ASSESSMENT OF KNOWLEDGE, ATTITUDES, AND PRACTICES TOWARDS PROSTATE CANCER SCREENING AMONGST MEN IN ZAMBEZI REGION, NAMIBIA.

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Abstract

Prostate cancer is a major health issue worldwide, including the Zambezi Region of Namibia. This study aimed to assess the level of knowledge, attitudes, and practices regarding screening of PCa among men in Zambezi region. A quantitative cross-sectional descriptive approach was used, with 391 men from all six constituencies of the Zambezi Region. Respondents were selected through a multi-stage sampling method, combining stratified random and cluster sampling. Data were collected via a self-administered questionnaire. The analysis employed descriptive statistics, regression analysis, and Chi-square tests to examine the prevalence of various knowledge, attitude, and practice (KAP) indicators. On the other hand, inferential statistics was used to identify correlations between KAP and screening behaviors.

The results showed that respondents had moderate knowledge of prostate cancer and a generally positive attitude (49.9%) toward screening. However, this knowledge and attitude did not appear to influence actual screening practices, which were low at just 4.1%. Statistical analysis (p-values of 0.927 of knowledge and 0.692 of attitudes) revealed no significant differences in knowledge and attitudes across constituencies. Additionally, the analysis showed no relationship between knowledge and screening practices and between attitudes and practices. However, there was a significant relationship between knowledge and attitudes. Education level was found to be significantly associated with knowledge, while other demographic factors showed no significant correlation. The study concluded that knowledge and attitudes alone do not significantly impact screening practices. It recommends further research into psychological factors influencing screening behavior, as well as a qualitative study to explore barriers to screening of PCa.

Key words: Prostate cancer, knowledge, attitudes, practices, screening, men.

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List of Abbreviations/Acronyms

A	Agree
BPH	Benign Prostatic Hyperplasia
BRCA	Breast cancer
CDC	Centers for Disease Control and Prevention
D	Disagree
DRE	Digital Rectal Examination
FDA	Food and Drud Administration
GCO	Global Cancer Observatory
GP	General Practitioner
HBM	Health Belief Mode
HCP	Healthcare Provider
HK	High Knowledge
KAP	Knowledge, Attitudes, and Practices
KB	Kabbe
KN	Kongola
KR	Katima Rural
KU	Katima Urban
LK	Low Knowledge
LY	Linyanti
MOHSS	Namibian Ministry of Health and Social Services
N	Neutral
NCD	Non-Communicable Disease

NGO	Non-Governmental Organization
OR	Odds Ratio
PCa	Prostate Cancer
PSA	Prostate-Specific Antigen
SA	Strongly Agree
SB	Sibbinda
SD	Strongly Disagree
US	Ultrasound
WHO	World Health Organization

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Yours beloved

Melody Namasiku Buchane

Declaration

I, Melody Namasiku Buchane, hereby declare that this study is my own work and is a true reflection of my research, and that

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CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1. Introduction

Prostate cancer (PCa) is one of the most common cancers diagnosed in men across the globe (1). Data revealed that about 1/8 men will be diagnosed of PCa during their lifetime, with the risk increasing with age (2). PCa is a form of cancer that develops in the prostate gland, a small, walnut-shaped organ in the male reproductive system (3,4). The prostate is essential for producing and secreting seminal fluid, which acts as a lubricant and provides transportation for sperm cells during ejaculation (5). This fluid contains enzymes, lipids, amines, and metal ions, all of which are vital for spermatozoa (sperm cells) to function properly. Given the importance of these biochemical contributions, the prostate plays a crucial role in male fertility and reproduction, making it a significant organ in evolutionary biology (3). The exact cause of PCa remains unknown, however, various predisposing risk factors increase the likelihood of the development of the disease. These factors may include age, family history, race, and certain lifestyle choices, although ongoing research continues with the exploration of these associations.

As illustrated, PCa is a divesting cancer among men which has a potential life-threatening result if not identified earlier and prompt actions not taken (6). It is currently recognised as the second most frequently diagnosed cancer among men, only surpassed by lung cancer in prevalence, (3) and significantly contributes to the increasing mortality rate in adult males. The disease often develops without noticeable symptoms in its early stages, making early detection through regular screening crucial for improving survival rates. Several diagnostic current recommendations include a PSA blood test and a digital rectal exam (DRE), with a biopsy being the definitive diagnostic tool if cancer is suspected (6).

Cancer screening for early diagnosis and treatment is crucial for effective treatment. However, despite advancements in medical technology and awareness campaigns, many men remain unaware of the risk factors and importance of screening, leading to late diagnoses when the cancer is more difficult to treat effectively (4).

Globally, healthcare systems are placing greater emphasis on public health interventions, such as screening programs, to decrease the severity of prostate cancer. However, disparities in knowledge, attitudes, and practices (KAP) towards the screening of PCa persist, especially in rural and underserved regions. These disparities are regarded to be influenced by several factors such as social and economic status, educational level, cultural beliefs, and access to healthcare services (7). Addressing these gaps is essential for reducing the incidence of advanced-stage prostate cancer and improving outcomes for men across various demographics (4). However, in this study, the researcher sought to assess the level of knowledge, attitudes, and practices (KAP) related to PCa screening among men in Zambezi region.

Through assessment of these factors, the study aimed at providing insights into the current state of awareness and engagement with screening of PCa in this region, which may inform future health interventions and educational programs. Furthermore, this study will serve as the primary data source for KAP in Zambezi region of Namibia. This chapter presents the background of the study, including the purpose, objectives, problem statement and significance of the study which set the foundation to understand the knowledge, attitudes, and practices of screening of PCa in Zambezi region. Furthermore, limitations and delimitation of the study, conceptual framework and definition of concepts will be discussed in this study.

1.2. Background of the study

Globally, prostate cancer is the most common cancer in men affecting 112 countries, with incidents varying from country to country (7,8). Furthermore, the data projections suggest a substantial increase in PCa cases in next years (3). In 2022, there were 1.467 million new cases of prostate cancer worldwide. Furthermore, globally, prostate cancer incidence and mortality rates vary significantly across the globe with Northern Europe having the highest incidence and Southern Africa the highest mortality rate in 2022 (9). The latest world statistics revealed that PCa is the fourth in cancer incidences and 8th in cancer mortality. Regarding the incidences, Europe is topping the list with 32.2% of incidences, followed by Asia, North America, Latin America, Africa and Oceania (9). Regarding mortality rate, Africa declined to fourth position with Asia topping followed by Europe and Latin America. The issues of incidents reflect the captured data and screening rates. Some studies and perceptions show concern that the low number in some parts of the world might be the result of poor screening processes in place (10).

Even though there have been an emerging of PCa development in young men and adolescence, PCa is more prominent in adults above 40 years of age (11,12). African men and those with a family history of PCa are most likely to develop PCa (4,13). Moreover, PCa is the second most frequent type of cancer in men, and it is the sixth most common cause of cancer-related fatalities among males, particularly among those of African descent, whose death rate is higher. PCa is the most common and leading cancer in men and the second leading cause deaths among the male gender in Namibia, representing 23.6% of all cancer cases (14,15). Furthermore, 68 PCa were recorded in Oshakati Intermediate Hospital of which 21% accounted for deaths in 2015 (14).

PCa is an escalating health issue in Africa, with incidence and mortality rates rising year on year. Africa recorded around 55744 deaths from PCa in 2022 alone (10). This alarming statistic can be attributed to several predisposing factors prevalent among African populations. Age is a significant factor in relation to PCa, with PCa primarily affecting men over the age of 50 (7,16). As life expectancy in many African countries continues to improve, an increasing number of men are living in the age range where prostate cancer becomes more likely. This has inevitably led to a growing number of cases (17,18).

Genetic predisposition plays a critical role, with research suggesting that men of African descent are at a meaningfully greater risk of developing forceful forms of PCa compared to other ethnic groups. In another study, it was revealed that black African men pose a great chance of being diagnosed and die from with PCa (19). This may be due to a combination of genetic factors and socio-economic challenges. In many African nations, healthcare systems are underfunded and under-resourced, making early screening programs difficult to implement. This means that most cases are diagnosed at a later, more advanced stage, resulting in poorer prognosis and higher mortality rates (19).

Cultural factors similarly play a significant role. In many African societies, there are deep-rooted taboos and misperceptions around reproductive health and masculinity. A study conducted in Nigeria highlighted that many men were reluctant to undergo prostate examinations due to fears surrounding the procedure and its perceived implications for their masculinity (20,21). This cultural reluctance to engage with healthcare services further delays diagnosis and treatment, leading to higher mortality rates. In addition, lack of medical aid schemes has been indirectly linked to lack of early screening of PCa hence germline PCa screening test are expensive (22). A study noted that obesity, coupled with

these dietary changes, has been associated with higher PCa incidence and mortality rates in African populations (7).

The lack of widespread access to healthcare infrastructure is a further critical factor. Many African countries, particularly in rural areas, lack the resources for effective cancer prevention, diagnosis, and treatment (21,23). A study reviewed that prostate cancer trends across Africa highlighted the limitations in healthcare provision, citing inadequate access to early screening, limited oncological expertise, and scarce treatment facilities. In addition, lifestyle poses a significant impact on people's health (23). These deficiencies are further compounded by a lack of awareness and education about PCa, resulting in men seeking medical attention only when symptoms have significantly progressed (20,24–26).

In contrast, male knowledge, attitudes and practices in developed countries, awareness of PCa and screening is generally high, supported by well-established healthcare systems, public health campaigns, and access to advanced medical technologies (27). Prostate-specific antigen (PSA) screening programs are widely implemented in nations like the United States of America (USA), the United Kingdom (UK), and Australia, contributing to early detection and improved survival rates. Studies indicate that men in these regions hold generally positive attitudes towards screening of PCa, with a good level of knowledge about its importance. Public health campaigns continue to encourage men, particularly those over 50 or with a family history of prostate cancer, to undergo regular screening (12,13).

PCa screening was introduced in Japan and United States of America (USA) using Tran-sonography, digital rectal examination, prostate acid phosphate and prostate antigen screening (PSA) in the early 1980s (16). A significance reduction in incidences and

mortalities has been observed ever since the introduction of PCa screening indicating the beneficial relationship between early detection and successful treatment (16,28). Therefore, indicating that PCa screening is one of the primary interventions in preventing PCa or successful treatment. Contrary to the Namibian context, PCa screening amongst men remains low (29). Limited understanding and negative beliefs regarding prostate cancer (PC) have a detrimental impact on the frequency of early screening among males. The mortality rate of individuals with PC is rising as a result of delayed reporting, screening, and treatment (30). Another study concurs that significant variables that contribute to a high incidence of PCa cancer and a lack of screening include cultural views, limited awareness, health beliefs, insufficient surgical care, as well as reliance on traditional medicine for treating uncommon illnesses (30). In addition, black males exhibit a pessimistic disposition towards screening, leading to the unfortunate consequence of experiencing intense discomfort when a condition is detected at a later stage, ultimately resulting in a disproportionately high death rate (13).

In Asia, knowledge, attitudes, and practices around screening of PCa vary greatly due to differences in healthcare infrastructure, cultural beliefs, and public awareness levels. In countries such as Japan and South Korea , where healthcare systems are more developed, awareness of prostate cancer and the uptake of PSA testing is relatively high (3). For example, a study in South Korea found that PSA screening was increasingly common, especially in urban areas with better healthcare access (3). However, in other parts of Asia, such as rural regions of India and China, knowledge about prostate cancer remains limited, and men are less likely to participate in screening. Cultural attitudes, including stigma around reproductive health and fear of diagnosis, further discourage men from seeking

prostate exams (26). A study conducted in China showed that a significant of 35 % of men had low awareness of PCa and screening methods (31), displaying a different picture from the African perspective.

In addition, knowledge of screening of PCa remains low, with significant differences between urban and rural populations in Africa. Limited access to healthcare facilities in many African countries means that PCa is often diagnosed at an advanced stage due to a lack of screening programs and awareness (31). A systematic review highlighted that most men in sub-Saharan Africa present with late-stage PCa, primarily due to poor knowledge and limited access to diagnostic services (24). Cultural beliefs also play a significant role. A study in Nigeria found that many men are reluctant to undergo prostate examinations due to concerns about masculinity and fear of discomfort, further reducing the uptake of screening (24).

South Africa has more developed healthcare system, awareness of screening of PCa is moderate, particularly in urban centres (26). A study conducted in Sweden, reported that while many men were aware of prostate cancer, misconceptions and fear regarding the screening process prevented them from engaging with healthcare services. Meanwhile, in countries like Namibia, Botswana, and Zimbabwe, awareness is lower, and screening practices are less common due to less developed healthcare infrastructure (7,25,32).

Prostate cancer is a significant health issue in Namibia, with rising incidence and mortality rates, particularly due to late-stage diagnoses. According to the reports, (26)(3, prostate cancer accounts for 16.3% of all cancers diagnosed in men in the country, with around 332 new cases and 181 deaths in 2020 (33). Urban areas like Windhoek and Walvis Bay have better awareness and access to healthcare services, which allows for more

opportunities for screening (33). However, even in these regions, cultural barriers and misconceptions about screening of PCa persist. In contrast, rural regions such as Oshana, Omusati, and Zambezi face more challenges, including limited access to healthcare infrastructure and lower awareness levels (34). Many men in these regions are hesitant to seek screening, influenced by cultural attitudes and a lack of understanding about the disease (33).

Namibia's healthcare system is underdeveloped in many rural areas, contributing to the high number of late-stage diagnoses (20). In northern and southern regions, including Kavango and Karas, cultural beliefs and financial constraints further reduce participation in screening of PCa. Public health campaigns have progressed in urban centres, but rural areas remain underserved. Studies in these regions indicate that traditional beliefs and fear of medical procedures limit men's engagement with formal healthcare (33). Addressing these disparities will require targeted efforts to improve healthcare access, increase public awareness, and reduce cultural barriers to screening of PCa across the country. There is a gap in the publication of PCa statistics in Zambezi region, Namibia, limiting the background of this study in the specified region. Katima Mulilo State Hospital (KMSH) Zambezi Region, which accounts for 25% of mortalities and incidences (KMSH Zambezi Region Inpatient and Outpatient Register 2021).

1.3.Statement of the problem

During clinical practices in the outpatient department in Katima Mulilo state hospital, in Zambezi region Namibia, the researcher observed an increased number of patients diagnosed with PCa stage two to three, who turned up for follow-up, some for referrals to

Windhoek central hospital, one of the referral Hospitals in Namibia with oncology services which is 1200 kilometers away from Katima Mulilo, Zambezi region.

This drew the researcher's attention and prompted the researcher to explore more on the identified problem. For significance's sake, the researcher visited the referral office and male ward of Katima Mulilo state hospital where prostate cancer statistics were achieved. The observation was that, out of a total number of all male admissions of 3541, 24 of them were diagnosed with prostate cancer of different stages, accounting for 0.67% of admissions. 6 out of 24 died accounting for 25% mortality, 33 out of all 576 referrals to Windhoek Central Hospital where PCa suffers, accounting for 5.7% referrals from April 2020 to mid-November 2021. Moreover, the researcher observed multiple referrals of the same patient. However, there was a gap in the publication of this data. Furthermore, the researcher opted to conduct one of the primary baseline studies of assessment of KAP amongst men toward PCa screening before any further studies.

In the Zambezi region, the burden of prostate cancer is compounded by low screening rates, which hinder early detection and timely intervention. The researcher further observed that, there are no screening services in the outpatient department and clinics in Zambezi region, However, WHO recommends that men above the age of 40-year-old should undergo prostate cancer screening every after 12 months (7). One of the role of Ministry of Health and Social Services (MoHSS) is to promote public health awareness and implementing effective interventional programs in combating non-communicable diseases, including PCa. However, such awareness programs are not being offered in Zambezi region, Namibia. The question was if an implementation of screening and awareness programs was to be introduced by the MoHSS, were men going to attend to

such or not? Will these PCa programs be effective? Do they know about PCa and screening methods? What are their attitudes and practices towards PCa screening?

In conclusion, the burden to the health care system, an increase in mortality without a reflection on published information, and without a better reflection of Men's KAP regarding PCa screening triggered the researcher to conduct this study regarding the knowledge, attitudes, and practices towards screening for PCa among men in Zambezi region, Namibia.

1.4. Purpose of the Study

The purpose of this study was to assess the level of knowledge, attitudes, and practices towards PCa screening amongst men in the Zambezi region, Namibia.

1.4.1. Specific Objectives of the Study

- To assess the level of knowledge regarding screening of PCa amongst men in Zambezi region, Namibia.
- To assess the level attitude toward screening of PCa amongst men in Zambezi region, Namibia.
- To assess the practices of screening of PCa amongst men in Zambezi region, Namibia.

1.5.Hypothesis

1.5.1. Null hypothesis:

- There was no association between knowledge and screening of PCa amongst men in the Zambezi region.
- There was no association between attitude and screening of PCa amongst men in the Zambezi region.
- There was no association between practices and screening of PCa amongst men in the Zambezi region.

1.5.2. Alternative hypothesis:

- There was an association between knowledge and screening of PCa amongst men in Zambezi.
- There was an association between attitude and screening of PCa amongst men in Zambezi.
- There was an association between practices and screening of PCa amongst men in Zambezi.

1.6. Significance of the study

The findings of this study provided valuable insights to the Ministry of Health and Social Services by establishing a scientific baseline of men's knowledge, attitudes, and screening practices for prostate cancer in the Zambezi region. By identifying specific gaps in these areas, the study will inform the development of targeted intervention strategies aimed at improving prostate cancer awareness and screening rates. This evidence-based approach

will enable the Ministry to design more effective public health campaigns, allocate resources more efficiently, and ultimately improve early detection and treatment outcomes for prostate cancer in the region. Additionally, the data can serve as a foundation for future research and policymaking, ensuring that interventions are both relevant and responsive to the unique needs of the local population.

Additionally, the study also contributed to the academic and research community by either validating or challenging the hypothesis concerning the relationship between men's knowledge, attitudes, and practices regarding screening of PCa. The results provided a valuable reference for other scholars exploring similar topics, thereby enriching the existing literature on screening of PCa.

Moreover, the study benefitted the University of Namibia by contributing to its body of scientific research and publications, enhancing the institution's academic reputation. For the researcher, this study has been instrumental in deepening their understanding of the topic and informing future studies that may influence policy development. It has also provided an opportunity for personal academic growth and broadened their field of expertise.

Lastly, the study has had a positive impact on the Respondents by enhancing their awareness and understanding of prostate cancer, potentially influencing their health behaviours and attitudes towards screening in the future.

1.7. Limitations of the study

The study's limitations address problems that were occasionally outside the researchers' control but have an impact on the research technique or results. These issues may also be unanticipated issues that the research missed (35).

Some respondents refused to participate to the study, however, ethical rules were abided to. Such respondents were not forced to participate rather excluded from the study. However, information regarding PCa was provided upon request. The researcher explained the importance of the study in the introductory phase of informed consent for generativity of accurate information.

The study only provided a snapshot of the respondents' knowledge, attitudes, and practices at a specific point in time. As a result, the researcher made several recommendations for future research on a related topic. Literacy level in terms of respondents who could not read and write served as a limitation to the study, however, the researcher opted to administer the questionnaire face to face reading and interpreting for the respondents. The researcher had a translated questionnaire in vernacular language, Silozi which was used as a guide to these who could not read English. The researcher confirmed whether the appropriate answer was chosen on behalf of the patient. Stigma affected Respondents ' willingness to discuss sensitive topics related to screening of PCa. Therefore, the researcher conducted the study individual.

The study's limitations stemmed from the structure of the data collection tool, a pilot study to assess its reliability and validity was conducted. A paraphrasing to some questions was

conducted. Other factor that limited this study were time frame, costs, and poor geographical area, which hindered access to respondents.

1.8. Delimitation of the study

These were regarded to be under the researcher's control because they were the limits the researcher had established for the study (36)**.** The study specifically focused on the Zambezi region in Namibia. While the findings provided insights into knowledge, attitudes, and practices among men in this region, they may not have been generalisable to other regions in Namibia. The study boundaries were adult men aged 18 years old and above in the Zambezi region of Namibia.

1.9.Definition of Concepts

Knowledge of prostate cancer refers to the awareness and understanding that individuals possess regarding various aspects of prostate cancer. This includes familiarity with the risk factors, symptoms, methods of diagnosis, available treatment options, potential outcomes, and the importance of early detection and screening. It also encompasses an understanding of how lifestyle choices and genetic factors can influence the likelihood of developing prostate cancer (37).

Attitudes refers to an individual's beliefs, feelings, and predispositions regarding the practice of undergoing screening for prostate cancer. This concept encompasses how a person perceives the importance, necessity, and effectiveness of screening methods, in the likes of prostate-specific antigen (PSA) tests or digital rectal exams (DRE). It includes both positive and negative attitudes (14).

Practices towards screening of PCa refer to the actions and behaviours that individuals engage in concerning the detection of prostate cancer. This includes whether and how often men participate in screening procedures - prostate-specific antigen (PSA) tests or digital rectal exams (DRE) - and their adherence to recommended screening schedules

Prostate Cancer a malignant tumor that originates in the prostate gland, a part of the male reproductive system, where abnormal cells grow uncontrollably and can spread to other parts of the body (38). This study has employed this definition to men in Zambezi region.

Men are adult male humans, typically characterized by the presence of XY chromosomes, testes, and the production of sperm (39). In this study, men were male individuals as per their birth identity living in Zambezi region.

Screening is about all diagnostic practices conducted in order to identify PCa (6).In this study, screening was about the process of testing men to identify PCa which includes typically involves a PSA (Prostate-Specific Antigen) blood test and a digital rectal exam (DRE).

1.10. Summary

This chapter provided an overview on the introduction and background of KAP amongst men in Zambezi region, the main problem and the purpose of the study. Furthermore, objectives, hypothesis, significance, limitations and delimitations of the study are also discussed.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

The purpose of a literature review was to explore and synthesis existing research in a specific area of interest KAP amongst men on screening for PCa (35). It aims to provide a comprehensive understanding of what has already been studied, highlighting the contributions of previous researchers, and identifying gaps, trends, and methodologies that are relevant to the current study.

2.2 Overview on PCa screening

Prostate cancer screening is the diagnostic investigations conducted to identify prostate specific agents, cells that indicates metastasis of the prostate gland when elevated. However, there are other medical conditions that may contribute to the elevation of PSA therefore further investigations clears other differential diagnosis (40). PSA was first identified in 1960, however, in 1986 PSA diagnosis was approved for monitoring of patients with PCa as it was viewed as one of the contributing factors to decreased PCa death rate (40). By the 1990s, PSA was approved by the Food and Drug Administration (FDA) in USA after an observation of increased survival rate (40,41). Furthermore, DRE and prostate biopsy was only used on men above 50 diagnosed with PCa (40). Elle et al concurs that there was no significance relationship between PSA diagnosis and prevalence of PCa therefore routine PSA testing was to be discouraged in patients above 50 years older and men with life expectancy of less than 10 years (42).

In 2012, the United States Preventive services Task Force (USPTF) opted for a Grade D recommendation, which completely ceased the diagnosis of PCa via PSA. In addition, the argument was that constant screening increases metastasis, in addition over diagnosis and overtreatment of PCa are risks (2,42). However, due to medical and urology specialist concerns and continuation in favoring PSA screening, the USPTF released tensions from grade D to grade C recommendation of screening of 55 to 69 years only in 2018. This trend affected the incidences trends of PCa screening in the USA (42).

The benefit of early detection of PCa is an increase in survival rate. However, in their scoping review, some authors argued that till to date, there is a gap in consensus regarding who should be tested and from the screening options, who is legible for which method of screening (40,42).

A systematic review was conducted in order to identify the recommended trend for PCa screening. The results were that there was no specified recommendation to PCa screening, however, a recommendation is highly directed on the shared decision making from health care workers and patients (43). The American Cancer society display the ages which are at high risk. Below 50 years specifically from 40 years old and therefore these men should have accessibility to information regarding PCa, however informed consent should be taken into consideration and a minimum of 2 years intervals when opting for screening services (43,44). In addition, a PSA level of 2.5 to 4 ng/mL needs further investigations (44). Moreover, this practice is conducted by the European association of urology (5). In a situational analysis for Sub-Saharan African, the most PCa screening methods were PSA and DRE, concurring to the universal practice (6).

The Cancer Association of Namibia is a non-governmental profit organization in collaboration with MoHSS to offer cancer services. Its activity are mainly awareness, treatment and rehabilitation (33). The main screening services is PSA blood testing on men above 40 years or young men with family history of PCa, however, these services are only offered at the General Practitioner and MoHSS of which patients presents there with signs and symptoms already (33). There is not enough information on DRE screening services in Namibia. It states that free breast, cervical and prostate cancer screening a have been offered to more than 30000 clients since 2015 in Namibia (33), however this data does not stipulate the exact region that was offered such services and the number of recipients to the services per region, per annum. Other factors such demographics in terms of rural and urban were not displayed. There is not enough statistics on the number of the population attending to these awareness campaigns, from which geographical area they came from. CAN display their awareness adverts on social media platforms (45). Raising concerns on the population without access to social media.

2.3 Knowledge on PCa screening

Knowledge is referred to having information regarding PCa (14). This includes information such as knowing what PCa is and the disease process. Furthermore, information of whether they have heard about PCa, the source of information, the most affected age group, risk factors such as family history, race, age, dietary fat intake, sexual activities, occupation and cigarette smoking, and early warning signs such as pain in growing, difficult and uneasiness in passing urine, erectile dysfunction and painful ejaculation is vital to test men's primary knowledge regarding PCa (18,22,46).

Studies suggest that the recommended age for commencement of PCa screening is 40 and above (28,40). However, Bleyer et al argues that PSA levels has been identified in young men of 15 years old (11). This argument prompted the researcher to conduct the study on adult male of 18 years and above so that young men below 40 are equipped with adequate knowledge regarding PCa post research participation.

A study conducted in America revealed that a black man is less knowledgeable regarding PCa information compared to a white man (13). This could be related to specific factors and this does not exclude Namibian, Zambezi men. In an online based cross-sectional survey in Lebanese of the middle east, Asia, a study was conducted on 844 men, of which only 4.6 % of those men demonstrated adequate level of knowledge about PCa (47). Furthermore, in similar studies of cross-sectional surveys, a display of low knowledge regarding PCa in Thulamela municipality of South Africa and Kitwe teaching hospital of Zambia was observed (31).

In an electronic review of five Sub-Saharan countries that met an inclusion criterion, there was a relationship between knowledge and socio demographic data such as education, employment and residential. These countries were, Burkina Furso, Namibia, Ghana, South Africa and Uganda (26).

In conclusion, a black men demonstrate little knowledge regarding PCa, however, this indication has influential factors.

2.4 Attitudes towards PCa screening

Attitudes are personalised opinions, beliefs and views regarding PCa screening (48). Furthermore, these are settled way of thinking about PCa which may be positive or negative. In addition, these are labelled as poor or good attitudes by researchers. One of the most widely used method of measuring attitudes is Likert scaling, whereas respondents are given an option to make comparisons and selection of preferred answer by ticking the appropriate column (49). In addition, the preferred columns comprise of strongly agree, agree, disagree, strongly disagree and neutral.

There is a direct link between attitudes and knowledge (47). In an online cross sectional study in Lebanese, Salah et al reports of poor attitudes and knowledge towards PCa screening (47). Their study further concurs that demographic factor such as education and a high monthly income plays a vital role in attitudes. Similar findings were reported in a hospital based cross sectional study in Tanzania However, marital status displayed no significant relationship with attitudes (47). Furthermore, age was associated with attitudes, concurring those men of 18 to 37 years old displayed poor attitudes since they had poor knowledge. Furthermore, a correspondence of poor knowledge and low level of screening was reported in Namibia, Oshakati (37). Despite of this similarity, Chavhalala reports of a different perspective of good knowledge of 65 %.

2.5 Practices towards PCa screening

Practices are actions and behaviours towards PCa screening (14). Grading practices is determined by men participation in PCa screening, routine, reasons for being screened (14). Additional information such as method is captured for statistical purposes. Practices

are labelled as good or poor. Studies reports of poor practices of prostate cancer screening regardless of the level of knowledge and practices (20,50–52).

Molando et al evaluated the knowledge, attitudes and behaviours towards prostate cancer and its prevention in a province in Italy implying a cross-sectional survey (52). The survey found that 72.7% of respondents were aware of the PSA test, with 51.1% learning about it from their doctors, particularly older men, those with higher education, and individuals with a family history or prostate issues. While only 29.6% had taken the test, 59.4% expressed willingness to do so in the future, reflecting moderate knowledge and strong openness to testing (52). Therefore, this indicates that there is no association between Knowledge and attitudes to practices. In Namibia, despite having a positive attitude of 86.2%, PCa screening remained low at 21% (14).

2.6 Barriers to PCa screening

The influence on PCa screening amongst men varies in different ways. In their integrated literature review of 83 articles, it was discovered that PCa screening barriers can be divided into three categories which are client related, health care providers and system-related barriers (26). In many low- and middle-income countries (LMICs), including parts of Africa, Latin America, and Asia, socioeconomic barriers significantly hinder screening of PCa. Limited access to healthcare services, high costs of medical tests, and inadequate healthcare infrastructure reduce the availability and utilisation of screening programs. For instance, in sub-Saharan Africa, many men lack access to PSA testing due to the high cost and scarcity of specialised medical facilities (26). In these regions, healthcare priorities are often focused on infectious diseases, leaving less funding and attention for cancer screening.

2.6.1 Client related barriers

Client-centred barriers refer to personal, cultural, psychological, and socioeconomic factors that affect an individual's decision to seek screening of PCa (3). These barriers are rooted in the perceptions, experiences, and individual circumstances of men and can significantly influence the uptake of screening of PCa services such as Prostate-Specific Antigen (PSA) testing and Digital Rectal Examination (DRE). One of the most significant client-centred barriers is the lack of knowledge regarding prostate cancer, the risk factors, and the importance of early screening of prostate cancer. Many men are unaware of the symptoms associated with prostate cancer, such as frequent urination, difficulty in urinating, or discomfort, and they may not understand the value of early detection. Research shows that men who lack awareness are less likely to seek screening services, particularly in low- and middle-income countries where health education is limited (2).

In high-income countries, this lack of knowledge may persist among certain demographic groups, including racial minorities and lower-income populations. A study by Nelson et al found that African American men in the United States were less likely to participate in screening of PCa due to insufficient information about the disease and screening methods (53). Cultural beliefs and social norms can significantly impact men's decisions to undergo screening of PCa (26).

Fear plays a significant role in preventing men from seeking screening of PCa. Many men fear a cancer diagnosis and the potential implications, including surgery, chemotherapy, and other treatments that could affect their quality of life. Moreover, the anxiety surrounding cancer diagnosis and the belief that prostate cancer is a death sentence can discourage men from taking proactive steps to detect the disease early, even when

screening services are accessible (26,53). Discomfort fear, embarrassment related to screening of PCa, particularly the Digital Rectal Examination (DRE), are common client-centred barriers (26,54). The DRE involves a physician examining the prostate through the rectum, which some men may find uncomfortable or invasive. This feeling of embarrassment is particularly prevalent in cultures where modesty and privacy are highly valued, and it can be a significant deterrent to screening (51,55).

2.6.2 Health care related barriers

Distrust of healthcare providers is another significant client-centred barrier to screening of PCa, particularly among marginalised or minority populations (26). In the United States, for example, African American men have historically faced discrimination in healthcare, leading to a deep-seated mistrust of medical professionals (7). This distrust can prevent men from seeking screening of PCa, even when they are at higher risk for the disease. In other regions, particularly in low- and middle-income countries, poor experiences with the healthcare system, lack of consistent care, and perceptions of corruption or incompetence in the healthcare sector undermine trust in screening programs (55,56).

2.6.3 System-related barriers

System-related barriers refer to challenges within healthcare systems that prevent effective delivery and access to screening of PCa services. These barriers are shaped by healthcare infrastructure, policies, workforce capacity, and the availability of resources, affecting both the provision of screening and the ability of patients to access these services. A major system-related barrier is the scarcity of healthcare facilities providing screening of PCa, especially in low- and middle-income countries, particularly in sub-Saharan Africa and

parts of Asia (26). Furthermore, this situation is worse in the rural areas (57). A similar situation is observed in Namibia, whereby patients from rural regions often travel long distances to reach facilities that offer these services, which can lead to delayed diagnoses and poorer outcomes (15).

Another key barrier to screening of PCa is the shortage of trained healthcare professionals, particularly urologists and oncologists who are skilled in diagnosing and treating prostate cancer (26). In many low-resource settings, the healthcare workforce is insufficient to meet the demand for screening, diagnosis, and treatment services. This shortage can lead to long waiting times for appointments, delays in diagnostic testing, and reduced screening uptake (26,54). In some countries, primary healthcare workers may not have adequate training in screening of PCa, leading to inconsistent practices or missed opportunities for early detection. Even in high-income countries, disparities in the distribution of healthcare professionals can lead to access challenges, particularly in remote or underserved areas where specialist care is scarce (26,54).

Inadequate funding and resource allocation within healthcare systems can severely limit the availability and quality of screening of PCa services. In low- and middle-income countries, limited healthcare budgets may prioritize infectious diseases and maternal and child health, leaving non-communicable diseases like cancer with insufficient resources. This lack of funding can result in inadequate diagnostic equipment (such as PSA testing kits or ultrasound machines) and limited access to treatment facilities. Even in high-income countries, cost constraints within healthcare systems can impact the availability of screening services. For example, in countries where healthcare is largely privatized, such as the United States, the cost of PSA testing and follow-up care can be prohibitive

In countries where health insurance is required to cover medical services, insurance-related issues can pose a barrier to screening of PCa. In the United States, in order access to PSA testing and follow-up diagnostic procedures may depend on an individual's insurance coverage, and men without insurance or with limited plans may not be able to afford these services (26). Even when insurance does cover screening, high deductibles or co-pays may discourage men from seeking preventive care. In some healthcare systems, reimbursement policies for screening of PCa may be inadequate or inconsistent. For instance, healthcare providers may not be incentivized to offer PSA testing if reimbursement rates are low, leading to reduced screening availability. In publicly funded systems, budget constraints may limit the number of screening tests that are offered or delay the implementation of new technologies for early detection (26). An observation in Namibia is that there are no PCa screening and awareness services in public sectors responsible for primary health care prevention and promotion.

2.7 Health Seeking Behaviours of PCa Screening

Grundy and Annear aimed to review the design and methods of health-seeking behaviour studies, with a focus on Cambodia (58). Using a literature review approach, the researchers analysed various studies to identify trends in study design, methodologies, and key findings related to health-seeking behaviours. The population focus included communities in Cambodia, although the review incorporated global studies. The findings highlighted the importance of context-specific approaches to understanding health-seeking behaviour, and the study concluded that better methods and frameworks are needed to improve health-seeking behaviour research and policy interventions.

The study by Ogunsanya et al (24) which examined the health-seeking practices, as well as the screening of PCa decisions among Black men in the United States, Nigeria, and Cameroon. Using a cross-sectional methodology, the study surveyed respondents across the three regions, targeting a diverse sample of Black men through stratified random sampling. Results were screening rates were generally low, largely due to cultural beliefs, healthcare accessibility, and varying perceptions of prostate cancer risk. Additionally, the findings indicated that tailored educational interventions and improved healthcare access could significantly increase screening participation. The study concluded that barriers such as stigma and misconceptions are some of the behaviours that inhibits PCa screening, in addition, are more common in black than white men (24,59).

However, other studies emphasize that cultivating positive health-seeking behaviours among the public is crucial for the effective primary prevention of illnesses. Encouraging individuals to seek early medical advice and engage in preventative care is essential for improving overall public health outcomes.

2.8 Recommendations to Improve Screening of PCa

Even though there are restrictions on PCa screening of asymptomatic men, (60), It is recommended by most guidelines that patient- clinician shared decision making is emphasized (60). This means that patients should have access to information regarding PCa pathophysiology and screening methods. However, patient remaining with a life expectancy of 7- 15 years do not need to be screened (60).

Studies reveals recommendations for PCa screening such as increasing public awareness through educational campaigns focused on the importance of early detection, particularly

in at-risk groups such as men over 50 and those with a family history of the disease (26). Healthcare accessibility, particularly in rural areas, must be expanded, ensuring that screening facilities and trained healthcare providers are available. Therefore, culturally sensitive health education programs that address these misconceptions are crucial. Additionally, the establishment of community-based screening initiatives, similar to programs found successful in other regions, could help improve uptake. Studies have also suggested that partnerships between governments, non-governmental organisations (NGOs), and international health bodies could assist in providing funding, training, and resources to strengthen screening of PCa infrastructure across the continent (26,52).

GCO (7) indicates male adults of which in Namibia aged 18 years old are more prone to develop prostate cancer. Screening has the potential to reduce the likelihood of death from prostate cancer in certain cases. Ultimately, it is crucial to consider the risks and benefits of screening in light of factors such as family history, race/ethnicity, existing health conditions, and individual preferences.

Scientific research in the community helps to identify challenges faced by the public and gives guidance to policymakers on the immediate response. KAP surveys, short for 'Knowledge, Attitude, and Practice' surveys, are a commonly used way to explore health-related behaviours and healthcare practice (25,52). A KAP survey is intended to be a representative sample of a population and can give insight into what people know (knowledge), how they feel (attitude) and what they do (practice) about the topic being researched (14). Data for a KAP survey is collected via semi-structured or structured questionnaires that are either self-administered or administered by interviewer (25,37). This method can give the necessary quantitative data needed to achieve the research

objectives. Knowledge, attitude, and practice (KAP) questionnaires are popular in the health sciences The KAPs model proposes that health behaviour is linked to a progressive process: it begins with gaining accurate knowledge which can lead to having a positive attitude and ultimately adopting a healthy behaviour (35). In the field of men's health-seeking behaviours, such questionnaires have assessed health-related beliefs and behaviours in the context of screening of PCa.

2.9 Conceptual Framework

Conceptual framework is a constructed, detailed structure, inclusive of variables and hypothesized outcomes of the study (35).

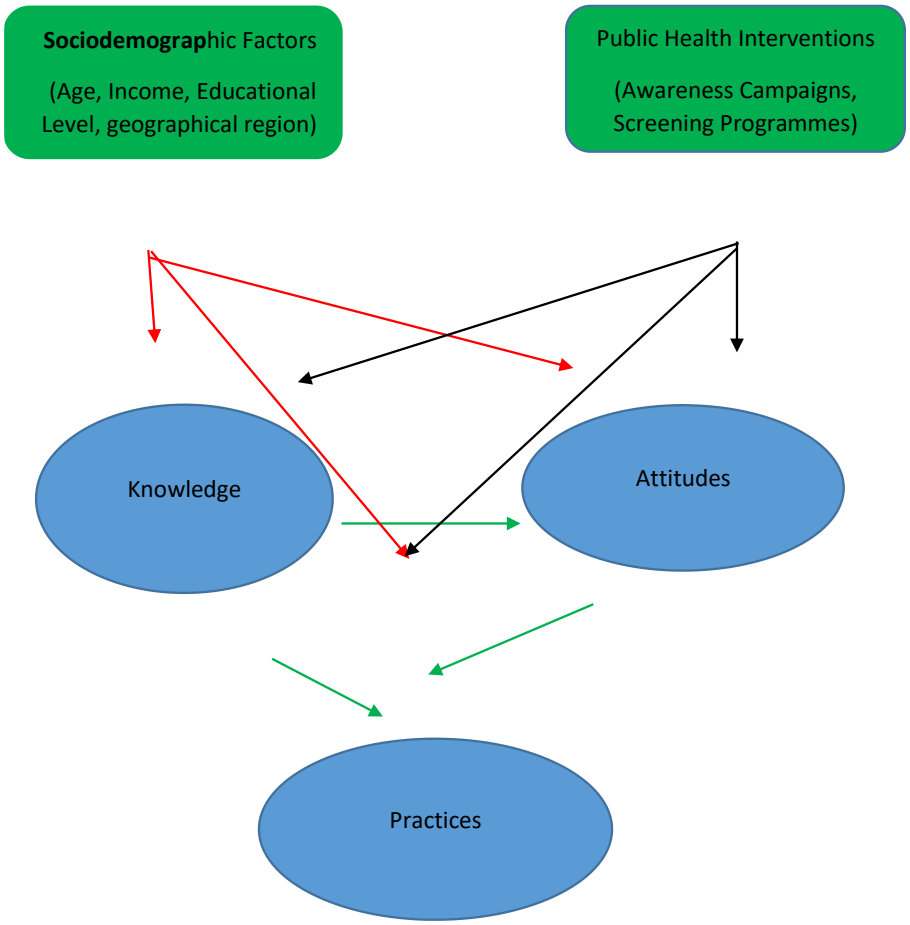

Figure 1.1: Interaction of KAP of PCa Screening variables

The conceptual framework above indicates the relationship between independent variables which are the socio-demographic factors such as age, gender, educational level, income and geographic region. In addition, health care, public health innervations and cultural beliefs. However, these have an influence on the outcome of dependent variables, KAP towards PCa screening.

2.10 Theoretical framework

Theoretical framework is defined as the structure that guides the study by outlining the key theories, models, or ideas that explain the research problem and relationships between concepts . Theory was necessary for this study as it guided the interpretation of the findings and understanding of the research context. This study was guided by the health belief and social cognitive theory.

2.10.1. Health Belief Model (HBM)

HBM suggests that individuals are more likely to take preventive action against a health risk if they perceive the threat to be serious, believe they are personally susceptible, and if the benefits outweigh the cost

2.10.2. Social cognitive theory

2.11 Summary

In summary, the narration of this chapter was more on the literature review regarding PCa overview, KAP on screening, barriers and health seeking behaviour. Moreover, the identified gaps in this literature review were lack of knowledge about early warning signs, fear, cultural influence on screening, stigma, unclear guidelines about age and screening

method and lack of PCa screening services, and recommendations to improve PCa awareness and screening.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Introduction

This chapter discussed the research method, and the research design the researcher used in the study. Research method is the organised plan for conducting research. It encompasses the tools, techniques, and procedures used to collect and analyses data. A research design is a framework or blueprint for conducting the research. It outlines how the research will be conducted, including how data will be collected, measured, and analysed. The research design ensures that the study was designed to address the problem identified by the study. It provides a logical sequence that connects the empirical data to the research questions and, ultimately, to the conclusions.

3.2. Research design

A research design provides the plan for data collection, detailing the approach and strategy used to address specific research questions or hypotheses. It sets the framework for how data will be collected, analyzed, and interpreted to meet the research objectives. This study has employed a quantitative research approach. Furthermore, cross-sectional descriptive research designs were used to assess the knowledge, attitudes, and practices (KAP) regarding screening of PCa among the population in the Zambezi region, Namibia.

The cross-sectional component of the design meant that data collection occurred at a single point in time, providing a snapshot of the current state of KAP regarding screening of PCa. This is particularly useful for capturing information about the present situation in a specific population without requiring prolonged observation or follow-up. In this case, the cross-sectional method enabled the researchers to efficiently assess KAP on screening

of PCa of the male population in the Zambezi region and report on the current trends without being influenced by changes that might occur over time.

The descriptive design used in this study was especially suitable given the research objective, which was to systematically describe the existing behaviour, knowledge levels, and attitudes toward screening of PCa. The goal was not to investigate cause-and-effect relationships or explore changes over time, in contrast to providing a clear picture of the status quo. This type of design is appropriate when the focus is on identifying and describing patterns and trends in behaviour (54), such as the proportion of individuals who are knowledgeable about screening methods, common perceptions of prostate cancer, and actual participation in screening programs.

A descriptive cross-sectional approach allowed the identification of prevalent trends, such as the percentage of individuals who were informed about screening of PCa options, the nature of prevailing attitudes toward the screening process (positive, neutral, or negative), and the actual practices, such as how frequently men in Zambezi region participated in screening programs.

The sampling strategy used in the study was designed to ensure that the findings could be generalised to the broader population in the Zambezi region, including the various constituencies within the region. By drawing a representative sample of the population, the research aimed to provide results that would reflect the overall knowledge, attitudes, and practices regarding screening of PCa across the entire community, ensuring that the insights gained could inform broader public health policies and initiatives targeted at improving screening of PCa in the area.

3.3. Population of the study

The population for this study comprised men aged 18 and above residing in the six constituencies of Zambezi region: Kabbe, Kongola, Katima Urban, Katima Rural, Linyanti, and Sibbinda.

3.4.Study setting

The Zambezi Region, situated in the corner of Namibia at the north-eastern, is a geographically and culturally diverse area known for its rich natural resources and vibrant communities. The region comprises six constituencies: Kabbe North, Kabbe South, Kongola, Katima Urban, Katima Rural, Linyanti, and Sibbinda, with five of these being predominantly rural and one, Katima Urban, representing the only urban constituency (51). The population of the Zambezi Region is approximately 23,098 men (51).

Given the significant rural composition of the region, many of the men live in remote areas where access to healthcare facilities and screening services can be limited. These rural constituencies, including Kabbe, Kongola, Linyanti, and Sibbinda, often rely on traditional leadership structures and informal community networks to disseminate information, including health-related awareness. Cultural practices, traditional authorities, and village meetings play a critical role in shaping the health behaviours of men in these areas, as many rely on traditional healers and community advice for guidance on medical issues.

Katima Urban, on the other hand, serves as the administrative and economic hub of the Zambezi Region. As the most developed and populated area, it has a more formal healthcare infrastructure, including hospitals, clinics, and healthcare centres, which

provide better access to screening of PCa services. Urban residents in this area are generally more exposed to modern healthcare practices and public health campaigns compared to their rural counterparts, and they may benefit from more frequent interactions with medical professionals.

The study conducted in the Zambezi Region covered all six constituencies, ensuring that the research captured a wide variety of environmental settings where men congregate, from May 2023 to June 2024. This was particularly important for reaching the diverse population, as men in rural areas are less likely to visit healthcare facilities routinely. As such, the study capitalised on existing social and community structures to reach a broad audience. Churches, Traditional authority gathering points, outpatient departments, clinics, Sports complex, villages offices complexes and other public venues where men regularly gather for recreational activities. These venues were ideal for capturing a large number of men who might otherwise be difficult to reach through conventional health outreach efforts.

3.5.Sample and Sampling Methods

A sample refers to a subset of individuals selected from the broader study population to participate in a research study (26). Sampling is the process by which specific cases are chosen from the larger population, allowing researchers to make inferences about the entire population based on the collected data (54). In this study, a multi staging sampling method of stratified random and cluster sampling was employed to ensure a representative sample of the population. This method ensures that the sample reflects the population's characteristics, particularly when there are distinct subgroups within the population.

Stratified random sampling involve dividing the population into different subgroups, known as strata, based on specific characteristics such as age, gender, whereas cluster sampling means randomly selecting respondents according to their location, cluster, in this study constituencies (54). In this study, the strata were determined by age groups, categorised as follows: 18-27, 28-37, 38-47, 48-57, and 58 and above per constituency. These age-based strata ensured that the final sample closely resembled the broader population in terms of its distribution across different age categories. This approach helped to prevent the overrepresentation or underrepresentation of any particular age group in the sample, thus making the results more generalisable to the larger population of the Zambezi region.

In addition, the stratified sampling approach enabled the researcher to capture the diverse socio-demographic characteristics of the male population across the six constituencies of the Zambezi region. Since each constituency varies in population size and socio-economic composition, this method ensured that individuals from both rural and urban constituencies were proportionally represented (54). A division of sample frame into distinct constituencies abled the selection of respondents proportionately from each stratum based on the size of their constituency. This process helped to create a sample that accurately reflected the population distribution within the region, accounting for the variations in population density and demographic characteristics between constituencies.

Proportional allocation was used to ensure that the number of respondents selected from each constituency was proportionate to the total population size of that constituency. This proportional representation ensured that each constituency's unique demographic structure, including age distribution, was mirrored in the sample. The proportionality

maintenance ensured that no constituency was under or over-sampled, thus allowing for more reliable and accurate conclusions about the knowledge, attitudes, and practices (KAP) regarding screening of PCa in the Zambezi region. The selection of respondents was determined by the inclusion criteria, which were designed to identify men who were eligible and relevant to the study's objectives

A combination of stratified random sampling and cluster sampling proportional allocation provided a robust framework for ensuring that the sample was not only representative of the broader population of the Zambezi region but also allowed the researcher to account for differences in constituency size and demographic composition. By carefully calculating the number of respondents (n) to be drawn from each stratum (constituency) and their respective age categories, the study was able to ensure that the findings were both valid and generalisable across the entire population. The table below provides a detailed breakdown of the calculated sample (n) of respondents from each constituency, showing the proportionate distribution of respondents across the different age categories and constituencies.

This approach to sampling enhances the study’s reliability and allows for a more comprehensive understanding of the screening of PCa behaviours among men in the Zambezi region. By employing stratified random sampling, the researcher ensured that the sample would accurately reflect the population's heterogeneity, providing insights that are representative of the broader male population across both urban and rural areas.

The Taro Yamane Formula was employed to calculate the sample size of this study (35) which was then used for determination of sample size per strata.

$n = \frac{N}{1+Ne2}$ $N = \frac{23098}{1+22174x0.05\text{^}2} = 393$

Where n = sample size, N = population size = 23098, e = error (0.05) reliability level 95% or e = level of precision always set the value of 0.0. Therefore, the required sample size for this study was 393 respondents.

Table 3.3. Sample size per cluster (constituency) in Zambezi region

Age categories	**Sibbinda**		**Kongola**		**Linyanti**		**Katima Rural**		**Katima urban**		**Kabbe**	
	N	n	N	N	N	n	N	n	N	N	N	n
18-27	916	$\frac{393}{23098}$ *916 = **16**	594	$\frac{393}{23098}$ *594 =**10**	1416	$\frac{393}{23098}$ *1416= **24**	1463	$\frac{393}{23098}$ *1463 =25	2828	$\frac{393}{23098}$ *2828= **48**	1334	$\frac{393}{23098}$ *1334= **23**
28-37	645	$\frac{393}{23098}$ *605 =10	400	$\frac{393}{23098}$ *400 = 7	1033	$\frac{393}{23098}$ *1033= 18	1096	$\frac{393}{23098}$ *1096 = 19	2022	$\frac{393}{23098}$ *2022= 34	1085	$\frac{393}{23098}$ *1085= 19
38-47	385	$\frac{393}{23098}$ *385 = 6	444	$\frac{393}{23098}$ *444 = 8	634	$\frac{393}{23098}$ *634 = 11	790	$\frac{393}{23098}$ *790= 13	1259	$\frac{393}{23098}$ *1259= 20	624	$\frac{393}{23098}$ *624 = 10

48-57	229	$\frac{393}{23098}$ *229 = 4	171	$\frac{393}{23098}$ *171 = 2	339	$\frac{393}{23098}$ *339 = 6	377	$\frac{393}{23098}$ *377= 5	598	$\frac{393}{23098}$ *598 = 10	302	$\frac{393}{23098}$ *302 = 5
58 and above	328	$\frac{393}{23098}$ *328 = 6	175	$\frac{393}{23098}$ *175 = 3	560	$\frac{393}{23098}$ 560 = 10	494	$\frac{393}{23098}$ *494= 8	290	$\frac{393}{23098}$ *290 = 5	454	$\frac{393}{23098}$ *454 = 8
Total	2503	42	1784	30	3982	68	4220	70	6997	118	3799	65
Total Sample size = 393												

3.5.1. Inclusion Criteria

The inclusion criteria for this study were appropriated considered to ensure that the respondents were relevant to the research objectives, allowing for the collection of reliable, valid data regarding knowledge, attitude and practices of screening of PCa. The criteria also ensured that the sample was representative of the target population within Zambezi region.

The study only included men aged 18 years and above. This age threshold was selected to focus on the adult male population, which is relevant for screening of PCa practices.

Respondents were required to be residents of one of the six constituencies within Zambezi region: Kabbe, Kongola, Katima Urban, Katima Rural, Linyanti, and Sibbinda. This geographic criterion was crucial for ensuring that the study captured the diverse social,

economic, and cultural contexts within the target area. By including respondents from both urban (Katima Urban) and rural constituencies (Kabbe, Kongola, Katima Rural, Linyanti, and Sibbinda), the study could assess how knowledge, attitudes, and practices regarding screening of PCa varied between different communities. This inclusivity across geographic settings enabled the researcher to generate findings that were more representative of the entire Zambezi region, including both densely populated urban areas and more remote rural settlements where access to healthcare might differ. Only respondents who provided informed consent were included in the study.

In addition to inclusion criterion, respondents were mentally capable to complete the survey thus ensured minimised potential data collection errors, such as misunderstandings or misinterpretations of questions, and ensured that the results reflected an accurate portrayal of the population's awareness and behaviour.

3.5.2. Exclusion Criteria

Men who did not reside in the specified constituencies of Zambezi region were excluded to ensure the study's findings were specific to the target population in the selected area. Furthermore, individuals who declined to provide informed consent were excluded from the study to ensure ethical research practices, as participation must be voluntary. The researcher excluded men below 18 years old, hospitalised and men who were not able to comprehend or respond to the survey due to cognitive impairments or other reasons were excluded. This exclusion criterion was necessary to ensure the quality and accuracy of the data collected.

3.6. Research Instrument

Data collection instruments refer to tools or devices used to gather information from respondents, including questionnaires, tests, and structured interview schedules, and checklists (26). In this study, a face-to-face questionnaire was the primary instrument used to collect data from respondents. A questionnaire is a widely recognised and effective tool in survey research, often referred to as a survey instrument (26). The structured nature of the questionnaire made it particularly suitable for this study, as it allowed the researcher to collect data from a large number of respondents efficiently and at a lower cost compared to more resource-intensive methods like interviews.

The questionnaire was divided into four key sections: socio-demographics, knowledge, attitudes, and practices related to screening of PCa (54). Each section was designed to capture specific information that would contribute to the study's objectives. The socio-demographic section gathered essential background information about respondents, such as age, education level, employment status, and location, which was crucial for understanding the context of their responses. The knowledge section assessed the respondents' understanding of prostate cancer, including symptoms, risk factors, and available screening methods (16). The attitudes section explored how respondents felt about screening of PCa, while the practice section focused on the frequency and type of screening practices they engaged in.

To make the questionnaire user-friendly and ensure that data could be easily quantified, the study used closed-ended questions, which required respondents to choose from a set of predefined answers or tick applicable responses. This format facilitated faster responses and simpler analysis, as the researcher could easily categorize the answers. In addition,

Likert scale questions were employed to gauge the intensity of Respondents' attitudes or opinions on certain statements related to screening of PCa. Clear instructions accompanied each section of the questionnaire to ensure that respondents understood how to respond, which minimized potential confusion and improved the accuracy of the data collected.

3.7.Data Collection Procedures

The research proposal was approved by the University of Namibia, the Ministry of Health and Social Services, the Zambezi regional governor and board. Therefore, enabled data collection for this study to commence from May 2023 to June 2024. As indicated in the study setting, the researcher visited Churches, Traditional authority gathering points, outpatient departments, clinics, villages, offices, sports complexes and other public venues where men regularly gather for recreational activities. The researcher made a self-introduction through the leaders and supervisor of the venues and events. Thus, further assisted in the announcement of the researcher's visit. All men were invited to participate in this study. Exclusion criteria were further emphasised. In addition, men were informed about the purpose of the study, however, no payments were to be done upon completion of the questionnaire. The researcher had two questionnaires, one in English and the other one translated in translated in the local language Silozi, with the assistance of a Silozi teacher for Grade 12 at Caprivi Senior Secondary School.

Men who agreed to participate in the study raised their hands for a questionnaire. However, before administration of the questionnaire, men were made to select a small piece of paper blindly from the bowl. The small paper was written either yes or no,

considering the sample size per constituency. The researcher handed in self-administered questionnaires were in convenient venues to allow privacy and safety whilst availing herself for any queries. This facilitated an accurate and reliable data collection process. On average, respondents took approximately 20 minutes to complete the questionnaire, ensuring that sufficient time was allowed without causing any undue burden. Additionally, ethical considerations, such as informed consent and confidentiality, were adhered to throughout the data collection process, in line with the approved research protocol.

Moreover, practical considerations were made during data collection to ensure that the process went smoothly. The researcher carried an adequate supply of pens, which were provided to respondents for completing the questionnaire. This small logistical detail ensured that respondents had the necessary tools to respond to the questionnaire promptly, without unnecessary delays or interruptions.

3.8. Pilot study

The pilot study is a small version of the full-scale research that aimed at assessing the methods and warning the researcher of potential drawbacks (35), or a small-scale trial run of an actual research study (35). A pilot study helped the researcher to recognised and addressed some problems by obtaining information to improve the project and guide to adjust or reassess the feasibility of the study (61). The pilot study was conducted on 20 men who met the inclusion criteria. Twenty respondents in the pilot study were equivalent to five per cent of the sample size and in adherence to the 12 rules of a pilot study. Men who participated in the pilot study were not allowed to participate in the main study.

Upon data analysis of the pilot study, the researcher observed that some content to cover some variables such as barriers or hindering PCa screening were not included in the questionnaire therefore was included in the questionnaire. In addition, the study was mainly focusing on the preventative pillar of primary health care of the public, therefore some contents on the treatment interventions were removed from the questionnaire.

3.9.Data Analysis

Data analysis includes categorising, ordering, manipulating and summarising the data, as well as describing those data in the meaningful terms (61). The data collected was verified before entering into the Statistical Package for the Social Sciences (SPSS) version 26 software which cleaned, categorised, and analysed the data. Descriptive statistics were used to present the data for easy analysis to determine the KAP for screening of PCa amongst men in the Zambezi region. The data analysis process involved several key steps to summarise, describe, and test the relationships between variables. First, descriptive statistics were employed to provide an overview of the dataset. This involved calculating and presenting means for continuous variables, allowing for the identification of central tendencies. Additionally, percentages and frequencies were calculated for categorical variables to summarise the distribution of responses across different categories, providing a clear snapshot of the characteristics of the respondents or responses.

To further investigate the relationships between categorical variables, cross-tabulation was used. Cross-tabulation is a method that allows for the organisation of data into a matrix format, where the frequencies of occurrence of two or more variables are displayed (54). This helps in visualising patterns and potential associations between the variables. Once the cross-tabulated data were obtained, the Chi-Square test of independence was

applied. This statistical test determines whether there is a significant association between the categorical variables. By calculating the p-values from the Chi-Square test, the strength and significance of these associations were evaluated. The p-value indicates whether the observed relationships between variables are due to chance or if they reflect actual patterns in the data. A p-value less than the conventional threshold (typically 0.05) suggests that the association between the variables is statistically significant, while a p-value greater than 0.05 indicates no significant association. Throughout the analysis, assumptions of the Chi-Square test, such as minimum expected frequency counts, were carefully checked to ensure the validity of the test results. Where necessary, adjustments were made to ensure the robustness of the analysis.

3.10. Ethical Considerations

The researcher obtained the ethical clearance certificate from the Human Research Ethical Committee (HREC) of the University of Namibia (UNAM), on 07 December 2022, Ethical clearance reference number DEC OSH 0029. Moreover, a formal approval from the Ministry of Health and Social Services and Zambezi regional governor, board and constitutional counsellors was granted. In line with ethical standards, the study adhered to four fundamental ethical principles: autonomy, beneficence and non-maleficence, and justice. The following principles were observed:

3.10.1. Principle of autonomy

The autonomy of the respondents was respected by providing the respondents with the comprehensive information about the study, where the researcher explained the purpose of the study, how the data will be collected, possible risks and benefits (26). This enhanced knowledge of respondents and guided them to make an informed decision about their

involvement. Participation was entirely voluntary, and individuals were given the right to decline or withdraw from the study at any point without facing any negative consequences. This ensured that the respondents were not coerced or influenced into taking part. Consent forms were used to obtain formal agreement from respondents, and their right to withdraw was reiterated at various stages of the study to ensure continuous voluntary participation. Respect for their opinions and preferences was maintained throughout the research process.

3.9.1 (a) Informed Consent and Transparency

Respondents were fully informed of the aims, procedures, and possible risks of the study through comprehensive briefings and written consent forms. Transparency in the research process was maintained by no providing answers to respondents allowing the researcher to generated primary information from respondents. In addition, respondents were allowed to ask questions and clarify any concerns before agreement to participate. This fostered trust between the researcher and the respondents, reinforcing the ethical nature of the study (54).

3.10.2. Principle of Beneficence and Non-maleficence

In accordance with this principle, the researcher ensured that the study posed no harm to the respondents (26). The research did not involve any experiments, physical interventions, or procedures that could cause discomfort, pain, or distress. Respondents were not subjected to force, pressure, or intimidation. Additionally, the study was conducted in a safe and private environment, providing respondents with a sense of security. No financial or material incentives were offered to avoid undue influence on the

decision to participate. The researcher also ensured that all data collected was treated with the highest level of confidentiality and anonymity, protecting Respondents ' personal information. Only authorised personnel had access to the data, which was stored securely and used solely for the purposes outlined in the study's objectives. Anonymity was further safeguarded by using respondents' codes instead of real names to protect identities in any reports or publications resulting from the research.

3.10.3. Principle of Justice

The principle of justice was applied by ensuring the fair and equitable selection of respondents, as outlined in the sampling method. This prevented any form of discrimination or bias in the inclusion or exclusion of respondents. The selection process was transparent and based on clearly defined inclusion criteria, ensuring that all individuals meeting the criteria had an equal opportunity to participate. Additionally, the researcher took steps to protect the anonymity of the respondents by replacing personal identifiers with unique codes. This practice ensured that respondents' identities were shielded from unauthorised access or exposure. Moreover, confidentiality was rigorously maintained throughout the study, with only authorised individuals having access to the data, thereby respecting Respondents' privacy and protecting their personal information (54).

3.10.4. Protection of Vulnerable Populations

In line with ethical guidelines, particular care was taken to protect vulnerable respondents, specifically the illiterate ones. No alterations were made to their answers, Furthermore, respondents remained anonymous, however only signed the consent for academic transparencies. No force and experiments were made on respondents.

Summary

This chapter presented the research method and design used in the study. The population of the study was also discussed where 393 men aged 18 and above were chosen to participate. The inclusion and exclusion criteria were discussed to ensure that the results are reliable. The researcher also discussed the ethical considerations as the research involved human subjects.

CHAPTER 4: RESULTS

4.1. Introduction

The previous chapter outlined the research methodology and plan of this study. Henceforth, this chapter presented the findings of the study based on the data collected from the respondents in table and graphs. From the total of 393 questionnaires distributed, 391 respondents, yielding an impressive response rate of 99.5%. This high response rate reflects the Respondents' engagement with the study and enhances the reliability and validity of the results. The chapter begins by detailing the socio-demographic characteristics of the respondents, which include age, education level, employment status, and other relevant background information that may influence their knowledge, attitudes, and practices regarding PCa screening. Following this, the analysis of the Respondents ' knowledge about PCa, examining their awareness of the disease, risk factors, symptoms, and available screening methods is presented. The chapter then explores the respondents' attitudes toward PCa and its screening, assessing their perceptions, beliefs, and potential barriers that might affect their willingness to engage in screening practices. Finally, the chapter examines the practices of the respondents concerning PCa screening, focusing on whether they have undergone screening, their frequency of participation in such practices, and the reasons behind their decision to either engage or not engage in screening.

4.2. Demographic characteristics of respondents per constituency

This section presents the demographic data of the respondents per site, that is, Kabbe, Kongola, Linyanti, Katima Mulilo urban, Katima Mulilo rural and Sibbinda.

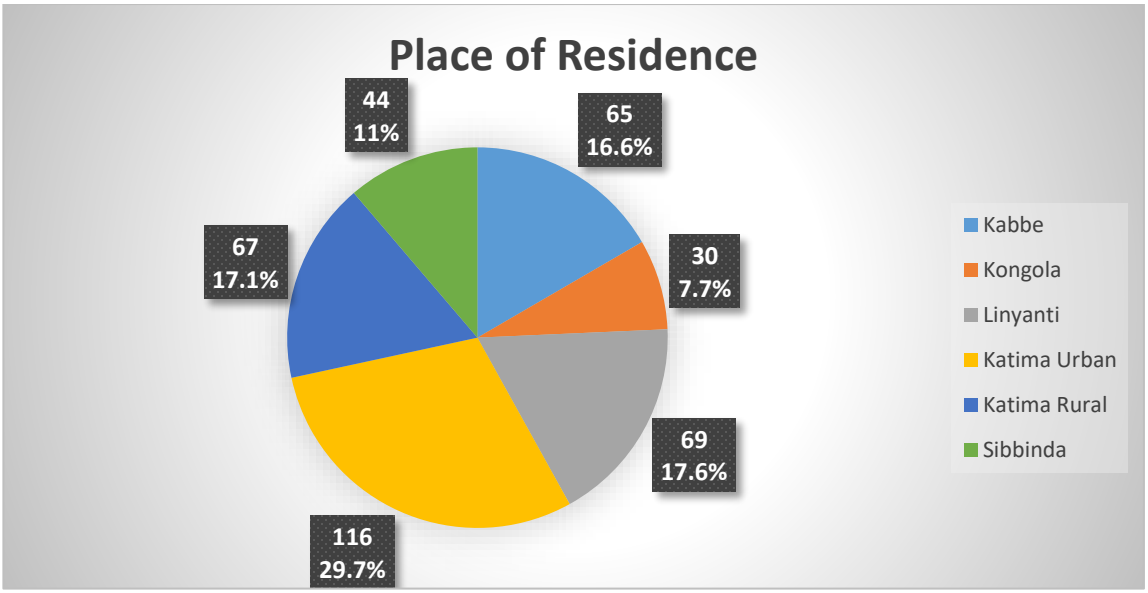

Figure 4.1: Respondents' Place of Residence

Most respondents, n=116 (29.7%) are resident in Katima urban, followed by n=69 917.6%) from Linyanti. Those from Katima rural and Kabbe were 67 (17.1%) and 65(16.6%) respectively. Sibbinda had 44 (11%) respondents and only 30 (7.7%) Respondents came from Kongola.

The following tables present the respondents' demographic data per constituency.

Table 4.1: Kabbe Constituency Demographic Data

Category	**18-27**	**28-37**	**38-47**	**48-57**	**57 and above**	**Total**	**percentage**
Total Individuals	23	18	11	5	8	65	100%
Marital Status							
Married	2	11	5	4	8	30	46 %
Single	21	7	6	1	0	35	54%

Divorced	0	0	0	0	0	0	0%
Widowed	0	0	0	0	0	0	0%
Educational Level							
Non-education	3	3	0	0	0	6	9 %
Primary level	2	3	3	0	3	11	17%
Secondary level	11	7	6	3	5	32	49%
Tertiary level	7	5	2	2	0	16	25%
Religion							
Christianity	21	17	11	5	8	62	95%
Islam	1	0	0	0	0	1	2%
Others	1	1	0	0	0	2	3%
Employment Status							
Employed	2	5	5	2	0	14	22%
Unemployed	21	13	6	3	8	51	78%

The table shows that the majority of individuals are in the 18-27 age group comprising of 35% of the total population, the least being 48 -57 comprising 8% . Predominantly single and unemployed, with secondary education being the most common level as it covered 49 %. As age increases, there is a shift towards marriage and employment, with all individuals in the 57 and above group being married and unemployed. Christianity is the dominant religion across all age groups, and there is a gradual increase in the proportion of married and educated individuals with age.

Table 4.2: Kongola Constituency Demographic data

Category	**18-27**	**28-37**	**38-47**	**48-57**	**58 and above**	**Total**	**Percentage**
Total Individuals	10	7	7	3	3	30	100 %
Marital Status							
Married	0	2	5	3	2	12	40 %
Single	10	5	2	0	0	17	57 %
Divorced	0	0	0	0	0	0	0 %
Widowed	0	0	0	0	1	1	3 %
Educational Level							
Non-education	1	2	2	3	2	10	33 %
Primary level	0	0	1	0	0	1	3%
Secondary level	7	2	4	0	1	14	47%
Tertiary level	2	3	0	0	0	5	17%
Religion							
Christianity	10	7	7	3	3	30	100%
Employment Status							
Employed	1	2	2	3	0	8	27%
Unemployed	9	5	5	0	3	22	73%

For Kongola constituency, the table indicates that the majority of individuals in the 18-27 age group are single covering 33 % of the total population, unemployed, and primarily have secondary education, with Christianity being the dominant religion of 100% across all age groups. As age increases, there's a notable shift towards marriage, with those aged 38 and above predominantly married. Employment increases with age, particularly in the 48-57 age group, although the oldest group (58 and above) is entirely unemployed. Educational levels vary, with secondary education of 47 % most common among the younger age groups, while non-education is more prevalent among older individuals comprising of 33%.

Table 4.3: Linyanti Constituency Demographic Data

Category	**18-27**	**28-37**	**38-47**	**48-57**	**58 and above**	**Total**	**Percentage**
Total Individuals	24	18	11	6	10	69	100%
Marital Status							
Married	1	3	7	6	8	25	36%
Single	23	14	3	0	2	42	61
Divorced	0	1	1	0	0	2	3%
Widowed	0	0	0	0	0	0	0%
Educational Level							
Non-education	1	2	1	2	0	6	9%
Primary level	0	1	0	0	1	2	3%

Secondary level	6	7	6	4	8	31	45%
Tertiary level	16	8	4	0	1	29	42%
Religion							
Christianity	24	17	11	5	9	66	96
Others	0	1	0	1	1	3	4%
Employment Status							
Employed	1	8	3	0	1	13	19%
Unemployed	23	10	8	6	9	56	81%

The demographic data from Linyanti show that the majority of individuals aged 18-27 are single (55%), unemployed (41%), and predominantly have tertiary education (55%), with Christianity of 36% as the dominant religion. As age increases, there is a shift towards marriage, with most individuals aged 58 and above being married covering up to 55% of the total population.

Employment is highest in the 28-37 age group but decreases in older age groups, particularly in the 48-57 age group, where all individuals are unemployed. Secondary education is common across most age groups, while tertiary education is primarily found among the younger individuals.

Table 4.4: Katima Urban Constituency Demographic Data

Category	**18-27**	**28-37**	**38-47**	**48-57**	**58 and above**	**Total**	**Percentage**
Total Individuals	48	34	21	10	3	116	100%

Marital Status							
Married	1	6	9	6	2	24	21%
Single	47	28	11	4	1	91	78%
Divorced	0	0	1	0	0	1	1%
Widowed	0	0	0	0	0	0	0%
Educational Level							
Non-education	0	0	2	2	0	5	4%
Primary level	0	2	0	1	0	2	2%
Secondary level	11	7	15	0	2	35	30%
Tertiary level	35	25	5	8	1	74	64%
Religion							
Christianity	38	34	18	9	3	102	88%
Others	10	0	2	2	0	14	12%
Employment Status							
Employed	8	15	13	6	1	43	37%
Unemployed	40	19	8	4	2	73	63%

The data from Katima Urban show that the 18-27 age group is predominantly single with 52% and unemployment status of 55%, with a high level of tertiary education of 47%. As individuals age, the proportion of married individuals increases, particularly from the 38-47 age group onwards. Employment is more common in the 28-57 age groups, up to 30%, though a significant number remain unemployed, especially in the younger age groups.

Christianity of 88% remains the dominant religion across all age groups, but in the 18-27 age group, there is a notable shift with a minority identifying with other religions, reflecting increased religious diversity of 22% among younger people. Regarding education, tertiary education is more prevalent among the younger age groups, indicating higher participation in advanced education. In contrast, secondary education is more common among individuals in the 38-47 age group, highlighting generational differences in educational attainment, possibly due to changing access to higher education and evolving societal expectations over time.

Table 4.5: Katima Rural Constituency Demographic Data

Category	**18-27**	**28-37**	**38-47**	**48-57**	**58 and above**	**Total**	**Percentage**
Total Individuals	25	18	14	5	5	67	100%
Marital Status							
Married	2	1	7	3	5	18	27%
Single	23	17	7	1	0	48	72%
Divorced	0	0	0	1	0	1	1%
Widowed	0	0	0	0	0	0	0%
Educational Level							
Non-education	0	0	1	1	2	4	7%
Primary level	4	1	3	0	0	5	8%
Secondary level	19	4	6	3	5	37	55%
Tertiary level	2	13	4	1	0	20	30

Religion							
Christianity	25	18	14	5	5	67	100%
Employment Status							
Employed	1	4	9	1	1	16	24%
Unemployed	24	14	5	4	4	51	76%

The data from the table above indicates that most individuals in the 18-27 age group are single covering up to 48%, unemployed, and have a secondary education, with Christianity which is 100% as their religion. As age increases, there is a shift towards marriage, particularly from the 38-47 age group onward, where most are married. Employment is more common in the 38-47 age group totaling up to 56%, though unemployment remains significant across all age groups with 76%. Tertiary education is most prevalent in the 28-37 age group which is 65%, while secondary education is common across all age groups comprising of 55%. The data also shows a consistent religious affiliation with Christianity of 100% across all age groups.

Table 4.6: Sibbinda Constituency Demographic Data

Category	**18-27**	**28-37**	**38-47**	**48-57**	**58 and above**	**Total**	**Percentage**
Total Individuals	15	12	7	4	6	44	100%
Marital Status							
Married	6	10	4	2	2	18	40%

Single	8	2	3	1	2	17	39%
Divorced	1	0	2	2	2	7	16%
Widowed	0	0	0	1	1	2	5%
Educational Level							
Non-education	8	12	6	4	6	36	82%
Primary level	0	0	0	0	0	0	0%
Secondary level	3	0	0	0	0	3	7%
Tertiary level	4	0	1	0	0	5	11%
Religion							
Christianity	15	12	7	4	6	44	100%
Employment Status							
Employed	2	0	1	0	0	3	7%
Unemployed	13	12	6	4	6	41	93%

The data shows that the majority of individuals across all age groups were unemployed covering up to 93% of the total and have no formal education tallying up to 89% , with 100% Christianity as their religion . In terms of marital status, most individuals aged 28-47 were married (55%), while the younger age group (18-27) has a mix of single and married individuals. Divorce is more common in the older age groups (48 and above) which is 86%, and there are a few cases of widowhood of 50% in the oldest group. A small number of individuals in the 18-27 age group had secondary or tertiary education, but this trend does not continue in older age groups. Employment status of 7% is very low

across all age groups, with only a few individuals employed, mainly in the younger age group.

Table 4.7 Summary of Demographic Characteristics of the Respondents

Characteristics	Frequency	Percentage (100%)
Age range (years)		
18-27	129	33.0
28-37	105	26.9
38-47	72	18.4
48-57	39	10.0
≥58	46	11.7
Marital status		
Married	129	33.0
Single	249	63.7
Divorced	10	2.5
Widowed	3	0.8
Educational Level		
No formal Education	63	16.2
Primary Level	26	6.6
Secondary Level	153	39.1

Tertiary Level	149	38.1
Religion		
Christianity	370	94.8
Islam	3	0.6
Others	18	4.6
Employment Status		
Employed	97	24.8
Unemployed	294	75.2

The above data presents the characteristics of Respondents. Most Respondents were between the age group of 18-27 (33%) years followed by those between 28-37 years (26.9%). Regarding marital status, 250 (63.9%) were single, 129 (33%) were married, 10 (2.5%) were divorced and only 3 (0.6%) were widowed. On the educational level, 153 (39.1%) have secondary level education, and those with tertiary education were 146 (38.1%). Respondents without formal education were 63 (16.2%) and those with primary school level education were 26 (6.6%). Christianity was the predominant religion with 370 (94.8%), other religions not specified, 18 (4.6%) and Islam had 3 (0.6%). Ninety-seven (24.8%) were employed while 294 (75.2%) were unemployed.

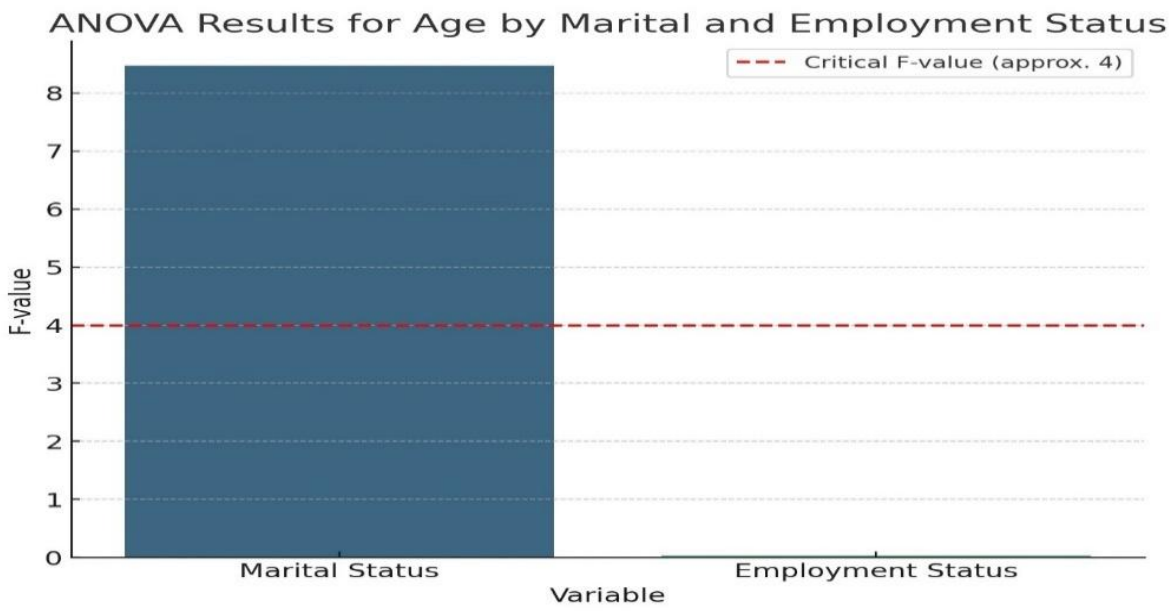

Figure 4.2: Analysis of the Age, Marital, and Employment status across constituencies

The F-values for each variable are shown, with a dashed line indicate an approximate critical F-value of 4. This highlights the significant effect of marital status on age (with an F-value of 8.47), while employment status has a negligible effect (F-value of 0.033).

4.3. Knowledge of Prostate Cancer

This section presents the respondent's knowledge regarding prostate cancer.

Table 4.8: Respondent's Awareness of PCa

Awareness of PCa	**18-27**	**28-37**	**38-47**	**48-57**	**58 and above**	**Total**	**Percentage**
Kabbe							
Heard of Prostate Cancer (Yes)	8	8	4	2	0	22	34%

Don't Know What Prostate Cancer Is	15	10	7	3	8	43	66%
Kongola							
Heard of Prostate Cancer (Yes)	2	3	2	0	0	7	23%
Don't Know What Prostate Cancer Is	8	4	5	3	3	23	77%
Linyanti							
Heard of Prostate Cancer (Yes)	9	15	7	3	3	37	54%
Don't Know What Prostate Cancer Is	15	3	4	3	7	32	46%
Katima Urban							
Heard of Prostate Cancer (Yes)	31	26	17	5	3	82	71%
Don't Know What Prostate Cancer Is	15	8	4	5	2	34	29%
Katima Rural							
Heard of Prostate Cancer (Yes)	15	12	10	4	5	46	69%
Don't Know What Prostate Cancer Is	10	6	4	1	0	21	31%
Sibbinda							

Heard of Prostate Cancer (Yes)	2	0	3	3	0	8	18%
Don't Know What Prostate Cancer Is	13	12	4	1	6	36	82%

The data reveals varying levels of awareness about prostate cancer across different age groups and constituencies. In Kabbe, 22 individuals (out of 65) across all age groups have heard of prostate cancer accounting for 34% of awareness, with the highest in the younger age groups (8 individuals each in 18-27 and 28-37) and no awareness among those aged 58 and above. Sibbinda shows lower awareness, with only 8 individuals (out of 44) aware with a percentage of 18%, particularly in the 28-37 age group (3 individuals). In Linyanti, 37 individuals (out of 69) have heard of prostate cancer accounting for 54%, with the highest awareness in the 28-37 age group (15 individuals), but a significant number (32 individuals) still do not know what it is. Katima Urban stands out with the highest awareness of 71%, where 82 individuals (out of 116) have heard of prostate cancer, particularly across all groups. In Katima Rural, 46 individuals (out of 67) are aware, with higher awareness in younger and middle-aged groups, but still 21 individuals remain unaware (31%) .In Kongola, only 8 individuals (out of 30) aware of prostate cancer accounting for 23% of awareness, similar to Sibbinda of 18%, with minimal awareness across all age groups. Overall, awareness tends to be higher in urban areas and among younger to middle-aged groups.

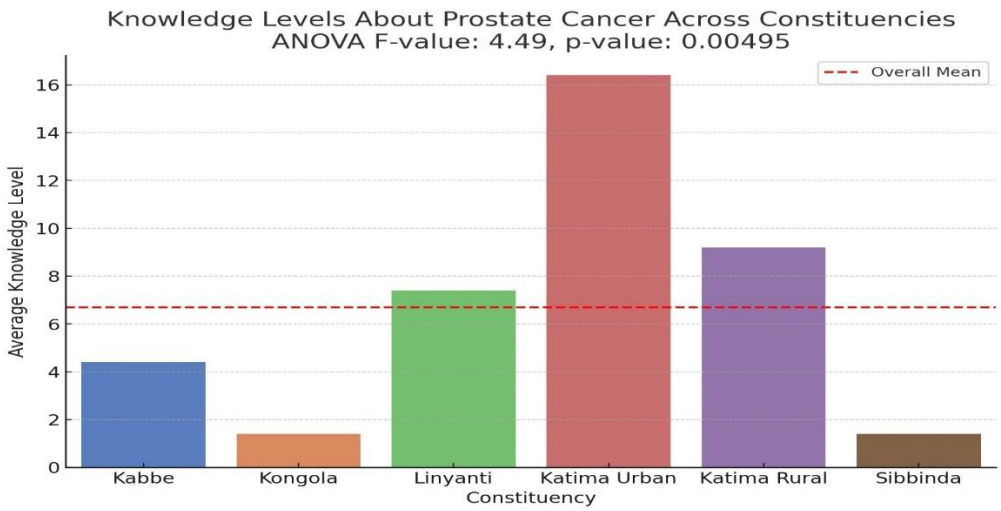

Figure 4.3: Analysis of respondent's awareness of PCa across the constituencies

The F-value is 4.49 with a p-value of 0.00495. Since the p-value is less than 0.05, the results reject the null hypothesis and conclude that there is a statistically significant difference in awareness levels about PCa across the different constituencies suggesting that awareness of prostate cancer varies significantly between constituencies.

The respondents were required to indicate the source of information if they answered 'yes' to have heard about prostate cancer.

Table 4.9: Source of Information

Source	**Frequency**	**Percentage (%)**
Health Care Providers	52	25.7
Media (TV, Radio)	66	32.9
Internet	48	23.7
Friends and Family	28	13.9

Other (Not specified)	8	3.9
Total	**202**	**100%**

The table summaries the sources of information about screening of PCa among respondents. Out of 391, 202 sources of information is displayed above, in exclusion of 189 who had never heard about PCa. The most common source is media (TV, Radio) at 32.9%, followed by health care providers (25.7%), the internet (23.7%), friends and family (13.9%), and other unspecified sources (3.9%).

The following table displays respondents' responses regarding the recommended age of screening, signs and symptoms of PCa, risk factors and early warning signs of the disease to further understand knowledge levels.

Table 4.10: Knowledge of PCa

Question	**Response Option**	**KB**	**KN**	**LY**	**KU**	**KR**	**SB**
1. What is prostate cancer?	Inflammation of the prostate gland	9	7	4	13	5	1
	Cancer of the prostate gland	17	6	18	66	18	8
	Being ill	16	4	12	5	11	0
	Don't know	23	13	35	32	33	35
2. What is the recommended age to start with screening of PCa?	40-49	20	13	28	70	19	8

	50-59	29	8	7	18	13	19
	60 and above	13	9	26	15	35	17
	Don't know	4	0	8	13	0	0
3. What are the risk factors associated with prostate cancer?	Family history	4	3	0	7	3	0
	Race	1	0	1	0	0	1
	Age	10	2	10	20	2	3
	Dietary fat intake	4	3	4	10	0	2
	Sexual activity	10	7	11	13	1	2
	Occupation	1	0	0	1	1	0
	Cigarette smoking	3	3	5	3	5	2
	Don't know	5	0	7	6	18	11
4. What are the early warning signs of prostate cancer?	Pain in groin	8	4	2	10	2	2
	Fever	0	0	0	0	1	0
	Difficulty in urinating	9	0	5	7	3	2
	Uneasy feelings during urination	2	0	0	1	1	2
	Painful ejaculation	8	4	3	14	2	2
	Erectile dysfunction	6	2	2	10	1	2
	Don't know	6	5	7	27	17	13

Many respondents in Katima Urban (KU) identified cancer of the prostate gland as the correct definition, with 66 respondents choosing this option. A significant portion of respondents in Katima Rural (KR) of 36 out of 67 accounting for 54% were uncertain, with 36 respondents indicating they 'Don't know' what prostate cancer is, followed closely by Sibbinda (SB) with 35 out of 69 (51%) respondents and Kongola (KN) of 13 out of 30 (43%)with 13 respondents expressing uncertainty. The age group of 40-49 was most commonly identified as the recommended age to start screening of PCa in Katima Urban (KU) with 70 respondents, followed by Linyanti (Ly) with 28 respondents, Kabbe with 20 respondents, Katima Rural with 19 respondents, Kongola with 13 respondents, and Sibbinda being the list with 8 respondents, respectively. 'Don't know' was a rare response, with a few responses indicating uncertainty, in LY with 8 respondents, KU 8 and KB with 4 respondents.. Age and Sexual activity were commonly recognised as risk factors across most constituencies. In Katima Urban (KU), 20 respondents identified Age and 13 identified 'Sexual activity' as risk factors. The response 'Don't know' was prevalent, particularly in Katima Rural (KR) with 18 respondents, indicating a lack of awareness or understanding of prostate cancer risk factors.

Regarding early signs of PCa, painful ejaculation was recognised as an early warning sign by a significant number of respondents in Katima Urban (KU), with 14 respondents selecting this option. Conversely, 'Don't know' was a common response in all constituencies, with Katima Urban (KU) having the highest number (27 respondents), indicating a notable gap in awareness regarding the symptoms of prostate cancer.

To analyse the knowledge levels across constituencies, a logistic regression model was used to model the probability of being knowledgeable based on constituency.

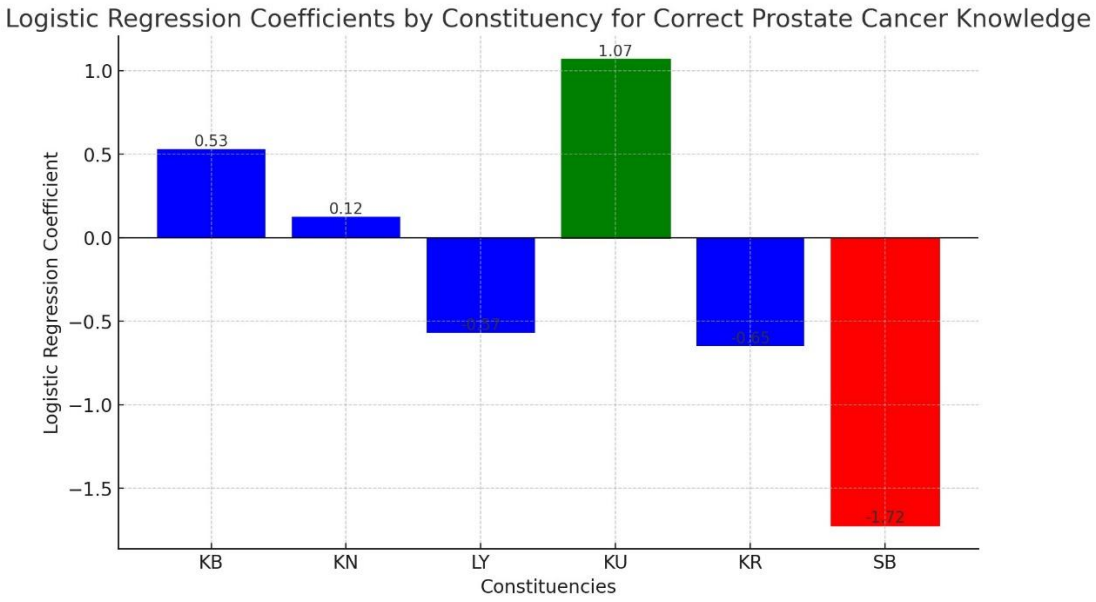

Figure 4.4: Logistic regression analysis of knowledge levels

Katima Urban (KU) has the highest positive coefficient (1.0678), indicating that respondents from Katima Urban are more likely to correctly identify PCa as prostate cancer compared to the baseline (the baseline constituency is not explicitly defined but is implied by the reference category, typically one of the other constituencies). Sibbinda (SB) has a strongly negative coefficient (-1.7225), indicating that respondents from Sibbinda are much less likely to identify prostate cancer compared to the baseline correctly. The other constituencies (KB, KN, LY, KR) have varying degrees of association with correct prostate cancer knowledge. The logistic regression model is statistically significant (as indicated by the LLR p-value), meaning that the differences in knowledge levels across constituencies are not due to random chance.

4.4.Attitudes towards PCa Screening

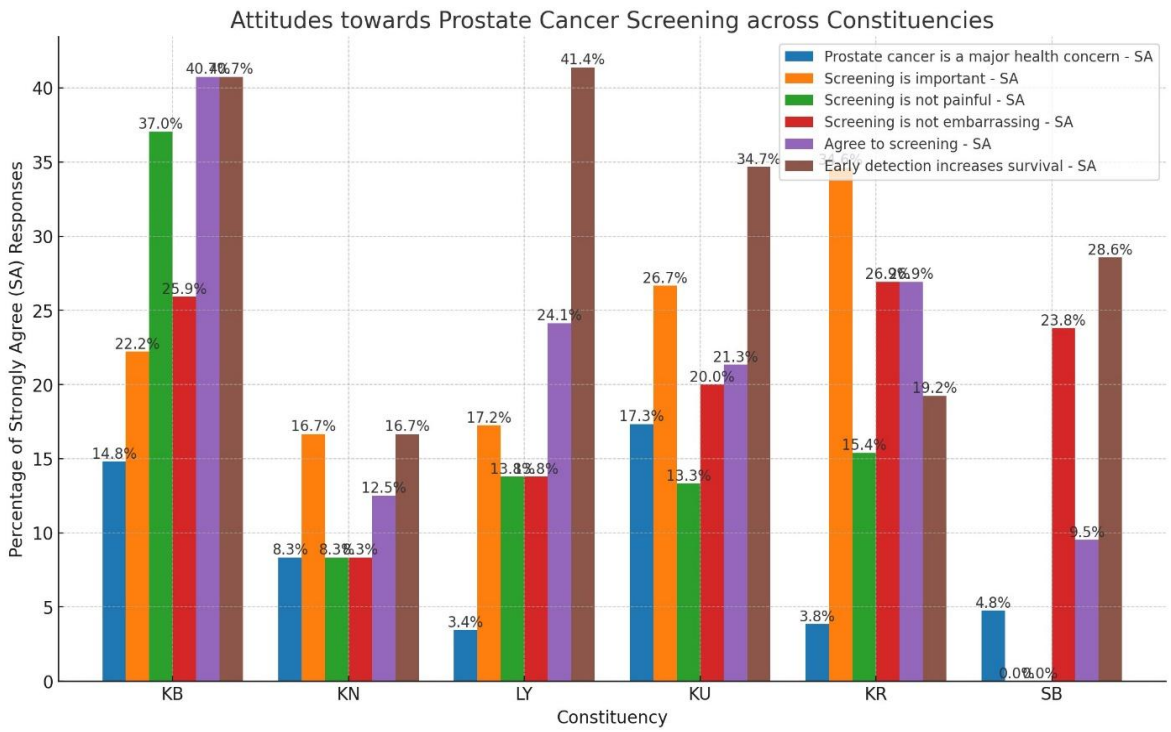

Figure 4.5: Responses on statements on PCa screening

The bar graph comparing attitudes towards screening of PCa across urban and rural constituencies shows that Katima Urban (KU) consistently exhibits the highest levels of strong agreement (SA) across all categories. For example, 34.7% of respondents in KU strongly agree that early detection increases survival, compared to an average of 11.9% in rural constituencies. KU also leads in the belief that prostate cancer is a major health concern (17.3% SA) and in agreeing to go for screening if recommended (26.7% SA). In contrast, rural constituencies, particularly Sibbinda (SB) and Kongola (KN)**,** show lower percentages, with SB having 0% SA for the importance of screening and only 4.8% SA in acknowledging prostate cancer as a major health concern.

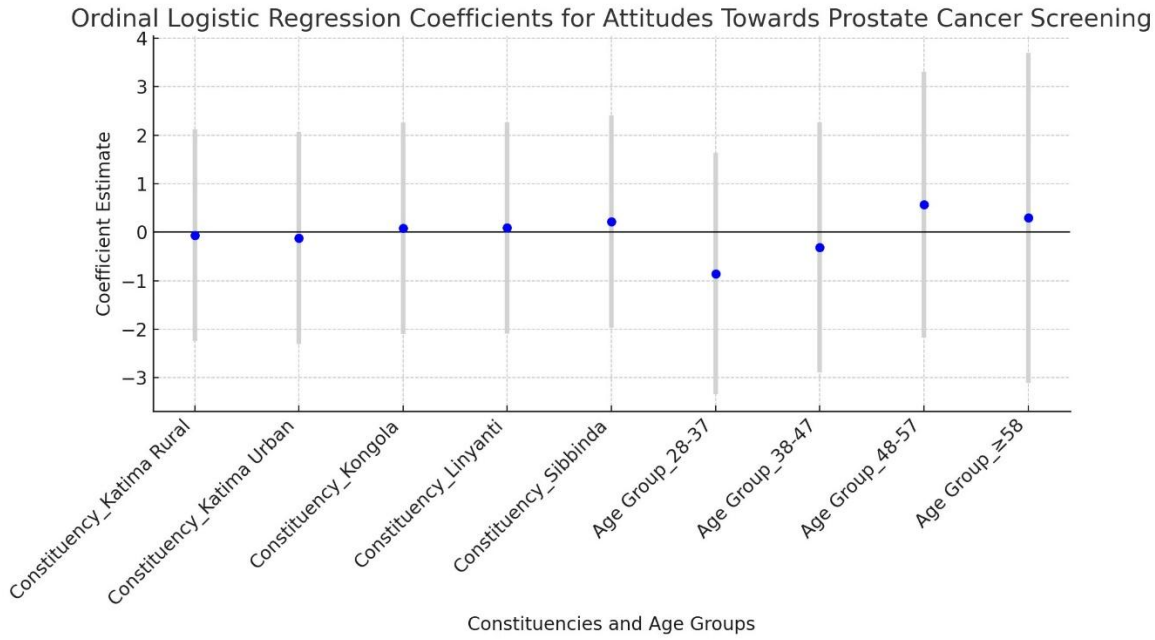

Figure 4.6: Ordinal logistic regression analysis for age and attitudes

Most of the coefficients are close to zero, indicating a lack of strong effect from the constituencies or age groups on the attitude levels. The ordinal logistic regression model suggests that neither constituency nor age group significantly impacts attitude levels towards screening of PCa in this dataset. The model had difficulty converging, as indicated by the convergence warnings, and the overall fit is relatively weak.

An ordinal logistic regression model was also used to analyse the relationship between level of education and attitude levels as displayed in the following Figure.

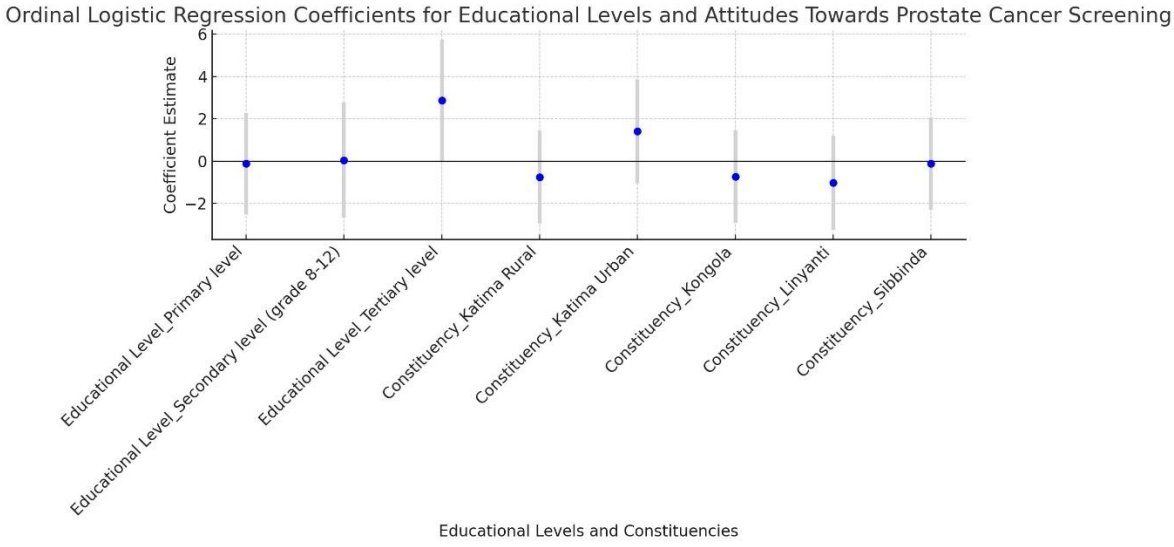

Figure 4.7: Relationship between educational level and attitudes towards PCa screening

The above figure shows that the positive coefficients (above zero) suggest that individuals in those categories have a higher attitude level towards screening of PCa. Tertiary education level has a notable positive coefficient, reinforcing the earlier observation that higher education is associated with more positive attitudes. The regression analysis indicates that the coefficients for all constituencies were not statistically significant. This suggests that, after controlling educational level, the constituency in which a person lives does not have a significant impact on their attitudes towards screening of PCa. While some constituencies, such as Katima Urban and Sibbinda, showed positive coefficients (indicating a potentially more positive attitude), the wide confidence intervals and lack of statistical significance cannot be confidently concluded that these constituencies differ meaningfully from others in terms of attitude.

Table 4.11: Attitude levels towards PCa

Attitude Category	Number of Responses	Percentage of Total Responses
Positive Attitudes (Agree + Strongly Agree)	195	49.9%
Negative Attitudes (Disagree + Strongly Disagree)	94	24.0%
Neutral Attitudes (Neutral)	102	26.1%
Total Responses	**391**	**100%**

The overall positive attitude level is 49.9%**,** and the overall negative attitude level is 24.0%**.**

4.5.Practices towards PCa Screening

The last section of the questionnaire required the respondents to answer questions regarding the practices towards PCa screening.

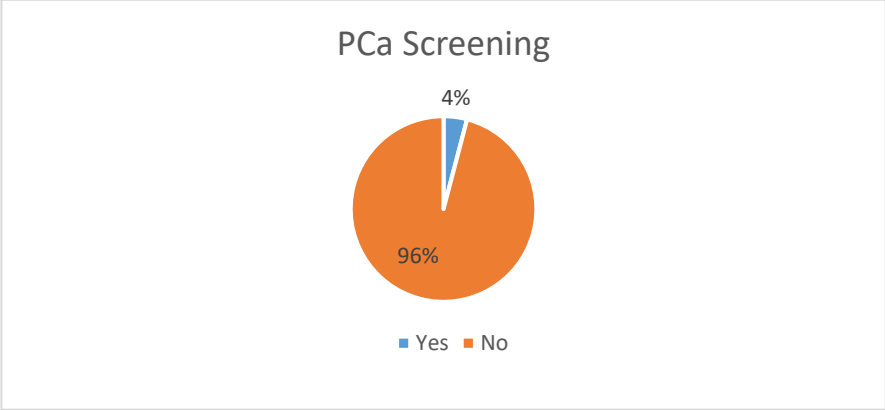

Figure 4.8 PCa Screening done

Only 16 (4%) respondents said they had done PCa screening with 375 (96%) never done PCa screening.

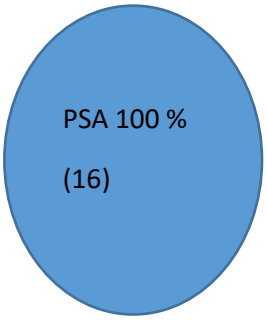

Figure 4.9: Methods of PCa screening used

All 16 (100%) respondents were screened for PCa using the PSA method.

Table 4.12: PCa Screening in the last twelve months

Last PCa Screening	**Frequency**
3-5 months	5
6-11 months	2
12 months and above	9

The table presents the frequency of the last prostate cancer (PCa) screening among respondents. Five individuals had their last screening within the past 3 to 5 months, two within the last 6 to 11 months, and nine had their screening 12 months or more ago.

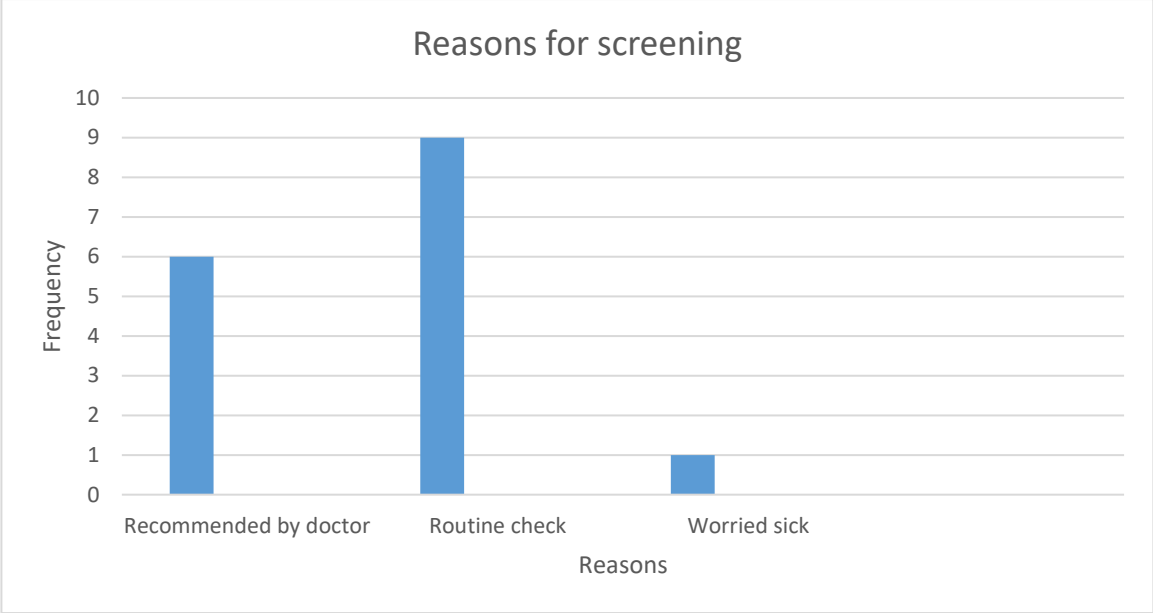

Figure 4.10: Reasons for Screening.

Nine respondents were screened as a routine check, 6 were recommended by their doctors and 1 was worried as they felt sick.

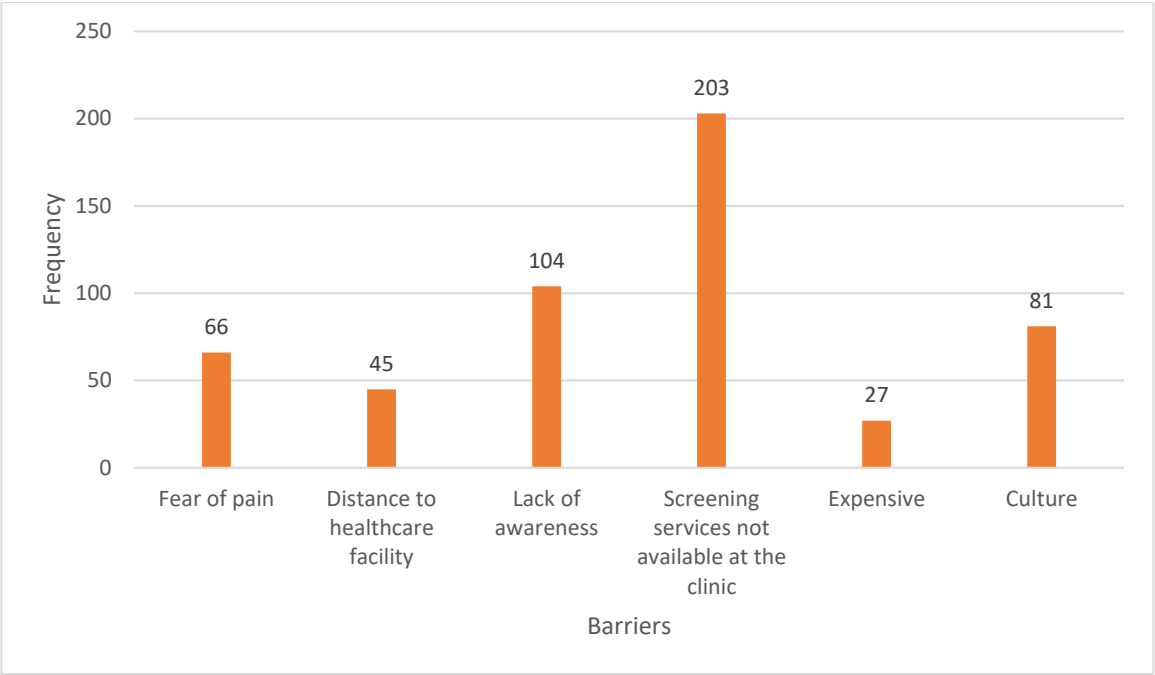

Figure 4.11: Barriers to PCa Screening

The bar chart illustrates the frequency of various barriers to accessing a particular service, likely related to healthcare, as reported by respondents. The most significant barrier, with a frequency of 203 accounting for 52%, is the unavailability of screening services at the clinic, indicating a critical gap in service provision. Lack of awareness follows, with 104 (27%) instances, suggesting that many individuals are not informed about the service or its importance. Cultural factors are also notable, with 81 respondents citing culture as a barrier with 21%. Fear of pain and the distance to the healthcare facility are also considerable obstacles, with frequencies of 66 and 45, respectively. The least cited barrier is the cost, with only 27 respondents (7%) considering the service to be expensive . This distribution highlights the importance of service availability and awareness in overcoming barriers to healthcare access.

Table 4.13: Summary of PCa Screening across the Constituencies

Constituency	Age Group	Underwent Screening of PCa (Yes)	Fear of Pain	Distance to Health Facility	Lack of Awareness	Screening Not Offered	Expense	Culture Permits Screening (Yes)
Kabbe	18-27	0	7	8	9	9	7	22
	28-37	0	7	6	12	5	13	17
	38-47	0	3	1	6	3	1	10
	48-57	0	2	1	2	1	1	3
	≥58	1	2	4	5	2	4	7
Kongola	18-27	0	6	6	4	1	0	6
	28-37	0	2	3	3	5	3	5
	38-47	0	5	3	5	6	2	6
	48-57	0	3	0	3	0	0	0
	≥58	0	1	0	3	1	1	1
Linyanti	18-27	1	7	18	10	14	11	20
	28-37	1	2	6	11	5	7	15

	38-47	1	2	5	4	5	1	6
	48-57	0	2	2	2	2	3	4
	≥58	0	1	4	3	8	3	8
Katima Urban	18-27	1	7	11	31	9	8	38
	28-37	2	9	7	22	13	2	29
	38-47	4	1	4	14	5	2	16
	48-57	0	0	1	9	0	0	0
	≥58	0	0	1	2	1	0	3
Katima Rural	18-27	1	7	7	8	9	9	20
	28-37	0	4	5	8	11	5	14
	38-47	2	2	3	8	10	1	12
	48-57	1	2	1	2	4	3	4
	≥58	1	4	2	3	2	4	3
Sibbinda	18-27	0	6	6	4	1	0	15
	28-37	0	2	3	3	5	3	12
	38-47	0	5	3	5	6	2	7
	48-57	0	3	0	3	0	0	4
	≥58	0	1	0	3	1	1	6

The data reveals significant challenges and variations in screening of PCa practices across six constituencies, highlighting a generally low uptake of screening services, particularly in rural areas. Katima Urban shows the highest screening rates, albeit still minimal, with the 28-47 age groups reporting some uptake. However, most constituencies report negligible or no screening, especially among older age groups. The primary barriers to screening include a widespread lack of awareness, fear of pain, and the distance to health facilities, with Linyanti and Katima Urban facing particularly high barriers. The lack of awareness is the most frequently cited obstacle, especially in Katima Urban, where over 60% of respondents in the 18-27 age group reported it as a barrier. Other barriers such as the perception that screening is not offered and the expense associated with it are also significant, particularly in Linyanti and Kabbe. Cultural acceptance of screening varies widely, with high acceptance in Kabbe and Katima Rural but much lower levels in Kongola and Sibbinda, particularly among older age groups. This variation indicates that while some areas may be more receptive to screening, others face deep-rooted cultural or systemic challenges that need to be addressed.

Table 4.14: Analysis of KAP across constituencies' summary table

Category	**F-Statistic**	**P-Value**
Knowledge	0.009	0.927
Attitudes	0.564	0.692

The p-values of 0.927 and 0.692 are much greater than 0.05, indicating no statistically significant difference in the knowledge and attitude levels (i.e., prostate cancer awareness)

across the different constituencies. Regarding the practices, the variance of 0.3 was insignificant in performing a test.

Table 4.15: Association between Demographic data and knowledge levels

Demographic variables	**HK (N %)**	**LK (N %)**	**Odd Ratio (95%CI)**	**P-Value**
Age group				
18-27	86 (34.6))	43 (29.9)	1.25	0.371
28-37	68 (27.5))	37 (25.7)	1.09	0.781
30-47	50 (20.2)	22 (15.2)	0.4	0.277
48-57	18 (7.3)	21 (14.6)	0.46	0.031
58 and above	25 (10.1)	21 (14.6)	0.6	0.246
Marital status				
Married	70 (29.8)	59 (37.8)	0.7	0.133
Single	158 (67.2)	92 (59.0)	1.44	0.101
Divorced	4 (1.7)	6 (3.2)	0.43	0.328
Widowed	3 (1.3)	0 (0.0)	Inf	0.406
Educational level				
No formal education	25 (12.6)	38 (19.7)	0.58	0.078
Primary level	10 (5.1)	16 (8.3)	0.58	0.279
Secondary level	65 (32.8)	88 (45.6)	0.58	0.013

Tertiary level	98 (49.5)	51(26.4)	2.72	4.388
Religion				
Christianity	206 (94.5)	164 (94.7)	0.9	1.0
Islam	1 (0.4)	2 (1.2)	0.3	0.840
Others	11 (5.1)	7 (4.1)	1.2	0.82
Employment status				
Employed	62 (25.6)	35 (24.5)	1.12	0.724
Unemployed	180 (74.4)	114 (76.5)	0.8	0.724

In the table above, the Odds Ratio (OR) compares the odds of being in the higher knowledge (HK) group versus the lower knowledge (LK) group for each age category. An OR > 1 suggests that individuals in that age group are more likely to be in the HK group (higher knowledge) compared to the LK group (lower knowledge). An OR < 1 indicates that individuals in that age group are less likely to be in the HK group compared to the LK group. An OR close to 1 suggests no significant difference in knowledge between the two groups for that age category.

The p-value tests the null hypothesis that there is no association between age and knowledge of screening of PCa. A p-value < 0.05 indicates a significant relationship statistically between the variable (age) and the outcome (knowledge level). A p-value > 0.05 suggests that any observed association could be due to a random chance. From the results shown, the following can be concluded:

- The only statistically significant finding is in the 48-57 age group, where individuals are significantly less likely to have high knowledge about screening of PCa. For other age groups, the differences in knowledge levels are not statistically significant, meaning that age may not be a strong determinant of knowledge regarding screening of PCa in those groups.

- While there were variations in Odds Ratios for different marital statuses (e.g., singles had higher odds of being in the HK group with an OR of 1.45), none of these differences were statistically significant. The p-values for all marital statuses were above 0.05, indicating no strong association between marital status and knowledge of screening of PCa.

- Both employed and unemployed individuals showed no statistically significant differences in knowledge levels. The Odds Ratios were close to 1, and the p-values were high (0.724), indicating that employment status does not strongly influence knowledge of PC screening.

- Religion does not show a statistically significant relationship with knowledge of screening of PCa. The p-values for all religious groups are high, indicating that any observed differences in knowledge levels could be due to chance.

- Educational Level remains the most significant factor influencing knowledge of screening of PCa, with tertiary education being strongly associated with higher knowledge and secondary education with lower knowledge.

Table 4.16: Attitude levels and demographic variables

Demographic variables	**PA (N %)**	**NA (N %)**	**Odd Ratios**	**P-Value**
Age group				
18-27	88 (29.6))	41 (43.6)	1.0	0.907
28-37	90 (30.3))	15 (16.0)	3.0	5.939
30-47	51 (17.2)	21 (22.3)	1.1	0.609
48-57	33 (11.1)	6 (6.4)	2.7	0.031
58 and above	35 (11.7)	11 (11.7)	1.155	0.263
Marital status				
Married	73 (24.8)	56 (57.7)	0.6	0.009
Single	212 (72.2)	37 (38.1)	3.1	2.249
Divorced	6(2.0)	4 (4.2)	0.7	0.872
Widowed	3 (1.0)	0 (0.0)	Inf	0.55
Educational level				
No formal education	35 (15.4)	28 (17.3)	0.62	0.05
Primary level	15 (6.6)	11 (6.7)	0.65	0.396
Secondary level	92 (40.3)	61 (37.3)	0.71	0.05
Tertiary level	86 (37.7)	63(38.7)	0.63	0.011
Religion				

Christianity	271 (95.1)	99 (93.4)	0.41	0.008
Islam	3 (1.0)	0 (0.0)	Inf	0.554
Others	11 (3.8)	7 (6.6)	0.75	0.751
Employment status				
Employed	73 (34.3)	24 (13.5)	0.5	0.111
Unemployed	140 (65.7)	154 (86.5)	0.37	8.048

According to the data presented in the above table, significant positive associations (OR > 1, p-value < 0.05) were found in the 28-37 age group: OR = 3.05, p-value < 0.0001; 48-57 Age Group: OR = 2.71, p-value = 0.032; Single Individuals: OR = 3.12, p-value < 0.0001; Christianity: OR = 1.41, p-value = 0.009; and Employed: OR = 1.50, p-value = 0.112 (approaching significance)

Significant negative associations (OR < 1, p-value < 0.05), were found in married individuals: OR = 0.61, p-value = 0.009; Tertiary Education: OR = 0.64, p-value = 0.012; and Unemployed: OR = 0.37, p-value < 0.0001. Non-significant associations were found in groups such as the 58 and above age group, divorced individuals, primary-level, education, and other religions. These did not show statistically significant associations with attitudes toward screening of PCa. The infinity ORs (widowed, Islam) was due to no negative attitudes recorded in these groups, leading to an undefined result.

CHAPTER 5: DISCUSSION

5.1. Introduction

The previous chapter presented the findings in various figures and tables. This chapter has discussed those results as presented, interpreting the findings in the context of existing literature. It compares and contrasts the study's results with similar research highlighted in Chapter 2, offering a deeper understanding of how these findings align or diverge from other studies. The discussion begins by analysing the demographic characteristics of the respondents, providing insight into their influence on the study's outcomes. It then explores the Respondents ' knowledge, attitudes, and practices (KAP) regarding screening of PCa, critically examining these factors in relation to the broader body of research. This approach helps to contextualise the results and provide a comprehensive analysis of screening of PCa behaviours.

5.2. Socio-demographic Data

The demographic analysis of respondents' knowledge, attitudes, and practices towards PCa screening reveals significant variations influenced by factors such as age, marital status, education level, religion, and employment status. Younger individuals, particularly those aged 18-27 years, form the largest age group in the study, comprising 33% of the respondents. Man from the age of 15 have been diagnosed with PCa, therefore this demographic might benefit from greater access to information through education and digital platforms, yet they may also perceive themselves as being at lower risk for prostate cancer, potentially leading to less proactive screening practices (11).

In contrast, older respondents, particularly those aged 48-57 and above, are closer to or within the age group where regular screening of PCa is recommended. However, their lower representation in the study could suggest barriers such as reduced access to healthcare services or lower health literacy, which might hinder their participation in screening despite their higher risk. This demographic might have a greater need for targeted awareness programs to improve their screening practices.

The education level of respondents plays a crucial role in shaping knowledge and attitudes towards PCa screening (62). In line with findings by (25) , this study confirms that respondents with tertiary-level education demonstrate significantly higher levels of knowledge about prostate cancer. In this study, 38.1% of respondents had tertiary education, and these individuals exhibited the highest awareness and understanding of prostate cancer, which positively influenced their attitudes toward screening. This suggests that education is a key factor in promoting informed health behaviour.

Conversely, respondents with no formal education or only primary education showed lower levels of knowledge. This points out that a lower educational level is a substantial barrier, it translates to limited health literacy and access to information, which could contribute to negative attitudes and lower screening rates (37). Employment status further exacerbates these disparities, with 75.2% of respondents being unemployed. Unemployment is often associated with lower socioeconomic status, which can limit access to healthcare resources, including screening services (63). Furthermore, (30,33) found that low socioeconomic status affected the KAP of PCa screening in Nigeria. Furthermore, the unemployed group face financial constraints and lack the necessary health information, leading to reduced participation in screening (2). This study found that

94.8% of respondents identified as Christian. In many cases, religious communities support health initiatives, potentially fostering positive attitudes towards screening (43). However, smaller religious groups may have different cultural perspectives that influence their health behaviour. However, despite the knowledge and awareness of PCa in Zambezi region, there were low screening rates.

The distribution of respondents by place of residence in the study highlights significant variations that are likely influenced by access to healthcare, proximity to urban centers, and socio-economic factors. Katima Urban, representing the largest proportion of respondents (29.7%), reflects the advantages of urban living, such as better healthcare infrastructure, higher health literacy, and more frequent exposure to health initiatives. A further justification of the high participation rate from Katima Urban may be frequent exposure to public health campaigns, which collectively foster greater awareness and proactive health behaviour. The urban setting's better socio-economic conditions, including easier access to resources and transportation, also facilitate participation (64). Additionally, the dense population and strong community networks in Katima Urban further encourage involvement in health-related studies, thus making it easier for the researcher to recruit respondents compared to more rural areas.

This is contrasted by areas like Kongola (7.7%) and Linyanti (11%), which have lower participation rates, likely due to their geographic isolation and the associated barriers to access healthcare and health education. Katima Rural (17.6%) and Sibbinda (17.1%), though more rural, still show considerable representation, possibly due to their proximity to urban areas and the spillover benefits of healthcare outreach. Kabbe (16.6%) also falls within this middle range, suggesting moderate access to resources. These variations

highlight the critical role that geographic and socio-economic factors play in influencing health behaviour and participation in health-related studies, with urban areas leading in engagement and remote areas requiring more targeted outreach and support (26).

5.3. Knowledge regarding PCa

The data on prostate cancer (PCa) awareness across different places of residence revealed significant disparities influenced by the Respondents ' place of origin. Katima Urban, with the highest awareness levels (82 aware versus 34 unaware) thus 71 % versus 29 %, reflects the advantages of urban living, including better access to healthcare facilities, higher education levels, and more frequent exposure to health information. Similarly, Katima Rural shows a moderate awareness level (69% aware versus 31% unaware), likely benefiting from its proximity to the urban Centre. In contrast, more rural and isolated areas like Sibbinda, Kongola, and Kabbe display much lower awareness, with Sibbinda having only 18% aware versus 82% unaware, Kongola with 23% aware versus 77% unaware, and Kabbe with 34% aware versus 66% unaware. These areas may suffer from limited healthcare access, lower educational attainment, and fewer health outreach programs, contributing to their low awareness of PCa. Linyanti, with a more balanced awareness (54% aware versus 46% unaware), appears to be a transitional area where some residents have access to information, but significant gaps remain. Overall, the results highlight the influence of geographical location on health awareness, highlighting the need for targeted interventions in rural and underserved areas to bridge the awareness gap and promote early detection of prostate cancer. Lower prostate cancer awareness in rural areas is partly due to lower health literacy, which is often linked to lower educational attainment in these regions. This makes it more difficult for residents to understand complex health

information, such as the risk factors and benefits of early screening for prostate cancer (26). Additionally, public health campaigns and educational initiatives are less frequent and comprehensive in rural areas, meaning that critical information about prostate cancer may not reach these communities as effectively as it does in urban settings.

The data regarding where the information was obtained regarding prostate cancer awareness reveals the varying influences of different channels on the Respondents' knowledge. The most significant source of information is the media (TV, radio), accounting for 32.9% of the responses. This highlights the broad reach and impact of traditional media in disseminating health information. Media platforms are accessible to a wide audience, making them effective in raising awareness across diverse demographics, particularly in regions where digital literacy may be lower or internet access is limited.

Healthcare providers are the second most common source of information, with 25.7% of respondents citing them as their primary source. This highlights the critical role that healthcare professionals play in educating the public about health issues, including prostate cancer. The trust that individuals place in their healthcare providers can lead to higher levels of engagement and adherence to recommended health practices. However, the fact that healthcare providers are not the top source may suggest potential barriers, such as limited access to healthcare services, time constraints during consultations, or a lack of proactive health communication by providers.

The internet is the third most utilised source, accounting for 23.7% of responses. This reflects the growing reliance on digital platforms for health information, especially among younger or more tech-savvy populations. The internet offers a vast amount of information

that is easily accessible, but it also raises concerns about the quality and accuracy of the information being consumed. The relatively high use of the internet suggests that public health initiatives should consider integrating digital strategies to reach broader audiences effectively.

Friends and family are cited by 13.9% of respondents as their source of information, indicating the influence of social networks in spreading health-related knowledge. While personal connections can be powerful in shaping attitudes and behaviour, the information shared within these networks may not always be accurate or comprehensive. This highlights the need to ensure that reliable information reaches these informal networks to improve overall awareness and understanding.

The "Other" category, with 3.9% of responses, likely includes fewer common sources of information, possibly local community leaders, traditional healers, or printed materials like brochures. The low percentage here suggests that these sources are not as influential or widely accessed in the community. The dominance of media as the primary source of information could be due to its widespread availability and ability to reach a large audience quickly. This is particularly important in areas where face-to-face interactions with healthcare providers are limited or where literacy rates are lower, making visual and audio media more effective. Healthcare providers, though highly trusted, may not be the top source due to barriers such as access, time constraints, or a reactive rather than proactive approach to patient education. The significant reliance on the internet indicates a shift towards digital information-seeking behavior, especially among younger or more educated populations, although it raises concerns about the quality of information accessed. The influence of friends and family indicates that social networks are significant

in health communication, but the variability in the quality of information shared highlights the need for broader public health education to ensure that accurate information permeates these networks. Lastly, the minimal influence of other sources indicates that they play a limited role in the overall awareness of prostate cancer within the community.

The analysis of the Respondents' knowledge about prostate cancer (PCa) revealed significant variations in awareness and understanding across different aspects of the disease. Most respondents (63.2%) were aware of the meaning of prostate cancer, indicating a relatively strong general awareness of the disease. However, the fact that over one-third (36.8%) of respondents do not know what prostate cancer is suggests a gap in basic health education. This gap could be due to a lack of targeted awareness campaigns, especially in rural or less educated populations, where health literacy might be lower. The general knowledge of PCa might be more prevalent due to broader media coverage or conversations around cancer in general, but this level of awareness is still not universal.

Almost half of the respondents (46.8%) are aware of the recommended age to start screening of PCa, with a slightly higher percentage (53.2%) being unaware. This indicates a significant knowledge gap in specific, actionable information that is crucial for early detection and effective management of the disease. The lower awareness could be attributed to insufficient emphasis on age-specific screening guidelines in public health communications or healthcare provider interactions. This gap might also reflect a broader issue of insufficient outreach to middle-aged men, who are typically the target audience for screening of PCa campaigns.

The knowledge of prostate cancer risk factors is relatively high, with 70.1% of respondents aware of them. This suggests that information about risk factors is either more widely disseminated or more effectively communicated through public health initiatives, possibly because it is often included in general cancer prevention education. However, 29.9% who are unaware of the risk factors still represent a significant portion of the population, indicating that there is room for improvement in educational efforts, particularly in reaching those who may not actively seek out health information.

The nearly even split between those who can and cannot identify early warning signs of prostate cancer (49.6% Yes, 50.4% No) highlights a critical gap in knowledge. Early detection is crucial for successful treatment, so the fact that half of the respondents are unaware of the warning signs is concerning. This could be due to the complexity of symptoms, which might not be as straightforward or as well-publicized as the risk factors or the general knowledge of the disease. Additionally, this might reflect a lack of direct communication from healthcare providers about what symptoms to watch for, possibly because these conversations are more nuanced and require more in-depth discussions that might not always occur during routine check-ups. The variations in knowledge across these questions likely stem from differences in how and where the information is disseminated, the complexity of the information, and the vital focus on educational campaign in relation to public health. General knowledge about prostate cancer is more widespread, likely due to the broad focus of cancer awareness initiatives. However, specific, actionable information such as the recommended screening age and early warning signs is less well-known, possibly due to less emphasis on public communications or a lack of targeted educational efforts aimed at the appropriate

demographic groups. Additionally, while risk factors are better understood, indicating some success in conveying preventative health information, the gap in recognising early warning signs suggests a need for more focused education on the symptoms that should prompt medical consultation. These findings concur with (21, 20) who found that men have varying levels of knowledge about screening of PCa suggesting that while knowledge exists, significant gaps remain in understanding and utilisation of screening of PCa.

5.4.Attitudes towards PCa Screening

The findings from the attitude statements regarding screening of PCa reveal a mix of generally positive attitudes tempered by significant reservations. While a majority of Respondents recognise prostate cancer as a major health concern (49.6%) and understand the importance of screening (67.3%), there remains a substantial portion who are either neutral or hold negative views, with some Respondents uncertain about the necessity or benefits of screening. The perception of pain associated with screening is particularly mixed, with a significant number of respondents (35%) unsure about the discomfort involved, which may deter them from participating. Although most respondents do not find screening embarrassing (61.8%) and express a strong willingness to undergo screening if recommended by a healthcare provider (73.4%), lingering concerns about embarrassment and mistrust in early detection's effectiveness persist among some individuals. These variations in attitudes likely stem from cultural norms, personal experiences, and varying levels of health literacy, highlighting the need for targeted educational efforts to address fears, misconceptions, and cultural sensitivities to further improve screening of PCa uptake (26).

The data shows that the majority of respondents hold positive attitudes towards screening of PCa, which is encouraging for public health efforts aimed at increasing screening rates. However, the existence of a substantial minority with negative attitudes cannot be overlooked. These negative attitudes, although less common, are significant enough to potentially hinder the success of screening of PCa programs. The reasons behind these negative perceptions are crucial to understanding the attitudes of males towards PCa screening (3), as they can provide insights into areas where public health interventions need to be strengthened.

For instance, addressing the fear of pain associated with screening, reducing the stigma around prostate health, and providing clear, trustworthy information about the benefits of early detection could help shift these negative attitudes. Healthcare providers play a vital role in this process, as they can offer personalised reassurances and correct any misconceptions during consultations. Additionally, culturally sensitive educational campaigns that target specific concerns within different communities can help mitigate these negative perceptions.

In summary, while the overall attitude towards screening of PCa is positive (49.9%), the presence of negative attitudes highlights the need for educational efforts to address lingering fears and misconceptions that influence the practices of PCa screening. By focusing on these areas, public health initiatives can further improve participation in screening programs, ultimately leading to better health outcomes through early detection and treatment of prostate cancer.

5.5. Practices of PCa screening

Regarding screening participation, a vast majority of respondents of 96% have not undergone screening of PCa, while only a small fraction has been screened. This suggests a low overall participation rate in screening of PCa within the population sampled despite the knowledge level and high positive attitudes. Among those who were screened, the primary reasons for undergoing screening were due to routine checks (56%) and doctor recommendations (38%). A very small number (6%) were screened because they were worried about their health highlighting that routine healthcare practices and physician advice are the key drivers for screening participation other than one's insight into their health. The most significant barrier was the unavailability of screening services at local clinics, affecting 52% of the respondents. Other notable barriers included a lack of awareness (27%) and cultural factors (21%), followed by fear of pain (17%). Distance to healthcare facilities (12%) and the cost of screening (7%) were less frequently reported barriers. These findings suggest that logistical and informational challenges significantly impede the uptake of screening of PCa in Katima Mulilo. Additionally, PCa screening is low, those who do engage in screening often do so irregularly, influenced by routine health checks or doctor recommendations rather than proactive health management. These findings are like (6,16) who found that higher education levels correlated with better knowledge and more positive attitudes toward prostate cancer prevention. However, despite this awareness, screening behaviour were limited, with many men not participating in regular screening of PCa. The study concluded that more effective educational

campaigns and healthcare provider involvement were necessary to improve screening uptake and preventative behaviour among men in the region.

5.6. Socio-demographic factors and knowledge of PCa screening

Regarding the relationship between socio-demographic variables and knowledge of PCa screening, the results indicate that age is not a uniform determinant of knowledge about screening of PCa across all groups. Notably, the only statistically significant finding in the age category was in the 48-57 age group, where there was a marked decrease in knowledge. This could suggest that middle-aged individuals might be less exposed or less receptive to information regarding screening of PCa, possibly due to generational differences in health information access or priorities. In contrast, other age groups did not show significant variations, which might imply that knowledge dissemination efforts are either more uniformly distributed or similarly limited among these groups.

Concerning marital status, the results of the analysis suggest that marital status does not have a significant impact on the knowledge of screening of PCa. While singles showed slightly higher odds of being in the high knowledge (HK) group, the lack of statistical significance ($p > 0.05$) across different marital statuses suggests that marital status alone is not a reliable predictor of screening knowledge. This could be due to the independent nature of health awareness which may not necessarily be influenced by marital dynamics.

Employment status also did not appear to significantly influence knowledge about screening of PCa. Both employed and unemployed groups showed p-values far exceeding the 0.05 threshold for significance. This indicates that employment status, which often correlates with socioeconomic factors and access to health information, might not be a

strong independent factor affecting awareness of screening of PCa. It suggests that other factors might play more pivotal roles, or that employment-related differences in access to information are not substantial enough to impact overall knowledge levels. These results are in contrast with what (30) found where the socioeconomic status of a person was found to have a bearing on the KAP of PCa screening.

Regarding educational level, there was an overwhelming association between educational level and knowledge of PCa. The educational level was the most significant determinant of knowledge regarding screening of PCa. Individuals with tertiary education are significantly more likely to have higher knowledge levels, while those with only secondary education tend to have lower knowledge. This trend tended to be lower as the educational level decreased. It also highlights the potential benefits of targeting awareness interventions for screening of PCa, particularly among those with lower educational levels.

5.7.Attitudes to PCa screening and socioeconomic demographics

Based on the results which analysed the relationship between attitudes (Positive Attitude [PA] and Negative Attitude [NA]) and various socio-demographic characteristics, the odd ratios and p-values provided insights into the strength and significance of these relationships. The relationship between attitudes (positive and negative) and various socio-demographic characteristics, including age, marital status, educational level, religion, and employment status. Significant variations were observed in certain groups, indicating that socio-demographic factors do influence attitudes. For instance, individuals aged 28-37 and 48-57 were significantly more likely to have positive attitudes, potentially

due to life experiences that foster a more optimistic outlook. In contrast, married individuals and those with higher education levels (secondary and tertiary) exhibited a significant tendency towards negative attitudes, possibly reflecting the pressures of responsibilities or critical thinking associated with higher education. Religion also played a role, with Christianity showing a significant negative association with positive attitudes, which could be influenced by cultural or doctrinal factors. Employment status was another key factor, where unemployed individuals were significantly less likely to have positive attitudes, highlighting the importance of financial stability and social engagement in shaping attitudes. These findings suggest that attitudes are not formed in isolation but are significantly influenced by one's socio-demographic background, allowing the study to reject the null hypothesis in favor of the alternate hypothesis that socio-demographic characteristics significantly impact attitudes.

The analysis of attitudes per constituency showed that there are statistically significant differences in attitudes towards screening of PCa across all the analysed constituencies. The differences suggested that regional factors such as cultural attitudes, access to healthcare, awareness levels, and social influences may play a significant role in shaping people's views on prostate cancer and its screening.

5.8. Summary

Chapter five provided a thorough discussion of the results presented earlier, comparing them with findings from similar studies conducted in various regions. The comparison highlighted key similarities and differences in the knowledge, attitudes, and practices of PCa screening across different populations. A notable aspect of the analysis was the

hypothesis testing regarding the relationship between knowledge and socio-demographic factors, which supported the null hypothesis, indicating no significant relationship. However, for attitudes, the null hypothesis was rejected, showing a significant link between attitudes and socio-demographic factors.

CHAPTER 6: CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

6.1. Introduction

This is the concluding chapter of this study which outlines the limitations, conclusions and recommendations of the study. It outlines the key takeaways, particularly to the study objectives, and offers practical recommendations based on the results. Additionally, the chapter presents suggestions for future research directions to address gaps identified during the study. The limitations that may have influenced the outcomes of the research are also discussed, alongside the delimitations that define the study's scope and boundaries.

6.2. Conclusions

This study concluded that there is a significant relationship between knowledge and attitudes which means that individuals with know more about the screening of prostate cancer have positive attitudes toward it. However, this positive attitude does not necessarily translate into action, as the study found no significant relationship amongst attitudes and the actual practice of undergoing screening. Similarly, there is no significant relationship between knowledge and practices of PCa screening. The study also concludes that educational level is the most significant determinant of knowledge about screening of PCa, with higher education strongly linked to greater awareness.

The results showed that respondents had moderate knowledge of prostate cancer and a generally positive attitude (49.9%) toward screening. However, this knowledge and attitude did not appear to influence actual screening practices, which were low at just 4.1%. Statistical analysis (p-values of 0.927 of knowledge and 0.692 of attitudes) revealed

no significant differences in knowledge and attitudes across constituencies. Additionally, the analysis showed no relationship between knowledge and screening practices and between attitudes and practices. However, there was a significant relationship between knowledge and attitudes. Education level was found to be significantly associated with knowledge, while other demographic factors showed no significant correlation. The study concluded that knowledge and attitudes alone do not significantly impact screening practices. It recommends further research into psychological factors influencing screening behavior, as well as a qualitative study to explore barriers to screening of PCa.

6.3.Limitation

A Gap in published data served as a limitation, in such a way that the researcher had to visit the hospital for the conduction of manual calculations of data of PCa prevalence and burdens, thus could have led to outliers, and misinterpretation of data. Furthermore, incomplete and unavailability of data limited the statistical argument in time frame trends in the problem statement. Time framework for the length of a questionnaire, thus resulted in 2 respondents not completing the questionnaire.

6.4. Recommendations

6.4.1. **Enhance public education campaigns**

Given the significant relationship between knowledge and attitudes, the study recommends that healthcare providers and public health agencies such as MoHSS and private sectors should focus on enhancing educational efforts about screening of PCa. The educational campaigns should provide clear, accurate, and culturally sensitive information

that could help improve knowledge and potentially foster more positive attitudes toward screening. Furthermore, the researcher recommends MoHSS to capture data about cancer per organ, and per region in Namibia, Fostering monthly, quarterly or yearly reporting. This will assist future researchers in terms of the availability of statistical data. In addition, this data is to be shared with CAN and made available to the CAN website.

6.4.2. Address barriers to screening

The study suggests that attitudes alone may not drive screening practices. The MoHSS through healthcare providers should identify and address practical barriers to screening, such as access to services, cost, fear, and cultural factors. Strategies could include offering free or low-cost screenings, mobile screening units, and community outreach programs to reach underserved populations.

6.4.3. Incorporate screening into routine health checks

Since routine checks and doctor recommendations are primary motivators for screening, integrating screening of PCa into regular health check-ups for men over a certain age could increase screening rates. Primary Health Care Clinics (PHC) providers should be encouraged to discuss prostate cancer risks and screening options during routine visits. Also nurses and doctors should engage in open and ongoing discussions with patients about screening of PCa. As healthcare providers, they should assess and address any misconceptions, fears, or cultural concerns that might prevent patients from participating in screening.

For future research, the study recommends the following:

6.4.4. Exploration of other influencing factors

Researchers can investigate additional factors that might influence screening practices, such as psychological factors for example, perceived risk, and self-efficacy; social influences such as family history, and peer encouragement, and systemic barriers such as healthcare access, and cost. Understanding these factors could lead to more effective interventions.

6.4.5. Qualitative studies

Qualitative studies that use data collection instruments such as interviews or focus groups, may be conducted to gain comprehensive understanding of the reasons behind the low uptake of screening practices despite positive attitudes and high knowledge. This could uncover nuances that quantitative surveys might miss.

of KAP within the six constituencies/ clusters of Zambezi region, Namibia.

6.5. **Summary**

This chapter discussed the limitations of the study and recommendations that may enhance PCa screening practices amongst men in Zambezi region, Namibia. Furthermore, recommendations on data availability and quality. Furthermore, the study provided data for Zambezi region regarding KAP regarding PCa screening.

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APPENDIX A: UNAM ETHICAL CLEARANCE CERTIFICATE

UNAM
UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: DEC OSH 0029 Date: 07/12/ 2022

This Ethical Clearance Certificate is issued by the University of Namibia Ethics Committee (REC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the ethics committee.

Title of Project: KNOWLEDGE, ATTITUDES AND PRACTICES TOWARDS PROSTATE CANCER SCREENING AMONGST MEN IN ZAMBEZI REGION, NAMIBIA

Principal researchers: MELODY NAMASIKU BUCHANE

Staff Number/ Student number: 200826263

Remarks: Low Risk Approved with corrections

Centre for Research Services

Take note of the following:

1. Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the ethics committee. An application to make amendments may be necessary.
2. Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the ethics committee
3. The Principal Researcher must report issues of ethical compliance to the ethics committee (through the Chairperson) at the end of the Project or as may be requested by the ethics committee
4. The ethics committee retains the right to:

i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,

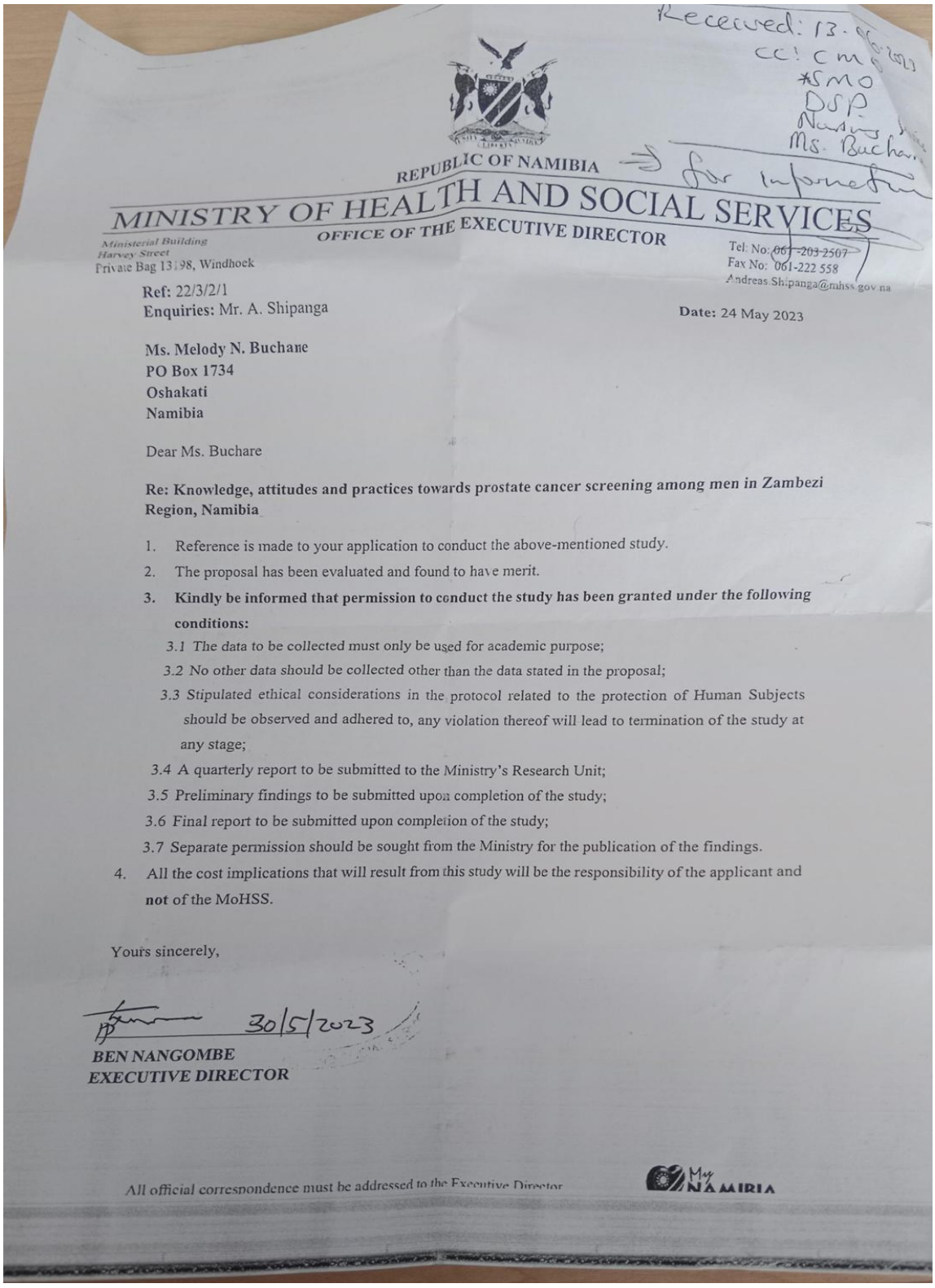
ii) Request for an ethical compliance report at any point during the course of the research.

The ethics committee wishes you the best in your research.

Prof Hans J Amukugo (Oshakati Campus Chairperson Decentralized Ethics Committee)

Prof. Davis Mumbengegwi (Head, Multidisciplinary Research)

APPENDIX B: MoHSS APPROVAL LETTER



Received: 13.
cc: cm
*SMO
DSP
Nursing
Ms. Bucha
for inform

REPUBLIC OF NAMIBIA

MINISTRY OF HEALTH AND SOCIAL SERVICES

OFFICE OF THE EXECUTIVE DIRECTOR

Ministerial Building
Harvey Street
Private Bag 13198, Windhoek

Tel. No: 061-203-2507
Fax No: 061-222 558
Andreas.Shipanga@mhss.gov.na

Ref: 22/3/2/1
Enquiries: Mr. A. Shipanga

Date: 24 May 2023

Ms. Melody N. Buchane
PO Box 1734
Oshakati
Namibia

Dear Ms. Buchare

Re: Knowledge, attitudes and practices towards prostate cancer screening among men in Zambezi Region, Namibia

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
   - 3.1 The data to be collected must only be used for academic purpose;
   - 3.2 No other data should be collected other than the data stated in the proposal;
   - 3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;
   - 3.4 A quarterly report to be submitted to the Ministry's Research Unit;
   - 3.5 Preliminary findings to be submitted upon completion of the study;
   - 3.6 Final report to be submitted upon completion of the study;
   - 3.7 Separate permission should be sought from the Ministry for the publication of the findings.
4. All the cost implications that will result from this study will be the responsibility of the applicant and **not** of the MoHSS.

Yours sincerely,

30/5/2023

BEN NANGOMBE
EXECUTIVE DIRECTOR

All official correspondence must be addressed to the Executive Director

My NAMIBIA

APPENDIX C: ZAMBEZI REGIONAL COUNCIL RESEARCH PERMISSION LETTER

REPUBLIC OF NAMIBIA
ZAMBEZI REGIONAL COUNCIL

Tel: +264 66-26 1700
Fax: +264 66-25 2650

Ngoma/Hospital Road
ZRC Office Park

Private Bag 5002
Katima Mulilo

Enquiries: Ms. C.L Chunga

Our Ref:
Your Ref:

Date: 02 August 2023

Ms. Melody Namasiku Buchane
P.O Box 315
Katima Mulilo
Namibia

Dear Ms. Buchane

SUBJECT: PERMISSION TO CONDUCT AN ACADEMIC RESEARCH SURVEY IN THE ZAMBEZI REGION: YOURSELF.

Kindly be informed that permission to conduct an academic research survey in Zambezi Region is hereby granted. You are further requested to present the letter of approval to the identified research sites in the Region concerned.

Kindly share your research findings with the Regional Council. We wish you the best in conducting your research and looking forward to hear from you soon.

Yours sincerely,

MS. REGINA NDOPU-LUBINDA
CHIEF REGIONAL OFFICER

ZAMBEZI REGIONAL COUNCIL
Office of the
Chief Regional Officer
2023 -08- 03
Private Bag 5002
Katima Mulilo
REPUBLIC OF NAMIBIA

APPENDIX D: RESEARCH QUESTIONNAIRE

Knowledge, attitudes and practices towards screening of PCa amongst men in Zambezi region, Namibia.

Date_____

Instructions: Please Tick (√) where appropriate Section A: Socio-Demographic Characteristics.

1. Age

18- 27years	[ ]	28-37years	[ ]
38-47 years	[ ]	48-57	[ ]
58 and above	[ ]		

2. Marital status

Married	[ ]	Single	[ ]
Divorced	[ ]	Widowed	[ ]

3. Educational level

Non educational	[ ]	Secondary level (grade 8-12)	[ ]
Tertiary level (University/ College)	[ ]	Primary level (grade 1-7)	[ ]

4. **Religion**

Christianity	[ ]	Islam	[ ]

Others…….

5. Residence : Tick your constituency

Katima Urban	
Katima Rural	
Kabbe	
Kongola	
Sibbinda	
Linyanti	

6. Employment status:

Employed [ ] Unemployed [ ]

Section B: Knowledge about Prostate Cancer

Knowledge is defined as having information about prostate cancer.

Instructions:

Please give a **Tick (√)** to the appropriate answer.

7. Have you heard about prostate cancer?

Yes [ ] No [ ]

8. If yes, which source of information have you heard about prostate cancer? Tick applicable answers

Health care providers	
Media (TV, radio etc)	
Internet	

Friends and families	
Other (specify)	

9. What is prostate cancer? Tick 1 answer only

Inflammation of the prostate gland	
Cancer of the prostate gland	
Being ill	
Don`t know	

10. What is the recommended age to start with screening of PCa? Tick 1 answer only

40-49	
50-59	
60 and above	

11. What are the risk factors associated with prostate cancer (Please Tick(√) all that apply)

Family history	
Race	
Age	
Dietary fat intake	
Sexual activity	
Occupation	
cigarette smoking	

Don`t know	

12. What are the early warning signs of prostate cancer? (Please Tick(√) all that apply)

Pain in groin	
Fever	
Difficulty in urinating	
Uneasy feelings during urination	
Painful ejaculation	
Erectile dysfunction	
Don`t know	

Section C: Attitudes regarding Prostate Cancer Attitude is defined as a settled way of thinking or feeling about Prostate cancer

Instructions: Please answer with honesty as possible by giving a **Tick (√)** using a 5 Likert scale (Strongly Disagree=1, Disagree= 2, Neutral=3, Agree=4 and Strongly Agree= 5).

		SD 1	D 2	N 3	A 4	SA 5
13	Prostate cancer is a health concern in the community					
14	It is important to screen for prostate cancer because it is beneficial and will settle any doubts about whether I have the disease or not					
15	Screening for prostate cancer is not painful					
16	Going through screening of PCa is not embarrassing					
17	If recommended, I would agree going to screen for prostate cancer					

18	Early detection increase survival					

Section D: Prostate Cancer Practices Defined as having ever been tested for prostate cancer by any common screening methods: PSA testing, Direct Rectal examination

19. Have you ever undergone screening of PCa?

Yes [ ] No [ ]

20. If yes, when did you have it done? Tick 1 answer only

3- 4 Months	
6 Months ago	
12 Months ago	

21. If yes which method of screening of PCa have you undergone? Tick 1 answer only

PSA Test	
Rectal Examination	

22. If yes, what was the reason for having a PSA / Rectal exam done? Tick applicable answers

Recommended by a doctor	
Routine check	

Worried Sick.	

23. What prevents you from undergoing screening of PCa? Tick all that apply

Fear of Pain	
Distance to the health care facility	
Lack of awareness	
Screening of PCa services not being offered at health care facility	
Expensive	

24. Does your culture permits or allow to you to undergo screening of PCa?

Yes [ ] No [ ]

Thank you

APPENDIX E: SILOZI QUESTIONNAIRE

HREC-NH Annex 5G: Questionnaire

Pampili ya Lipuzo

Kwabaalabeli

1. Libizo laka kina Melody Namasiku Buchane. Nombolo yaka yasikolo ki 200826263. Nisweli kuituta lituto ze pahami za makete a sicaba mwa sikiliti kwa sikolo se situna sesipahami sa Namibia (UNAM). Nisweli kueza patisiso ya kuamana ni zibo, minahano/ mihulo ni mikwa ya baana kuamana nibutu bwa mambongola ili yona kensa ya baana (purositeti kensa) mwa sikiliti sa Zambezi, mwa naha ya Namibia.
2. Nimiketile kuli mube babanwi baba ka alabela kwa patisiso ya tuto yaka ,kacwalo namimema kuli mutaleleze pampili yalipuzo za patisiso ye.
3. Patisiso yenieza ilumelezwi kuba ka tengo kababa bona za li patisiso kwasikolo sesituna sesipahami sa UNAM.

   Nikaitumela hahulu hamuka bapala kalulo kwakutaleleza pampili ye. Minika milemusa kuli:

   a. Musike mwa alabela kwa lipuzo haiba hamuikutwi kueza cwalo.
   b. Mukona kutuhela kualabela kwalipuzo kapa kusiya nako yemuikutwa kusatabela kualaba, miakuna bumaswe bobukaba kwatenikwalineku lamina.
   c. Hamuna kuzibahazwa haiba nji inge mubapala kalulo kwapatisiso ye.

d. Mapampili nibupaki bobukafumaneha akabulukwa mwasibaka sesiipatile, mihais babalumelelezi nina kona babakakona kuabona kapa kuaswala, Mikasamulaho alillimo zeketalizoho, mapampili nibupaki bobukafumaneha likasinyiwa mwa nzila yende.

4. Haiba muna ni puzo kappa nji hamuutwisisi, mulukuluhile kunibuza minikataba ahulu kumitolokela.
5. Haiba mubata kuziba kabutungi za patisiso yenieza, muikutwe kulukuluha kunibuza minika mitolokela.
6. Kukamishimba mizuzu ye mashumi amabeli kufeza kualabela kwalipuzo ze.
7. Mwakona kuniswala fa nombolo yaka 0813424778 kamba emaile buchanemn@gmail.
8. Haiba kuna nikomuhakanyeha kamba kubilaela kaza ka kamba patisiso ye,Mwakona kulileza sikolo sesituna sa UNAM fa nombolo (+ 264 61) 206 4673) kamba e-mail research@unam.na.

9. Niitumezi hahulu kwabuitomboli bwa mina kubapala kalulo kwa patisiso ye.

Muapule pampili ili kuli mukale kualabela kwa lipuzo

Zibo,maikuto ni mikwa kuamana nikutatubisa butuku bwamambongola ili yona kensa ya baana mwa sikiliti sa Zambezi, mwanaha Namibia.

Lizazi:_____

Nomboo yamina:_____

Milao: mulaitele mokuswanela.

Kalulo yapili A : Miinelo mwasikiliti

1. Lilimo

19- 27years	[ ]	28-37years	[ ]
38-47 years	[ ]	48-57	[ ]
58 nd above	[ ]		

2. Maemo amanyalo:

Munyezwi	[ ]	Hamusika nyaliwa	[ ]
Mukauhani	[ ]	Mushwezwi	[ ]

3. Maemo a sikolo

Hamusikazwela kwa sikolo	[ ]
Litopa ze nyinyani (grade 1-7)	[ ]

Litopa zepahani (grade 8-12) [ ]

Likolo ze pahami (University/ College) [ ]

4. **Keleke**

Mubalumeli: [ ] Muba isilami [ ] Zemwi :(Mutoloke)……

5. Komuina: Mulaitele Libizo la konsiticuensi:

Katima Urban	
Katima Rural	
Kabbe	
Kongola	
Sibbinda	
Linyanti	

6. Maemo amusebezi

Mwabeleka [ ] Hamubeleki [ ]

Kalulo ya B: Zibo kuamana ni purositeti kensa (butuku bwa mambongolawa)

Zibo itolokiwa kuba ni liseli ni linusa la lisupo,kuikambusa ni likalafo kuamana ni purositeti kensa (butuku bwa baana)

Milao:

Mulaitele mokuswanela **(√)**

7. Kana nese mu utwile kaza butuku bwa purositeti kensa (butuku bwa baana bwa mambongola) ?

Eni [ ] Awa [ ]

8. Heba kulinji ki eni, nemuutwile kanzila ifi?

	Mulaitele(√)
Babeleki ba likolo la makete ni pabalelo ya sicaba	
Wayalesi , mazimumwangala,	
kanyandi kalifasi (intaneti)	
Balikani ni mizwale	
Zemwi, mutoloke	

9. Butuku bwamambongola (purositeti kensa) kisikamani?

	Mulaitele(√)
Kululuha kwa mambongola	
Kensa ya lilama zabuuna (purostate)	

Kukula	
Hamuzibi	

10. Lilimo ze swanela kuitatubisa butuku bwa mambongola. Mukete fela silimo silisimu.

40-49	
50-59	
60 kuya kwahalimu	

11. Kilikamini zekona kumitiseza purositeti kensa (butuku bwamambongola)? **Mulaitele.**

Kensa ya purosite mwalubasi	
Mushobo	
Lilimo/ kuhula	
Kuca lico za mafula	
Lipangaliko zeamanani kusomana	
Mufuta wa musebezi	
Kuzuba kwai	
Hmuzibi	

12. Kilifi lisupo zekona kumilemusa kapili kaza butuku bwa purositeti kensa (butuku bwa mambongola) ? **(Mulaitele mkuswanela (√))**

	Mulaitele(√)
Butuku mwa nkeleswa	
Kucisa mubili	
Butata kwakuluta	
Kusaikutwa hande hanze muluta	
Butuku kasamulaho akusomana	
Kusayema kwa buuna	
Amuzibi	

Kalulo ya C: Maikuto/ Minahano kuamana ni butuku bwa purositeti kensa (butuku bwa baana)

Milao: Mulaitele kalabo ya niti kakuitusisa Zetatama:

1= Kusalumela kokutiile, (KK)

2= Hamulumeli (A)

3= Mufahala kalabo (MK)

4 Mwalumela (M)

5= Kulumela kokutiile (K)

		KK 1	H 2	MK 3	M 4	K 5

13	Butuku bwa mambongola bwa bilaeza mwa sikiliti					
14	Kikwabutokwa kuitatubis butuku bwa purositeti kensa kakuli kuzwisa kuhakanyeha kuamana nikuba nibutuku bwa mambongla.					
15	Hakuyo butuku kutatubisa butuku bwa purositeti kensa					
16	Kutatubisa purositeti kensa hakuswabisisi					
17	Hanilumelelwa kambaa kulumiwa, nalumela kuitatubisa purositeti kensa					
18	Kuitatubisa kabunako ku mbwecafaza maemo akupila.					

Kalulo ya D: Mikwa kuamana nikutatubisa purositeti kensa = Itokiwa kuli kana nese mutatubilwe kalinzila zepeli Zecwale ka Kutatubiwa ka mail/ gazi kapa kwa mulaho.

19. Kana nese mutatubilwe butuku bwa mambongola?

Eni [ ] Awa [ ]

20. Haiba kuli kalabo ya lipuzo zafahalimu ze ki eni, neili lili? Mulaitele mokuswanela

Likweli ze talu kisa kuzene(3-4)	
Likweli ze silizi (6)	
Silimo (12 likweli)	

21. Neili ka nzila ifi?

Ka kushimbiwa mali/ gazi	
Kwa mulaho	

22. Haba kuli nemutatubilwe ka mali/gazi kappa nzila yakwa mulaho, libaka neili lifi?

Naka/ Doctor kiyana bulezi cwalo	
Kuitatabisa kanako ya swanela	
Kubilaela bakenisa kukula	

23. Kilifi libaka lelitisa kuli musike mwaitatubisa butuku bwa mambongola? Mulaitele kaufela mokuswanela

Kusaba butuku	
Musipili omutelele kuya kwa sipatela	
Kutokwa zibo	
Lisebelezo zakuitatubisa hazifumanehi mwalipatela	
Kutula	

24. Kana sizo samina samilumelela kutatubisa butuku bwa mambongola?

Eni [ ] Awa [ ]

Luitumezi

APPENDIX F: PROOF OF TRANSLATION SERVICES

Proof of Translation Services

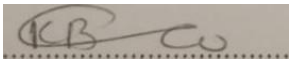
Date: 05 May 2023

To Whom It May Concern,

This letter serves as confirmation that I, Kakambi Beauty Pumulo, a professional translator, hav'e translated the attached questionnaire from English to Silozi. The translation has been carried out with the utmost accuracy, ensuring that the meaning and intent of the original text are preserved in the Silozi version.

As a qualified translator, I have taken every necessary step to provide a clear and precise translation that is culturally and linguistically appropriate for the target audience.

If further verification is required, please do not hesitate to contact me.



Sincerely,

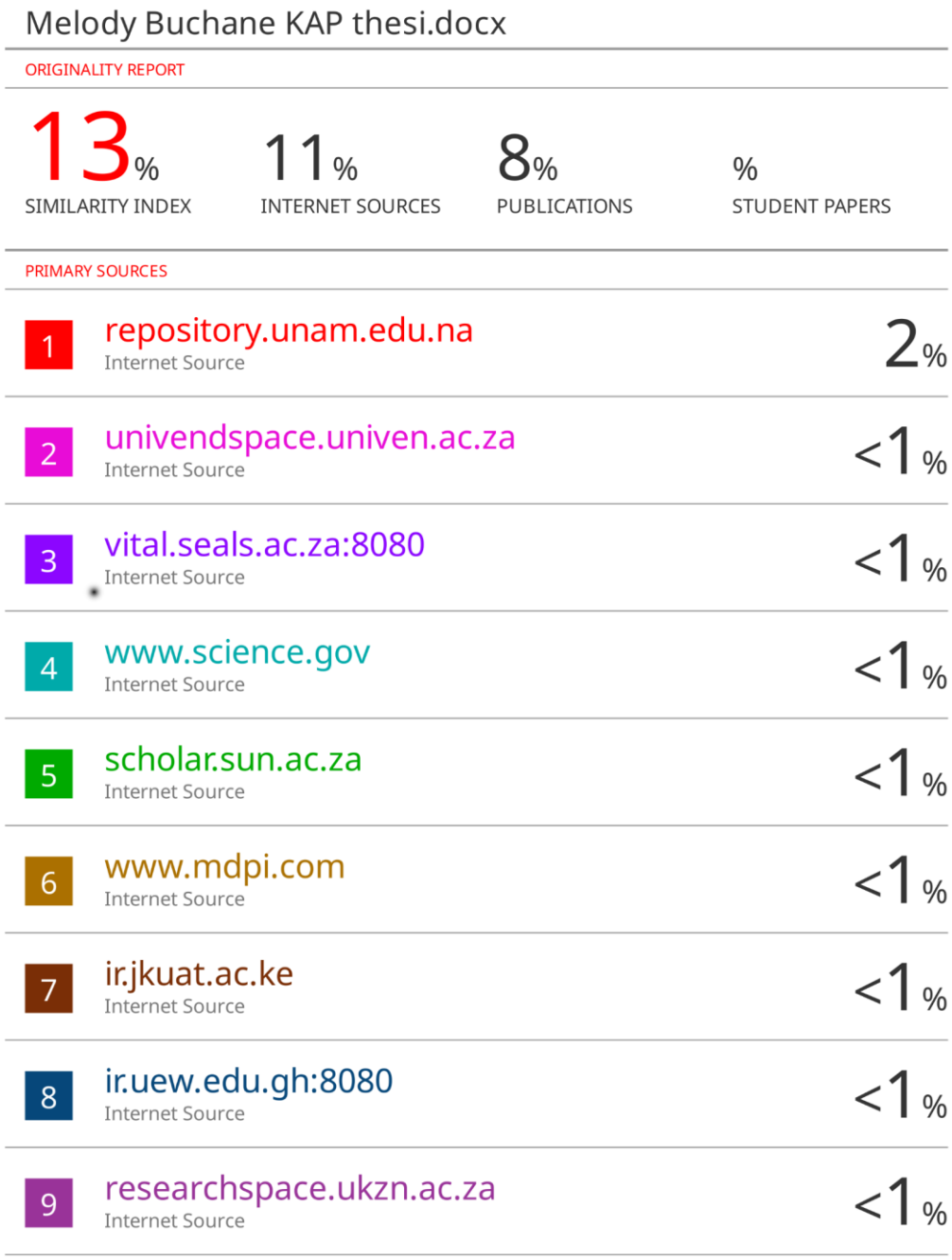
Kakambi Beauty Pumulo

+264813851413

BETD Languages 8-10, ACE (Advanced English in Education), I l years teaching experience in Silozi First Language, Chief Marker for Silozi First Language paper 4&5, Team leader for Silozi First Language paper 2, and Translator of External Examination for both NSSCO &

NSSCAS

APPENDIX G: TURNIT IN REPORT



Melody Buchane KAP thesi.docx

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