Knowledge, Attitudes and Practices of Men Regarding Prostate Cancer in Thulamela municipality, Vhembe District

BY

Dakalo Mathews Chavhalala

Student No: 11591838

A mini-dissertation submitted in the fulfilment of requirements for the degree

MASTER OF PUBLIC HEALTH

In the

Faculty of Health Sciences

Department of Public Health

Supervisor

Prof N.S. Mashau

Co-Supervisor

Prof. V.O. Netshandama

February 2023

DECLARATION

I, Dakalo Mathews Chavhalala, student number 11591838, hereby declare that the mini-dissertation titled: "*Knowledge, Attitudes and Practices of Men Regarding Prostate Cancer in Thulamela Municipality, Vhembe District*" submitted by me has not been previously submitted for a degree at this or any other institution or university, that it is my own designed and executed work, and that all reference material contained therein has been duly acknowledged.

Signature:  ……Date: 21 February 2023

DEDICATION

I dedicate this dissertation to Almighty God who gave me the strength and wisdom to achieve this great level. I also dedicate this study to my wife, Mrs Phililе Nicole Ngcobo-Chavhalala who supported me throughout this journey of my studies. My last dedication goes to my daughters, Melokuhle, Okundaho and Ndiene Chavhalala who allowed me time to focus on my study as well as my parents, Mr N.V Chavhalala and Mrs A.C Chavhalala who supported me throughout my studies.

ACKNOWLEDGEMENTS

My sincere gratitude goes to God almighty for his grace, mercy, strength and wisdom. He granted me throughout my studies.

My appreciation goes to my Supervisor, Prof N.S Mashau who tirelessly guided me through the writing of this dissertation, for her patience, input and support throughout the duration of my study. It is through her great efforts and supervision that I achieved this.

I would like to acknowledge my Co-supervisor Prof V.O Netshandama as well as the men of Thulamela municipality who agreed to participate in this research study making it possible.

Lastly, my profound gratitude goes to my lovely family, friends and supportive colleagues for the tremendous support they gave me throughout my studies.

PREFACE

This mini-dissertation is presented in article format and comprises three sections: Section A presents the thesis overview, Section B provides the manuscripts/articles with their journal guidelines for authors and Section C presents the summary, conclusions, limitations and recommendations of the study.

Chapter 1: Overview of the study

This section provides the overview that details the background, problem statement, purpose and objectives of this study, research design and methods, and ethical considerations.

The following chapters have a total of two manuscripts as detailed below:

Chapter 2: Literature Review (Manuscript 1)

This chapter comprises a manuscript submitted to The Open Public Health and is under review. The manuscript is titled "*Knowledge, attitude and practices of men towards prostate cancer: A scoping Review*."

Chapter 3: Manuscript 2

This chapter comprises the manuscript that was submitted to The Inquiry Journal and awaiting a response. The manuscript is titled "Knowledge, Attitudes and Practices of Men towards Prostate Cancer in Thulamela Municipality of Limpopo Province, South Africa."

Chapter 4: Summary and Conclusion

This chapter presents the summary of the whole study in coherence with the study objectives, conclusions from the study, recommendations and limitations aligned to the whole study.

ABSTRACT

Prostate cancer is one of the men`s killer diseases globally and the number of fatalities attributed to it is on a rise. This study adopted a quantitative, cross-sectional descriptive survey design to investigate men's knowledge, attitudes and practices regarding prostate cancer inThulamela Municipality, Vhembe District. A sample size of 280 was calculated using an automated web-based online Raosoft sample size calculator. Random sampling was used to select 280 men aged 40 years and above from Ha Budeli village. A questionnaire containing close-ended questions was used to collect data. The validity and reliability of the questionnaire were ensured. Statistical Package for Social Sciences software version 25.0 was used to analyse data. Data were summarised descriptively and presented in frequencies, tables and charts. Chi-square and Phi and Cramer's V tests were used to test for association and effects size respectively at 0.5 level of significance. Respondents' knowledge as an explanatory variable and attitude and practice as response variables were assessed. Ethical measures were considered throughout the study.

The findings of this study showed that 65% of men had adequate knowledge of Prostate Cancer risk factors and symptoms, while just 35% showed inadequate knowledge of Prostate Cancer. The results also showed that 65% of respondents have a positive attitude towards Prostate Cancer. However, the results show that the practice of men regarding Prostate Cancer is negative with only 6% of respondents saying they have visited a clinic to consult about symptoms that made them think they had Prostate Cancer. Furthermore, the study found a significant association between knowledge and attitudes. The relation between these variables was significant, $\mathbf{X^2}$ (4, N=285) = 29.09, p = .001. Therefore, the study recommends widespread awareness campaigns that target raising awareness about the importance of screening and influence men to regularly go for check-ups especially those at high risk.

Keywords: Attitude, Knowledge, Practice, Prostate Cancer

TABLE OF CONTENTS

DECLARATION ii
DEDICATION iii
ACKNOWLEDGEMENTS iv
PREFACE v
ABSTRACT vi
LIST OF TABLES x
ABBREVIATIONS AND ACRONYMS xi
CHAPTER1: OVERVIEW OF THE STUDY 1
1.1 INTRODUCTION AND BACKGROUND TO THE STUDY 1
1.2 Statement of the Problem 3
1.3 Rationale of the study 3
1.4 Significance of the Study 4
1.5 Aim of the study 4
1.6 Objectives of the study 4
1.7 Theoretical framework 4
Health Belief Model 4
1.8 Definition of Key Concepts 6
2. RESEARCH METHODOLOGY 6
2.1 Research approach 7
2.2 Research design 7
2.3 Study Setting 7
2.4 Study Population 8
2.5 Sampling and Sample 9
Inclusion criteria 10
Exclusion criteria 10
Sampling procedure 10
2.6 Measurement Instrument 10
2.7 Validity 11
2.8 Reliability 11
2.9 Pre-test 11
2.10 Data collection procedure 12
2.11 Data Management and Analysis 12
2.12 Ethical Considerations 13
2.14 Conclusion 14
REFERENCES LIST 15
CHAPTER 2: LITERATURE REVIEW 24
2.1 INTRODUCTION 24
2.2 MANUSCRIPT 1: A SCOPING REVIEW OF KNOWLEDGE, ATTITUDES AND

PRACTICES OF MEN REGARDING PROSTATE CANCER SCREENING 24
Abstract 25
1. INTRODUCTION 26
2. METHODOLOGY 26
2.1 Search Strategy 27
2.2 Inclusion criteria for articles 28
2.3 Data extraction 29
3. RESULTS 29
3.1 Overview of epidemiology of prostate cancer 29
3.2 Incidence of Prostate Cancer in South Africa 30
3.3 Knowledge and Attitudes of Men Towards Prostate Cancer 31
3.4 Attitude Towards Early Screening and Detection 32
3.5 Traditional Health Practitioners and Prostate Cancer Treatment 34
3.6 DISCUSSION 35
3.7 Conclusion 36
ABBREVIATIONS 37
ETHICS APPROVAL AND CONSENT TO PARTICIPATE 37
CONSENT OF PUBLICATION 37
AVAILABILITY OF DATA AND MATERIALS 37
COMPETING INTEREST 37
FUNDING 37
AUTHORS' CONTRIBUTIONS 37
ACKNOWLEDGEMENT 38
4. REFERENCES 38
CHAPTER 3: KNOWLEDGE, ATTITUDES AND PRACTICES OF MEN REGARDING PROSTATE CANCER IN THULAMELA MUNICIPALITY OF LIMPOPO PROVINCE, SOUTH AFRICA 43
Knowledge, Attitudes and Practices of Men towards Prostate Cancer in Thulamela Municipality of Limpopo Province, South Africa 43
ABSTRACT 44
1. Introduction 45
2.Material and methods 46
2.1 Study Setting 46
2.2 Study Population 47
2.3 Sampling and Sample 47
Inclusion criteria 48
Exclusion criteria 48
2.4 Sampling procedure 48
3. Measurement Instrument 49
4. RESULTS 49

4.1 Response rate 49
4.2 Demographic characteristics of respondents 50
Objective 1: Knowledge of men regarding prostate cancer 52
4.3 The knowledge of men regarding prostate cancer screening 52
4.4.1 The attitudes of men towards prostate cancer in Thulamela Municipality 60
4.4.2 Association between attitude of men regarding prostate cancer and demographic characteristics 62
4.5 Practices of men regarding prostate cancer in Thulamela Municipality, Vhembe District 63
5. Discussion 65
6. Conclusion 69
7. REFERENCES 70
CHAPTER 4: STUDY SUMMARY, STRENGTHS AND LIMITATIONS, AND RECOMMENDATIONS 75
4.1 INTRODUCTION 75
4.2 SUMMARY 75
4.3.1 Recommendations for the Department of Health 76
4.3.3 Recommendations for further research 77
4.5 CONCLUSION 78
Appendix A: Ethical clearance Letter 79
Appendix B: Permission letter from the Royal Traditional Council of Budeli Village 80
Appendix C: Information leaflet and informed consent form 81
Appendix D: English version questionnaire 85
Appendix E: Tshivenda Version Questionnaire 91

.

LIST OF TABLES

Number	Table	Page
Table 5.1	Demographic characteristics of participants	53-55
Table 5.2	Knowledge of men regarding prostate cancer in Budeli Village	56-60
Table 5.3	Level of knowledge about prostate cancer	61
Table 5.4	Association between the level of knowledge prostate about cancer and demographic details	63
Table 5.5	Attitude of men regarding prostate cancer	64-65
Table 5.6	Association between attitude of men regarding prostate cancer and demographic characteristics	66
Table 5.7	Practices of men regarding prostate cancer	67-68
Table 5.8	Chi-square distribution test	68

ABBREVIATIONS AND ACRONYMS

ACS	American Cancer Society
AWACAN	African Women Awareness Cancer
HBM	Health Belief Model
HIV	Human Immuno-Deficiency Virus
PCa	Prostate Cancer
SAPCS	South African Prostate Cancer Study
Stats SA	Statistics South Africa
TB	Tuberculosis

CHAPTER1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

Prostate cancer (PCa) is a disease of public health concern across the world. About 70% of the prostate cancer related deaths are reported in developed countries such as America, New Zealand and Australia (Owens, Daniela, Friedman et al., 2015; Ralwa, 2019; Wang, Lu, He, Wang, wang & Du, 2022). Key Statistics for Prostate Cancer (2021) indicate that prostate cancer is regarded as second most common cancer among men and the number of fatalities related to it is rising. It was estimated that in 2014, about 29 480 out of 233 000 men who were diagnosed of prostate cancer in the United States succumbed to the diseases in that year alone (Siegel, Ma, Zou, & Jemal, 2014).

The World Health Organization (WHO) (2020) reported that 70% of 96 million deaths that occurred in 2018 were caused by PCa. This figure is worrisome considering that access to treatment is currently scarce. The prevalence of PCa is adequately documented, but attempts to understand the knowledge, attitudes and practices of men regarding PCa remain largely undocumented (Musalli, Alobaid, Aljahani, Alquatani & Alshehiri, 2021). Studies indicate that PCa affect more black men than white men due to lack of knowledge about the existence of it as well as limited participation in screening activities (Makhado, Musekwa, Murwira, Luvevhengo, Mulaudzi, Lebese & Chueng, 2022, Musalli et al, 2021; Alexis & Worsely, 2018). For example, in Thailand where most male morbidity is caused by PCa, men seek traditional treatment before going for screening (Lojanapiwat, Lee, Gang, Kim et al., 2019). The Asian continent, including superpowers like Japan, China, Hong Kong, India and Singapore, have since set up a continental body that focuses on finding solutions and sustainable treatment of PCa including raising awareness about the disease (Lojanapiwat et al., 2019).

Araujo and Zago (2019) revealed that 61 200 new cases of prostate cancer were reported between 2016 and 2017 in Brazil and the estimated levels of infection seem to increase annually. Efforts to improve men' s awareness of PCa increases the chance of seeking early treatment but there is stigma and fear of the effects of screening and after treatment effects such as infertility. Such risk perceptions

negatively influence the attitudes of men regarding PCa (Gacci, Noale, Artibani, Bassi, Bertoni, Bracarda & Maggi, 2017). Once negative perceptions about PCa are entrenched in one's mind, little effort is made to seek early treatment. Besides, most men affected by PCa assume bad habits such as over smoking. Such practices increase the risk of men contracting PCa. In addition, men's practices concerning PCa are quite secretive even though one maybe suffering from the disease (Gacci, Noale, Artibani, Bassi, Bertoni, Bracarda & Maggi, 2017).

In sub-Saharan Africa, PCa is well-known for its debilitating effects on men. Several fatalities related to PCa have been relatively dominant in Cameroon, Nigeria and Ghana (Kaninjing, Lopez, Nguyeni, Odedina & Young, 2018). Moreover, Africa is considered one of the most diversified continent with people of different cultures who tend to believe much in their traditional ways of controlling diseases such as prostate cancer (Omara, Odero, & Obakiro, 2022; Ly, 2018). Cowman et al., (2021) argues that traditional practices bear a significant impact on PCa and there is need to consider the some culturally sensitive issues when crafting and implementing health awareness program for men's health and PCa.

A survey carried out in 2017 indicates that about 1 in 16 men in South Africa have PCa and this translates to about 6% of men in the country having this disease. In South Africa, the use of traditional medicine to treat PCa is largely guided by traditionalideas and this has limitations to the dissemination of knowledge about PCa (Cassim, Ahmad, Wadee, Rebbeck, Glencross &George, 2021). It is futhere argued that traditional medicine act as alternative when in the event that clinical measures fail (Oystacher, Blasco, He, Huang, Schear, McGoldrick & Yang, 2018) However, overreliance on traditional medicine blurs the importance of screening and other practices that can be used to decrease PCa cases in South Africa.

Bad living habits such as smoking, lack of regular exercise and lack of awareness on men's health contribute to high prevalence of PCa. Like many other African countries, South Africa lacks empirical evidence regarding the relationship between PCa and the level of education. Higher level of education is expected to increase one's knowledge, positive attitude and good practices to protect against PCa but actual findings in previous studies present mixed results (Matowa, Gundidza, Gwanzura & Nhachi (2020). However, the South African government and some NGOs has

organized some strategies such as screening and awareness campaigns as way to avert the negative impacts of prostate cancer in rural communities. Moreover, there are guidelines for the cancer awareness and knowledge dissemination which is critical for the role it plays in reducing the impact prostate cancer.

1.2 Statement of the Problem

PCa is seldom publicly addressed. The number of prostate cancer cases is increasing exponentially and thus government's efforts are overwhelmed (National Cancer Registry, 2021). The National Cancer Strategic Framework 2017 –2022 indicates that there is a lack of documented strategies targeted at increasing public awareness on PCa. In Limpopo province, Vhembe District is one of the prostate cancer hotspots wherein 5% of men between the age of 40 and above have lost their lives to this chronic disease between 2012 and 2017 (Massyn, Day, Ndlovu & Padayachee, 2020).

Self-awareness is believed to be the main driver of acquisition of knowledge, attitudes, and perceptions of men regarding PCa (Masilli et al, 2022). Yet, there has been a very slow uptake of the Prostate- specific antigen which is vital for preventing men from contracting prostate cancer. Mofolo, Betshu, Kenna, Koroma, Lebeko, Claassen & Joubert, 2015 argue that only 3% of men who participated in the South African Prostate Cancer Study had taken PSA. Having such an acute level of delay or unwillingness to take preventative measures against prostate cancer should be investigated. Therefore, this study aimed at exploring the levels of knowledge, attitudes and practices of men towards prostate cancer.

1.3 Rationale of the study

The study attempts to understand the primary levels of knowledge, attitudes and practices of men about PCa. The disease is the world's common men killer. More than 100 years after its discovery, PCa still has no cure. For instance, in Vhembe District, a study conducted by Maladze (2020) focused more on knowledge and attitudes about PCa screening among males at Dzingahe Village. However, there has not been any attempt to carry out a study in Budeli village regarding the knowledge,

attitude and practices regarding prostate cancer among men. This study went further to assess the practices of men regarding PCa.

1.4 Significance of the Study

A study of this nature is vital because it assists communities to understand men's knowledge, attitude and practices regarding PCa. The Department of Health of South Africa benefits from this study through harvesting new insights that are useful for developing guidelines for prostate cancer awareness programs in local communities.

1.5 Aim of the study

The aim of this study was to investigate the knowledge, attitude and practices of men regarding prostate cancer in Thulamela Municipality, Vhembe District.

1.6 Objectives of the study

The objectives of this study were to:

- Assess the knowledge of men about prostate cancer in Thulamela Municipality, Vhembe District.
- Describe the attitude of men about prostate cancer in Thulamela Municipality, Vhembe District.
- Examine the practices of men regarding prostate cancer in Thulamela Municipality, Vhembe District.

1.7 Theoretical framework

Health Belief Model

The theoretical framework adopted in this study was the Health Belief Model (HBM). Ruba, Suiman, Safia, Waquaraddia & Sareeha (2016) argue that the use of the is vital when carrying out health related studies because lays out the ground for understanding the health seeking behaviour of human beings in various settings. This study focuses on the knowledge, attitude and practices of men regarding prostate cancer therefore, adopting this model helps to understand health seeking

behaviour of men.

Over the years, the HBM has grown to a household framework for unraveling a variety of behaviours of men regarding their sexual health and awareness (Abraham & Shireen, 2016). The main assumption of this theory is that individuals take preventative measures if they are convinced that they will be served from the illness of they are willing to avoid the illness (Conner & Norman, 2021). The key elements contained in the HBM focus on health conditions and individual drive towards avoiding or ameliorating health risks. Ruba et al., (2016) argue that these key elements influence a person's behavior regarding seeking medical treatment.

Basic Components of the Health Belief Model:

Perceived Susceptibility: Glanz, Barbara and Viswanath (2008) argue that individuals hold subjective perceptions regarding the possibility of contracting a health challenge. Karen (2015) adds that individuals who perceive they are vulnerable to a disease will practice behaviors that reduce his or her risks of developing an illness.

Perceived severity: The notion of perceive severity is related to the extent at which an individual regards the level of harm or pain that can be experienced when one contracts a certain illness. Karen (2015) argues that more severe a health illness, the more individuals seek medical treatment.

Perceived Benefits: The gains that accrue to one seeking a particular treatment for a disease is vital. Although the benefits of being treated general flows to the patient, the use of incentives get people treated can help to change the health seeking behavior of individuals. However, Abraham and Shireen (2016) argue that individuals actively seek treatment if they are sure of the health benefits attached to it.

Perceived barriers: Individuals seek health services if they are no barriers to access the required treatment. The barriers include lack finance, lack of knowledge about risks and lately the side effects associated with the taking of such treatment. For an individual to partake in a treatment procedure, the gains should outweigh the barriers (Abraham & Shireen, 2016).

Cues to action: The cues to action are the leading factors that encourage one to

take action. They are a trigger to take action. This refers to exposure to factors that prompt action. Cues to action include internal pain, encouragement from friends and family members, health professionals and information from the media (Karen, 2015)

Self-efficacy: The fact that individuals carry with them certain values and beliefs gives is important when analyzing the health seeking behavior. For some people seeking medical attention is part of their lifestyle and they do so for self-gratification.

The framework is therefore, suitable in this study because it allows us to understand perceptions of men about prostate cancer. The key elements explained gives direction towards understanding the knowledge, attitude and practices of men regarding prostate cancer.

1.8 Definition of Key Concepts

Attitudes – An attitude is a display of an individual's predisposed state of mind which is connected to their values, and the environment surrounding them. It influences one responds to certain triggers. This definition applies to the current study and it will adopted as the feelings of participants regarding prostate cancer.

Knowledge- This refers to facts, information and skills acquired through education or experience(Oxford Dictionary, 2018). In this study the term knowledge refers to facts or information that men have about prostate cancer.

Practices- This refers to the way individuals use of information, idea, belief, or method, as opposed to theories relating to it (Oxford Dictionary, 2018). In this study, practices refer to activities performed habitually or customarily in relation to prostate cancer.

Prostate cancer- This is a form of cancer that begins in the gland cells of the prostate which is found only in males (ACS, 2016; WHO, 2014).

2. RESEARCH METHODOLOGY

Research methodology involves the specific procedures or techniques used to identify, select, process,and analyze information about a topic (Kumar, 2012). Babbie

(2020) argue that the methodology section is important for providing practical details about how the research objectives were achieved. This chapter provides procedures followed to achieve objectives of the study. Other important aspects explained in this section are the research design, population and sampling, data collection, ethical considerations, reliability and data analysis.

2.1 Research approach

Creswell (2014) defines research approach as a procedure that consist of the steps of broader assumption of detailed method of data collection, analysis and interpretation. The study followed a quantitative research approach for quantifying the problem. This was also important for testing objective theoriesthrough generating numerical data that was used to examine the relationship among variables(Creswell, 2014). The quantitative approach assisted with handling a large sample and of participants. Furthermore, this approach was important for making inferences of findings to the entire population of men in Thulamela Municipality, Vhembe District.

2.2 Research design

A research design is a blueprint or plan of how the researcher intends to conduct a study (Babbei, 2020; Kumar, 2012). In this study, a cross-sectional descriptive design was followed using a survey to investigate the knowledge, attitude and practice of men about prostate cancer in Thulamela Municipality, Vhembe District. A cross-sectional survey is a type of design that seeks to study a defined population's frequency and characteristics of a condition at a point in time (Creswell & Creswell, 2018). The researcher was motivated to use cross-sectional descriptive survey because there was need to collect data at one point in time. Therefore, the choice of this research design was centered on an inquiry which tried to understand the knowledge, attitudes, and practices of men about prostate cancer at one point in time.

2.3 Study Setting

According to Babbie (2020), a study setting refers to the area where the study is

conducted. This study was carried out in selected Village within Thulamela Municipality, Vhembe District. It forms one of the four local municipalities comprising the Vhembe District Municipality (IDP, 2021). In the North and Eastern side are Musina and Collins Chabane municipality and in Western side is Makhado municipality (IDP, 2020). Thulamela Municipality covers 2 893.936 km²: 22° 57´ S 30° 29´ E covers vast track of tribal lands, and Thohoyandou is its political, administrativeand commercial center (IDP, 2021). The municipality is has the second largest number of residents in the district (Thulamela Municipality IDP Budget 2020/21 – 2021/23). According to Stats SA (2016) Community Survey, Thulamela has a population of 618 462 with 58.8% being the working age group of 15 to 64 years old and 6% elderly who are 64+ years old. About 47,7% of the entire Vhembe District's population lives in Thulamela Local Municipality (IDP, 2020). More than 85% of the people in this municipality live in tribal areas (IDP, 2020). The majority (55%) of the residents are women. On average, there are 0.7 men to every woman in Thulamela Municipality (Vhembe District, 2022)

Selected Village has been purposively selected because of its demographic feature that most(52.2%) of its 575 households are headed by men. This means that 299 Households are headed by men who are over 40 and above. Budeli Village has a population of 2 362 people of which 61% is the working age group of 15 – 64-year-olds and 5.1% is the elderly age group of 64+ year olds (StatsSA, 2016). According to records from the traditional council, it is estimated that selected Village has774 men who are above 40 years of age. The village is situated 12 km west of Thohoyandou. selected village does not have its own clinic. The residents use a Clinic situated at a neighbouring village because there is no clinic in the village. A regional hospital is located at about 15 kilometres. The dominant ethnic group in selected Village is Vhavenda and it is under the leadership of a traditional leader. The village is situated around tourist attraction sites such as a nearby Dam which is a busy area during holidays because most public events such as Festivals are held.

2.4 Study Population

A study population is a collection of certain objects with similar characteristics (Brink, Van der Walt & van Rensberg (2017). The study population comprised of all men

residing at Vhembe district. The targeted population consisted of all men who were above the age of 40 years residing at selected Village. Records from the Local Traditional council show that there are 774 men who are 40 years and above residing at selected village.

2.5 Sampling and Sample

Creswell and Creswell (2018) define a sample as a sub-collection of objects from a population. In this study, a simple random technique was used to select participants. Simple random sampling technique is a probability sampling procedure that allows every member of the population an equal opportunity to be selected van (van Wyk, 2018). This assisted to ensure that the appropriatenumber of sample is selected from the targeted population in an unbiased manner since according to Babbie (2018), this method reduces the probability of sampling error.

Sampling size: the sample size was calculated using an automated web-based online Raosoft sample size calculator (Roasoft Sample size Calculator, 2004). The margin of error was at 5%, confidence level was 95%, populationsize was 774, and the response distribution was 50% and the sample size was 257.

To accommodate the probability of non-responses, the researcher added 10% to the sample size, which was about 26. Therefore, the sample size totaled 285.
In terms of the numbers above, the sample size n and margin of error E are given by

$$X = Z(c/100)^2 r(100-r)$$

$$N = N x/((N-1)E^2 + x)$$

$$E = \text{Sqrt}[(N - n)x/n(N-1)]$$

where N is the population size, r is the fraction of responses that the researcher is interested in,and Z(c/100) is the critical value for the confidence level c (Raosoft, 2004).

Inclusion criteria

All men who reside at selected village, aged 40 years and above and willing to participate were included in the study regardless of their educational level, working experience and marital status.

Exclusion criteria

All men who are aged 40 and above who show signs of mental incapacitation were not included in the study.For example, those who exhibited obvious mental disorder or any other dysfunctional behavior that influence to consent were not included. Those who refused to sign the consent form on the day of data collection were excluded from the study.

Sampling procedure

The researcher used the fishbowl technique to sample participants from the targeted population. The researcher designed a pick box with small papers marked ‘Yes’ and ‘No’. The pieces of paper with ‘Yes’ were 500 and those with ‘No’ were 275. The 285 men who picked ‘Yes’ and who were willing to form part of the study were included. The pieces of paper were placed inside a bowl in which all men from the targeted population had an equal chance to pick one piece of paper. Those who picked ‘No’ were not included in the study.

2.6 Measurement Instrument

A self-administered questionnaire with close-ended questions was used as a data collection instrument because close ended items in the questionnaire are amenable to statistical data analysis with minimal manipulation of raw data. Bracken (2013) also point out that questionnaires can reach out to a large sample and place minimal demands on personnel, and can be totally anonymous. In this study, the questionnaire was developed by the researcher guided by study objectives and literature from previous studies. The questionnaire was in the form of a three-point dichotomous question scale. When responding to this survey instrument, respondents were asked yes, no or don’t know with each statement.

The English language was used to develop the questionnaire which was translated

into Tshivenda by a language expert from University of Venda to suit participants' home language. The questionnaire comprised of 5 sections. Section 1 consisted of biographical information of the respondents, Section 2 addressed the knowledge of risk factors, Section 3 addressed the knowledge of symptoms, Section 4 addressed the attitudes of respondents and Section 5 addressed men's practice regarding prostate cancer.

2.7 Validity

Ensuring that results are validity and the study yield credible results was important in this study. According to Robinson (2014) validity is the degree to which an instrument can effectively perform its purpose without any modifications done on it. The instrument was validated using expert judgment of the supervisor and other colleagues. A simple English Language was used in the instrument and other copies of were translated to vernacular language of Tshivenda.

2.8 Reliability

Reliability is refers to the extent to which results are consistently accurate over time (Robinson, 2014). In this study, a test-retest was done to ensure reliability by administering the questionnaire at two different times to a neutral population but with the same characteristics. The test-retest study utilized a 10% (26) of the sample of men who are 40 years and above from Budeli Village who selected pieces of paper written No during the sampling procedure but did not form part of the actual study. The reliability of the study was ensured by checking the similarity of responses of the 10% sample of the respondents. Cronbach's alpha correlation coefficient which measures internal consistency ($0 \leq \alpha \geq 1.0$) was used to ascertain reliability of the instrument. The Cronbach's alpha of the research instrument was 0,79.

2.9 Pre-test

According to Kumar (2012), pre-test is a critical examination of the instrument that helps to test the validity and reliability of the research instrument. In this study, the pre-test utilized10% (26) of the sample of men who were 40 years and above from Budeli village who picked pieces of paper written No during the sampling procedure. The pre-test findings are presented in the final results but they were used to modify

the instrument. However, the pre-test was important for identifying errors, ambiguity, relevance and acceptability of the questionnaire.

2.10 Data collection procedure

In this study, primary data were collected using a self-administered questionnaire to collect data from participants. Considering the health and wellbeing of participants and adhering to Covid-19 regulations, the questionnaire was self-administered through sharing the Google Forms Link containing a questionnaire and a brief description of the purpose of the study together with the consent form. The Google Forms Link was sent via WhatsApp and email addresses for the participants to complete at a time convenient to them.

The permission to conduct the study in selected village was granted by the local headman. The researcher got access to the local headman through the assistance from local civic society with whom a discussion on the study was initially done. The community civic structure arranged a meeting with the traditional council for the presentation of the study proposal.

Upon obtaining permission to conduct the study from Headman, participants were recruited from Khoroni where the headman addresses the community on weekends. Other places where participants were recruited include stokvel gatherings where men gather during weekends and holidays to socialize, sport grounds and car wash businesses. Informed consent was signed by participants who were willing to partook in the study.

The researcher asked participants if they could read and write and if they had WhatsApp or email and whether they were comfortable using google forms. Those who could not read and write or did not have suitable device were provided with paper-based questionnaire and the researcher read the questions for them. Participants who had WhatsApp or email addresses and use Google forms were sent the Google Form Link via WhatsApp or email to complete at a time convenient to them.

2.11 Data Management and Analysis

Data analysis began with cleaning whereby incomplete questionnaires with incomplete information were discarded. Out of the 285 distributed questionnaires only

2 were discarded because they were incomplete. The data were then coded and captured into the statistical Package for Social Sciences (SPSS) version 25.0 for analysis. The results were presented using frequencies and tables. Cross tabulation, Chi square and Spearman's correlation test were also used test for association and effects size respectively at 0,5 level of significance.

2.12 Ethical Considerations

According to Babbie (2016), ethical considerations as measures are put in place to protect the rights of the participants and the institution where the study is done as well as to maintain the scientific integrity of a study. The following ethical measures were considered:

- **Institutional protocol**

The research proposal was presented to the Department of Public Health and the Higher Degrees Committee of the Faculty of Health Sciences at the University of Venda for quality evaluation. Upon approval, the proposal was submitted to the University of Venda Ethics Committee for ethical clearance evaluation. After approval was issued, the researcher then obtained permission to conduct the study from community leaders.

- **Permission to conduct the study**

The permission to conduct the study was granted by the local headman of Budeli village with the assistance of the community civic structures. The researcher consulted the community civic structure about the study before being introduced to the headman. The community civic structure arranged a meeting with the traditional council where the study proposal was presented. A permission request letter was addressed to the headman of Budeli Village who then agreed for the study to be conducted in his village (See Annexure C).

- **Informed Consent**

Participants were allowed to read an information leaflet informing them about the research process as indicated in the attached annexure (Annexure A) for informed consent. The information was further explained to participants to increase

understanding. Participants were requested to volunteer to participate without any coercive force or bribery. Participants were explained that they are free to withdraw from the study at any time.

- **Confidentiality**

Data were protected and are only accessible to the researcher and supervisors. Data collected from participants were always kept under secure conditions.

- **Anonymity**

Participants were assured that their participation remained anonymous and no real identification was required to participate in the study. During the analysis of data, codes were used to instead of real names. The right of the respondents to provide information based on anonymity was observed.

- **Protection of participants from any harm**

Protection from both physical and psychological harm was exercised with due diligence. To avoid physical harm, the interviews were conducted at an open space where the participants felt comfortable. The researcher also ensured that participants were protected from psychological harm by not asking personal questions to participants as well as ensuring that the information supplied was not going to be used other purposes outside this study. Considering the health and wellbeing of participants and adhering to Covid-19 regulations, the questionnaire was self-administered through sharing the Google Forms Linkcontaining a questionnaire and a brief description of the purpose of the study and the consent form. The Google Forms Link was sent via WhatsApp or email for the participants to complete at a time convenient to them.

2.14 Conclusion

This section outlined the research overview that was followed to achieve the research objectives. A quantitative research approach was employed and the steps taken in the carrying out of the research followed the cross-sectional descriptive design. The chapter highlighted the research methods and ethical principles that were used in this study.

REFERENCES LIST

Abbo, C. (2011). Profiles and outcome of traditional healing practices for severe mental illnesses in two districts of Eastern Uganda. *Global health action*, *4*(1), 7117.

Abraham, C. and Sheeran, P. (2016). The Health Belief Model. New York: Open University Press.

Adeloye, D., Harhay, M. O., Ayepola, O. O., Dos Santos, J. P., David, R. A., Ogunlana, O. O., ... & Rebbeck, T. R. (2019). Estimate of the incidence of bladder cancer in Africa: A systematic review and Bayesian meta-analysis. *International Journal of Urology*, *26*(1), 102-112.

Adibe, M. O., Aluh, D. O., Isah, A., & Anosike, C. (2017). Knowledge, attitudes and perceptions of prostate cancer among male staff of the University of Nigeria. *Asian Pacific journal of cancer prevention: APJCP*, *18*(7), 1961.

Ae-Ngibise, K., Cooper, S., Adiibokah, E., Akpalu, B., Lund, C., Doku, V., & Mhapp Research Programme Consortium. (2010). 'Whether you like it or not people with mental problems are going to go to them': a qualitative exploration into the widespread use of traditional and faith healers in the provision of mental health care in Ghana. *International review of psychiatry*, *22*(6), 558-567.

Alexis, O., & Worsley, A. (2018). An integrative review exploring black men of African and Caribbean backgrounds, their fears of prostate cancer and their attitudes towards screening. *Health Education Research*, *33*(2), 155-166.

Aluh, D. O., Anyachebelu, O. C., Azubuike, E. A., & Abdulmuminu, I. (2018). Knowledge, attitudes, and perception of prostate cancer among male outpatients of a tertiary care hospital in south-east Nigeria. *Journal of Applied Pharmaceutical Science*, *8*(11), 064-068.

American Cancer Society. (2014). Cancer Fact and Figures 2014. American Cancer Society, Atlanta, GA, USA.

Araújo, J. S., & Zago, M. M. F. (2019). Masculinities of prostate cancer survivors: a qualitative metasynthesis. *Revista brasileira de enfermagem*, *72*, 231-240.

Arnold-Reed, D. E., Hince, D. A., Bulsara, M. K., Ngo, H., Eaton, M., Wright, A. R., ... & Brett, T. D. (2008). Knowledge and attitudes of men about prostate cancer. *Medical Journal of Australia*, *189*(6), 312-314.

Babbie, E. R. (2020). *The practice of social research*. Cengage learning

Baobaid, Mohammed & Abdalqader, Mohammed & Ghazi, Hasanain & Kassim, Hesham & Abdalrazak, Haitham. (2020). The Study of Knowledge, Attitude and Practice of Prostate Cancer Prevention and Its Relationship With Socio-demographic Characteristics Among Men at Ppr Lembah Subang 1, Selangor, Malaysia. Malaysian Journal of Medicine and Health Sciences. 16. 46-51.

Bowie, J. V., Bell, C. N., Ewing, A., Kinlock, B., Ezema, A., Thorpe Jr, R. J., & LaVeist, T. A. (2017). Religious coping and types and sources of information used in making prostate cancer treatment decisions. *American journal of men's health*, *11*(4), 1237-1246.

Bracken, B. A., Geisinger, K. F., & American Psychological Association. (2013). *APA handbook of testing and assessment in psychology, Vol. 2, Testing and assessment in clinical and counseling psychology*. Washington, D.C: American Psychological Association.

Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians*, *68*(6), 394-424.

Brink, H.I., Van Der Walt, C. and Van Rensberg, G. (2017). Fundamentals of Research Methodology for Healthcare Professionals (4th Ed.). Cape Town: Juta.

Calys-Tagoe, B. N., Yarney, J., Kenu, E., Owusu Amanhyia, N. A. K., Enchill, E., & Obeng, I. (2014). Profile of cancer patients' seen at Korle Bu teaching hospital in Ghana (A cancer registry review). *BMC research notes*, *7*(1), 1-6.

Cassim, N., Ahmad, A., Wadee, R., Rebbeck, T. R., Glencross, D. K., & George, J. A. (2021). Prostate cancer age-standardised incidence increase between 2006 and 2016 in Gauteng Province, South Africa: A laboratory data-based analysis. *South African Medical Journal*, *111*(1), 26-32.

Chokunonga, E., Borok, M. Z., Chirenje, Z. M., Nyakabau, A. M., & Parkin, D. M. (2013). Trends in the incidence of cancer in the black population of Harare, Zimbabwe 1991–2010. *International journal of cancer*, *133*(3), 721-729.

Conner, M., & Norman, P. (2021). Predicting long-term healthy eating behaviour: understanding the role of cognitive and affective attitudes. *Psychology & Health*, *36*(10), 1165-1181.

Coughlin, S. S. (2020). A review of social determinants of prostate cancer risk, stage, and survival. *Prostate international*, *8*(2), 49-54.

Cowman, S., Cowman, J. G., Almumin, A., Altailasan, F. A. F. M., & Weathers, E. (2021, June). Knowledge and Attitudes of Men in Bahrain Toward Prostate Cancer. In *Seminars in Oncology Nursing* (Vol. 37, No. 3, p. 151158). WB Saunders.

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. SAGE publications.

Creswell, W.J. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th Ed.). New York: SAGE Publications.

de-Graft Aikins, A., Boynton, P., & Atanga, L. L. (2010). Developing effective chronic disease interventions in Africa: insights from Ghana and Cameroon. *Globalization and health*, *6*(1), 1-15.

Dictionary, O. E., & Dictionaries, O. L. (2018). Science in Our Backyards. *Feminist Technosciences*, 202.

Ferlay, J., Colombet, M., Soerjomataram, I., Dyba, T., Randi, G., Bettio, M., ... & Bray, F. (2018). Cancer incidence and mortality patterns in Europe: Estimates for 40 countries and 25 major cancers in 2018. *European journal of cancer*, *103*, 356-387.

Gacci, M., Noale, M., Artibani, W., Bassi, P. F., Bertoni, F., Bracarda, S., ... & Maggi, S. (2017). Quality of life after prostate cancer diagnosis: data from the Pros-IT CNR. *European urology focus*, *3*(4), 321-324.

Gift, S., Nancy, K., & Victor, M. (2020). Assessment of knowledge, practice and attitude towards prostate cancer screening among male patients aged 40 years and above at Kitwe Teaching Hospital, Zambia. *African Journal of Urology*, *26*(1), 1-7.

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2008). *Health behavior and health education: theory, research, and practice*. John Wiley & Sons.

Hayes, V. M., & Bornman, M. R. (2018). Prostate cancer in Southern Africa: does Africa hold untapped potential to add value to the current understanding of a common disease?. *Journal of Global Oncology*, *4*.

Kaninjing, E., Lopez, I., Nguyen, J., Odedina, F., & Young, M. E. (2018). Prostate cancer screening perception, beliefs, and practices among men in Bamenda, Cameroon. *American Journal of Men's Health*, *12*(5), 1463-1472.

Karen, G. (2015). Health Behavior: Theory, Research and Practice. River, B. K. J., Wiswanath, K. (Kasisomajajule) (5th Ed.). San Fransisco. CA.

Korley, J. (2018). *Knowledge, Attitude and Practices about Prostate Cancer among Men in the Awutu Senya East Municipality* (Doctoral dissertation, University Of Ghana).

Le Roux, H. A., Urry, R. J., & Sartorius, B. (2015). Prostate Cancer at a regional hospital in South Africa: we are only seeing the tip of the iceberg: urology. *South African Journal of Surgery*, *53*(3-4), 1-6.

Liu, X., Yu, C., Bi, Y., & Zhang, Z. J. (2019). Trends and age-period-cohort effect on incidence and mortality of prostate cancer from 1990 to 2017 in China. *Public health*, *172*, 70-80.

Lojanapiwat, B., Lee, J. Y., Gang, Z., Kim, C. S., Fai, N. C., Hakim, L., ... & Akaza, H. (2019). Report of the third Asian Prostate Cancer study meeting. *Prostate international*, *7*(2), 60-67.

Loud, J. T., & Murphy, J. (2017, May). Cancer screening and early detection in the 21st century. In *Seminars in oncology nursing* (Vol. 33, No. 2, pp. 121-128). WB Saunders.

Mahmoud, N., Dawood, M., Huang, Q., Ng, J. P., Ren, F., Wong, V. K., & Efferth, T. (2022). Nimbolide inhibits 2D and 3D prostate cancer cells migration, affects microtubules and angiogenesis and suppresses B-RAF/p. ERK-mediated in vivo tumor growth. *Phytomedicine*, *94*, 153826.

Maladze, N. T. (2020). *Knowledge and attitudes towards prostate cancer screening among males at Dzingahe Village, Limpopo Province* (Doctoral dissertation).

Massyn, N., Day, C., Ndlovu, N., and Padayachee, T., (2020). *District health barometer*. Health Systems Trust.

Matowa, P. R., Gundidza, M., Gwanzura, L., & Nhachi, C. F. (2020). A survey of ethnomedicinal plants used to treat cancer by traditional medicine practitioners in Zimbabwe. *BMC Complementary Medicine and Therapies*, *20*(1), 1-13.

Mofolo, N., Betshu, O., Kenna, O., Koroma, S., Lebeko, T., Claassen, F. M., & Joubert, G. (2015). Knowledge of prostate cancer among males attending a urology clinic, a South African study. *Springerplus*, *4*(1), 1-6.

Morlando, M., Pelullo, C. P., & Di Giuseppe, G. (2017). Prostate cancer screening: Knowledge, attitudes and practices in a sample of men in Italy. A survey. *PloS one*, *12*(10), e0186332.

Mundell, N. L., Daly, R. M., Macpherson, H., & Fraser, S. F. (2017). Cognitive decline in prostate cancer patients undergoing ADT: a potential role for exercise training. *Endocrine-Related Cancer*, *24*(4), R145-R155.

Nakandi, H., Kirabo, M., Semugabo, C., Kittengo, A., Kitayimbwa, P., Kalungi, S., & Maena, J. (2013). Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. *African Journal of Urology*, *19*(4), 165-170.

Nakwafila, O. (2017). *Knowledge and attitudes towards prostate cancer screening amongst men in Oshana region, Namibia* (Doctoral dissertation, University of Namibia).

Nkoana, S., Sodi, T., Makgahlela, M., & Mokwena, J. (2022). Cancer survivorship: religion in meaning making and coping among a group of black prostate cancer patients in South Africa. *Journal of religion and health*, *61*(2), 1390-1400.

Nwagwu, S.A.J., Ibebuike, J.E. & Nwokike, G.I. (2020). Knowledge and attitude of men (50 years and above) about prostate cancer in Umugolo, Ehime Mbano L.G.A Imo state. *Nurse Care Open Acces Journal*. 7(2):39-43. DOI: 10.15406/ncoaj.2020.07.00215

O'Brien, K. S., Soliman, A. S., Annan, K., Lartey, R. N., Awuah, B., & Merajver, S. D. (2012). Traditional herbalists and cancer management in Kumasi, Ghana. *Journal of Cancer Education*, *27*(3), 573-579.

Oladimeji, O., Bidemi, Y. O., Olufisayo, J. A. Y., & Sola, A. O. (2010). Prostate cancer awareness, knowledge, and screening practices among older men in Oyo State, Nigeria. *International Quarterly of Community Health Education*, *30*(3), 271-286.

Olaoye, T., Baderinwa, K., & Oyerinde, O. (2022). Knowledge, Perception and Screening Practices Regarding Prostate Cancer Among Men in Oshodi Local Government Area, Lagos State, Nigeria. *ELECTR J MED DENT STUD*, *12*(1).

Owens, O. L., Jackson, D. D., Thomas, T. L., Friedman, D. B., & Hébert, J. R. (2015). Prostate Cancer Knowledge and Decision Making Among African-American Men and Women in the South-eastern United States. *International journal of men's health*, *14*(1), 55–70.

Oystacher, T., Blasco, D., He, E., Huang, D., Schear, R., McGoldrick, D., ... & Yang, L. H. (2018). Understanding stigma as a barrier to accessing cancer treatment in South Africa: implications for public health campaigns. *Pan African Medical Journal*, *29*(1), 1-12.

Raosoft (2004) Raosoft Sample Size Calculator. Raosoft, Inc., Seattle. http://www.raosoft.com/samplesize.html

Robinson, O. C. (2014). Sampling in interview based qualitative research: A theoretical and practical guide. Qualitative Research in Psychology.,11,25-41. https://doi.org/10.1080/14780887.2013.801543.

Ruba, S. T., Saima, G., and Safia, B., Waquaraddia, A and Fareeha, S. S. (2016). Use of the health belief model for assessment of public health knowledge and household preventive in Karachi, Pakistan, a Dengue – Endemic City. Ploc neglected Tropical Disease. 10 (11): e0005129.

Saad-Hussein, A., Ibrahim, H., & Soliman, F. (2020). Impact of Long-Term use of Mobile Phones on the Prostate in Human users.

Sak, K. (2014). Cytotoxicity of dietary flavonoids on different human cancer types. *Pharmacognosy reviews*, *8*(16), 122.

Salmon, C., Song, L., Muir, K., Pashayan, N., Dunning, A. M., Batra, J., ... & Parent, M. E. (2021). Marital status and prostate cancer incidence: a pooled analysis of 12

case–control studies from the PRACTICAL consortium. *European journal of epidemiology*, *36*(9), 913-925.

Siegel, R., Ma, J., Zou, Z., & Jemal, A. (2014). Cancer statistics, 2014. *CA: a cancer journal for clinicians*, *64*(1), 9-29.

Sloan, D. J., Dedicoat, M. J., & Lalloo, D. G. (2007). Healthcare-seeking behaviour and use of traditional healers after snakebite in Hlabisa sub-district, KwaZulu Natal. *Tropical Medicine & International Health*, *12*(11), 1386-1390.

Stafford, M. C., Willoughby, C. E., Walsh, C. P., & McKenna, D. J. (2022). Prognostic value of miR-21 for prostate cancer: a systematic review and meta-analysis. *Bioscience reports*, *42*(1), BSR20211972.

Tilki, D., Chen, M. H., Wu, J., Huland, H., Graefen, M., Wiegel, T., ... & D'Amico, A. V. (2021). Adjuvant versus early salvage radiation therapy for men at high risk for recurrence following radical prostatectomy for prostate cancer and the risk of death. *Journal of Clinical Oncology*, *39*(20), 2284-2293.

Tindall, E. A., Monare, L. R., Petersen, D. C., Van Zyl, S., Hardie, R. A., Segone, A. M., ... & Hayes, V. M. (2014). Clinical presentation of prostate cancer in black South Africans. *The Prostate*, *74*(8), 880-89.

Venter, M., Venter, C., & Botha, K. (2012). Cancer treatment in South Africa: A narrative literature review. *Journal of Psychology in Africa*, *22*(3), 459-466.

Wang, X., Fang, G., & Pang, Y. (2018). Chinese medicines in the treatment of prostate cancer: From formulas to extracts and compounds. *Nutrients*, *10*(3), 283.
World Health Organization. (2020). WHO report on cancer: setting priorities, investing wisely and providing care for all.

Yeboah-Asiamah, B., Yirenya-Tawiah, D., Baafi, D., & Ackumey, M. M. (2017). Perceptions and knowledge about prostate cancer and attitudes towards prostate

cancer screening among male teachers in the Sunyani Municipality, Ghana. *African Journal of Urology*, *23*(4).

Zhang, K., Bangma, C. H., & Roobol, M. J. (2017). Prostate cancer screening in Europe and Asia. *Asian journal of urology*, *4*(2), 86-95.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This section consists of two manuscripts. The first manuscript is a scoping review approved by the journal's editorial advisory board and is now under review. The second manuscript is a research article that has been submitted and awaiting approval. Both the manuscripts followed the appropriate journal parameters, and the guidelines websites have been attached.

2.2 MANUSCRIPT 1: A SCOPING REVIEW OF KNOWLEDGE, ATTITUDES AND PRACTICES OF MEN REGARDING PROSTATE CANCER SCREENING

Submitted to *The Open Public Health Journal* following the **Journal Author Guidelines found at: https://openpublichealthjournal.com/manuscript-preparation.php**

Chavhalala, D.M[1], Mashau, N.S[1], Netshandama, V.O[2]

[1]Department of Public Health, Faculty of Health Sciences, University of Venda, *University of Venda, 1 University Road, Thohoyandou, 0950, South Africa; ORCID number: https://orcid.org/0000-0001-9054-2003, Email Address: dmmchavi@gmail.com*

[1]Department of Public Health, Faculty of Health Sciences, University of Venda, Thohoyandou, South Africa, ORCID number: https://orcid.org/0000-0001-7104-6768, Email Address: ntsieni.mashau@univen.ac.za

[2]Directorate of Community Engagement, Orcid number: https://orcid.org/0000-0002-2466-6099, Email Address: vhonani. netshandama@univen.ac.za

Corresponding Author: Dakalo Mathews Chavhalala, E-mail: *dmmchavi@gmail.com*, Tel: 015 962 8892, mobile: 067 196 5560. Postal address: P/Bag X5050, University of Venda, Thohoyandou, 0950. Department of Public Health, Faculty of Health Sciences, University of Venda, South Africa

Abstract

Background: The growth in prostate cancer related fatalities is worrisome. The prevalence of prostate cancer is adequately documented, but attempts to understand the knowledge, attitudes and practices of men regarding prostate cancer remains acute. Therefore, we mapped evidence on men's knowledge, attitude, and practice regarding Prostate Cancer screening.

Methods: We conducted a scoping review based on Arksey and O'Malley framework as a guide. The framework outlines a rigorous way of transparency enabling replication of the search strategy and increasing the reliability of the study findings. The online Ebscohost and Google Scholar databases were searched for relevant studies on Knowledge, attitude and practice of men regarding prostate cancer. Studies included in the review were studies from Africa and other countries published from 2010 to 2021. The articles were screened at the abstract and full-text screening guided by inclusion and exclusion criteria. All relevant data were extracted, and a thematic analysis conducted. The themes were collated, and a narrative summary of the findings reported.

Results: Of the 110 potentially eligible articles identified from 3013 only 20 met the inclusion criteria and were included for data extraction. These included studies that were conducted from global countries of which 5 were conducted in Nigeria; two each in Ethiopia, Ghana, Cameroon, and Uganda; and one each in Kenya, South Africa and Malaysia and Sudan. Of the 20 included studies, 18 studies reported incidence of Prostate cancer; two on only knowledge; one on practice only. The study findings suggest varying knowledge, attitude and practice of men regarding prostate cancer screening. The study findings also suggest that prostate cancer screening practice is still a challenge.

Conclusion: There is a paucity of published literature on knowledge, attitude, and practice of men regarding prostate cancer. Hence, this study recommends further studies to identify contextual challenges and provide evidence-based solutions to improve men's knowledge, attitudes, and practice regarding prostate cancer.

Keywords: prostate cancer, screening, knowledge, attitude

1. INTRODUCTION

Over the years, prostate cancer has become a public health burden claiming lives of men in many parts of the world. In most developed countries such as New Zealand, Australia and America, the disease account for about 70% of men's morbidity [1]. The ACS (2016) reported that about 30% of men diagnosed prostate cancer in 2014 died during the same year in the United States [2].

WHO [3] report shows that of 96 million deaths that occurred during 2014 70% were caused by PCa. This global statistic is worrisome considering that access to treatment is currently scarce. History demonstrates that the prevalence of PCa is adequately documented, but attempts to understand the knowledge, attitudes and practices of men regarding PCa screening remain important (Hassanipour-Azgomi et al., 2016). Other studies indicate that PCa largely affects black men compared to their white counterparts due to lack of knowledge about its existence as well as limited participation in screening activities [4, 6]. For example, in Thailand where most of the male morbidity is caused by PCa and when such disease prevails, they seek traditional treatment before they go for screening [5]. This shows that men are often attacked by this disease without proper knowledge which makes them to prolong seeking for clinical treatment.

Knowledge about PCa is crucial even before the patient falls sick. This is so because having knowledge about the diseases helps to identify the symptoms earlier and it motivates men to regularly seek for PCa screening sessions (Ferlay *et al*, 2018). However, Aluh *et al*. [6] argue that the increasing level of awareness of the prostatic disease is far from achieving its total control as the number of new infections is on a rise. Although there are efforts to convince men to take cognizance of the disease through awareness campaigns, there is doubt that increasing the level of knowledge about PCa can positively contribute to the increased screening [7].

2. METHODOLOGY

A scoping review methodology was used to understand the knowledge, attitude and practices of men regarding prostate cancer. As postulated by Ghzinoory et al [8], a scoping review method provides ample opportunity to interrogate various literature sources to clarify the research problem. Using a scoping review is an easy but rigorous

way of reviewing literature and it is favoured for being robust [9]. In addition, a scoping review methodology is a fast and reliable method of comparing and contrasting literature sources that focus on the topic under review [9]. In this review, the major focus is on describing the existing concepts in the discourse of prostate cancer. This study was carried out in 2022 and summarises and maps studies of Knowledge, Attitudes and Practice (KAP) of men regarding prostate cancer from 2010 to 2022. This period of years was chosen because prostate cancer awareness became widespread from 2010 onwards. However, this study does not exclude the contribution of ground-breaking studies which examined the knowledge, attitudes and practices of men regarding prostate cancer screening prior to the marked period under study. Our aim was to determine the various approached, challenges and successes faced by different countries. Thus, this scoping review sought to clarify the question of how the knowledge, attitudes, and practices of men towards prostate cancer are studied. This study considers the health dynamics that have occurred due to COVID 19 which started in 2020. Certainly, the knowledge and attitude towards the disease of any form have changed after the advent of COVID 19 and this is likely to influence the manner in which men seek knowledge and change their attitudes and practices regarding prostate cancer screening.

2.1 Search Strategy

The PRISMA search strategy was employed in this study. Accordingly, the flow diagram as indicated in figure 1 outlines the various stages of search selection that is followed during a scoping review literature search. The search strategy employed in this study involved a two stage search approach on online databases such as Ebscohost and Google Scholar. The first stage search involved the search for the topic and keywords: “prostate cancer” or “knowledge” or “attitude” and “practices” and “health” or “screening”. The secondary stage involved the use extension works for geographic location such as South Africa, Sub Saharan Africa, India and Europe. Both the primary and secondary stages were guided by the main topic which focused on “Knowledge, attitudes and practices of men towards prostate cancer”. In addition, the search was set to select abstracts that contained the information needed in the study. Multiple results were downloaded to added specific file wherein further selection and grouping was performed. All duplicate files were discarded. For example, the articles were grouped according to keywords and geographic location.

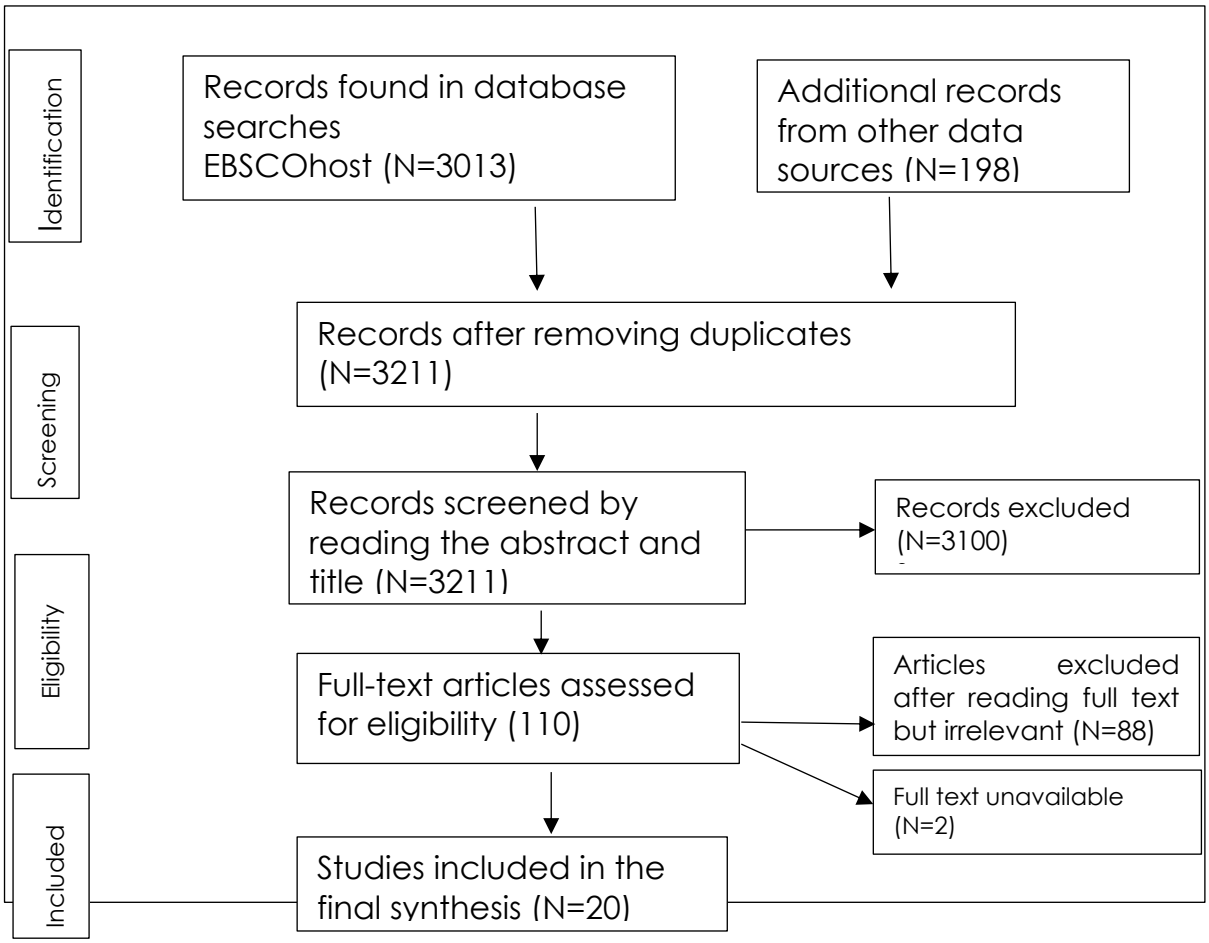


Figure 1: Flowchart of the literature search and screening based on the PRISMA 2009 Flow Diagram

2.2 Inclusion criteria for articles

All articles that contained information related to knowledge, attitude and practices of men regarding prostate cancer were included in the study. Some articles that did not contain the exact topic but containing vital information such as key statistics were also included in the study. During the search, there were some abstracts which were relevant but having incomplete information while other articles which did not contain key information were discarded. About 5022 articles were available on the search results but 3211 were excluded because they were duplicated. Some articles which also studied the KAP on women and cervical cancer were excluded. This also applied to other types of cancers which affect both men and women and children.

2.3 Data extraction

The process of extracting data began during the search were in only relevant articles were downloaded. The destination folder files were sorted according to each key word and country of publication of the article. Sorting articles was important for determining the differences, challenges and similarities between high income and low income countries. A checklist of articles was also developed to assist with cross-checking the properties of the data being downloaded to avoid duplicating articles. Other important extraction and sorting criteria included, the year of publication, methodologies used, and findings. Each article was analysed in a table illustrating the topic, year of publication and country, methodology and the findings.

3. RESULTS

Over the past decades, prostate cancer has grown to become a topical public health issue. The statistics of prostate cancer-related fatalities are ever-increasing. Every country is taking initiatives to orient people about the prevalence of the diseases. However, instilling a sense of urgency in disseminating information about prostate cancer enhances the knowledge, changes attitudes and improves practices of men on prostate cancer screening. The research findings presented in this scoping review helps to clarify issues surrounding prostate cancer screening and its epidemiology in various countries.

3.1 Overview of epidemiology of prostate cancer

The burden of PCa varies according to geographical areas together with ethnicity [11]. However, there are spatial differences regarding the incidences of prostate cancer. CRA (2016) report show that the highest incidences of prostate cancer are concentrated in economically advanced countries. GLOBASCAN [12]; [13] indicate that Australia hosts the highest concentration of prostate cancer wherein 111.6 per 100 000 are diagnosed annually. Moreover, the distribution of prostate cancer cases presents a greater variation but the Southern African is reportedly having higher incidences of prostate cancer compared to its Northern counterparts. However, countries in the north have long been implementing screening [14].

The CLOBESCAN [12] shows that PCa was the major men's killer in 2018. However, the variation in the distribution of incidences of prostate cancer presented by the Age-

Standardised Incidence Rate (ASIR) show that countries such as Butan have low incidences as low as 1.0 per 100 000 [12]. Bary et al. [15] further show that other countries which have low prostate cancer are also in Asia and other small islands. A study carried in America show that most of the prostate cancer cases were severe and frequent among men of African descent [15]. It can be argued that the variation revealed by the available statistics does not clearly indicate the intensity of screening activities. The foregoing global landscape regarding PCa is equally worrisome and it portrays salient efforts to find better solutions for its treatment. However, huge gaps exist in literature on the role of traditional healers on the treatment of PCa. Certainly there is no culture without patrons and one of the important role players in the health domain are traditional healers whose practice is seldom scrutinized. This is against global partial reporting of dualistic prescriptions taken by PCa patients.

It is further argued that efforts to improve men' s awareness to PCa increase the chance of seeking early treatment but there is stigma and fear of the effects of screening and after-treatment effects such as infertility. Such risk perceptions negatively influence the attitude of men towards PCa [18]. Once negative perceptions about PCa are entrenched within one's mind, little effort are made to seek early treatment. Besides, the majority of men who are affected by PCa assume bad habits such as over smoking. Such practices increase the risk of men contracting PCa. In addition, men's practices towards PCa are quite secretive even though one is suffering from the disease.

In sub-Saharan Africa (SSA), PCa is well-known for its denigrating effects on men. Several fatalities related to PCa have been relatively dominant in Cameroon, Nigeria and Ghana [19]. Besides, many countries in Africa host a diversity of tribes and cultures that are highly inclined to their communities in relation to life, including the use of traditional medicine to overcome their health problems [20]. In the realm of health, traditional practices bear a significant impact on awareness campaigns for PCa [20].

3.2 Incidence of Prostate Cancer in South Africa

A survey carried out in 2017 indicates that about 1 in 16 men in South Africa have PCa [21]. This translates to about 6% of men in the country having this complex disease. In South Africa, the use of traditional medicine on the treatment of PCa is largely

guided by traditional Healers and this has limitations to the dissemination knowledge about PCa. Ly *et al*. [22] argues that in instances were clinical measures fail, individuals fall back on Traditional Healers for treatment. The dependence on traditional medicine blurs the importance of screening and other practices that can be used to abate the increasing numbers of PCa cases in South Africa. Bad living habits such as smoking, lack of regular exercise and lack of awareness on men's health contribute to high prevalence of PCa [23]. Like many other African countries, there is a lack of a clear relationship between PCa and the level of education.

Higher levels of education is expected to increase one's knowledge, positive attitude and good practices to protect against PCa but actual findings in previous studies present mixed results [24]. Like in any other country in Africa and beyond, the use of Traditional healers as first-line healthcare providers as soon as a disease is developed may be the only possibility of care in certain areas suffering from poor medical services [23]. This type of behaviour from cancer patients and the lack of a good medical system are very typical in African populations.

3.3 Knowledge and Attitudes of Men Towards Prostate Cancer

The underlying assumption regarding the knowledge of men regarding prostate cancer is that being better informed about the disease influences a positive attitude. Aluh *et al*. [6] reiterate that negative attitudes regarding PCa often result in avoidance of screening. Whereas possessing knowledge about the negative effects of PCa shapes the foundations of attitude and the appetite to learn about it [19]. Indeed, knowledge and attitudes about PCa cannot be separated because men seem to possess similar attributes towards the disease.

In a study carried out assessing the knowledge and attitudes of men towards prostate cancer in Malaysia, results indicate that the lack of knowledge about PCa and the inclined negative attitude were associated with socio-demographic distribution of respondents [25]. However, there were other risk factors, such as age, lack of awareness and family history which also contribute to vulnerability of men to catch cancer. In different study, Aluh *et al*. [6] report a significant distinction between older and young men on their levels of knowledge and attitude towards PCa. It indicated that the young men of ages 18-30 had a better incidence of understanding PCa because they frequently find the information on social media while older men who

seldom follow social media deprive themsleves of such awarenesss opportunity. This raises concerns because PCa is reportedly more prevalent in older than young men.

The finding that older men possess little knowledge about PCa compared to younger ones is challenged by Adibe *et al*. [26] who demostrated that older University male staff possed better knowledge about PCa than younger male staff. The erstwhile argument holds bacause Nakandi *et al*. [27] concurs that some older men may possess a better level of knowledge of PCa compared to younger generation. However, this may only holds at instistituional level due to experience, exposure and education of older men unlike in rural communities wherein the occurance of PCa is first blamed as mascular weakness rather than being regarded as clinical condition which needs urgent treatment.

Zheng *et al.* [28] further reported that high level of knowledge is mostly found among men at high risk, especially those with family history of PCa. This explains why other Asian countries like Japan, China, Hong Kong, India and Singapore set up a continental body that focuses on finding solutions and sustainable treatment of prostate cancer including raising awareness about the disease [5]. One way of finding sustainable solutions is to involve the potential patients who happen to be men by increasing their knowledge about PCa.

Although discussions regarding the role of knowledge, attitudes, and screening practices in PCa prevention and control is gaining traction, there has not been commensurate increase in research on knowledge, positive attitude, and perception among men [29]. It is suggested that increasing knowledge about PCa is important because it reduces the burden of incurring high cost of treating cancer in both private and public health institutions. Adeloye *et al*. [30] implores public health officials to develop or set up information centres for men to regularly screen for PCa. This is so because some men in the public service were found to be highly knowlegeable of PCa and they are likely to have positive attitudes towards screening.

3.4 Attitude Towards Early Screening and Detection

Regular screening for prostate cancer is an important intervention that should be assist in reducing the incidences of this disease. However, it seems the low attitude of men towards prostate cancer screening is associated with lack of awareness campaigns

[28, 6]. The findings reveal having positive attitude towards cancers can be related to the reduction of deaths caused by prostate cancer screening in the asymptomatic stages and early treatments. Loyd and Mupphy [31] argue that a negative attitude of men towards prostate cancer screening delays diagnosis and early treatment of the disease. It is further argued that undergoing through prostate cancer screening at an earlier stage improves successful treatment [11]. This so because treatment of PCa is most effective before other symptoms are detected.

According to ACS [2] reporting early detection and treatment of PCa contribute to having a 94% survival rate better as compared to 30% when diagnosed in the advanced stages. Regular screening is an important apsect and influences a positive attitude regarding the disease [28]. The American Cancer Society [2] recommends that men over the age of 50 years should undergo either Prostate Specific Antigen (PSA) or Digital Rectal Examination (DRE), prostate screening every year. Despite having clearly laid out guidelines, Korley [11] argues that there seems to be some barriers limiting individual decisions for testing for prostate cancer.

Calys-Tangoe *et al*. [32] argue that most African countries are not prepared to fight PCa because the limited infrastructure facilities contribute to patient co-morbidity, lack of education, physician inability to remember, and patient's inability to visit the clinic. Hence, the lack of facilities for screening forces men to have negative attitude toward early screening for PCa (Maladze *et al*., 2020). Zhang *et al*. [28] notes that attitudes of men towards early detection of PCa varies across the world but the Europe seem to have a better concentration of positive attitude towards PCa. Oladimeji *et al*. [33] argue that African countries lack the facilities and the level of attitude towards PCa screening is quite minimal. Other factors which influence positive attitudes toward PCa screening have been found to be associated with high level of education, age, income, awareness of the availability of the test, and the occupation of men [28].

In addition to the above factors, the embedded cultural beliefs play a critical role in shaping the attitude of men towards PCa. Mirone *et al*. [18] castigate cultural underpinnings which discourage men from seeking medical attention hence they are infected, instead they choose traditional ways. This was also reported that Thai men pride themselves in the green tea, ginger, garlic and other roots which are believed to be helpful healing in any complication which attack men especially the reproductive

segment [19]. Cultural barriers are also present in Africa even though a slow change of attitude is being realised as people acquire more knowledge and move to different areas [40].

3.5 Traditional Health Practitioners and Prostate Cancer Treatment

The traditional healing domain is partially recognized within small circles of literature focusing much on South America, Asia and Africa. Lojonapiwat *et al*. [5] argue traditional healers possess ample knowledge about complex diseases like PCa and their practices have been quite useful for a while in various pockets of Thailand. Araujo and Zago [17] indicate the efficacy of traditional healers and traditional medicine in Brazil. However, there are certain considerations that should be observed when addressing prostate cancer because it is not easily detected unlike other diseases [18].

Despite considerable efforts to understand the use of traditional medicine to cure prostate cancer, there is no known traditional screening across various races in and outside Africa [33]. Yet emerging evidence suggests some considerable reliance on traditional medicine for treatment of PCa in Northern America [34]. This could be as a result of the ancestral relationships that exist between African American and black Africans in North-western countries of Africa.

Little is known about the epidemiology of PCa among men in Sub-Saharan Africa (SSA) [41]. Moreover, it has been argued that men in most African countries are susceptible to prostate cancer compared their western counterparts [35]. The International Agency for Research on Cancer (IARC) [35] reiterate that PCa is a growing problem in Africa with approximately 28,006 deaths from PCa in 2010, and approximately 57,048 deaths in 2030. This means that the incidence of prostate cancer cases will continue to rise. It is therefore important to find sustainable solutions towards the treatment and screening of prostate cancer among African men [12].

While screening of prostate cancer is increasingly getting appreciation dissenting into African countries, there is need to change the traditional practices which often does not cover the screening process. Calys-Tangoe *et al*. [32] argue that there are notable similarities in the incidences of prostate cancer in West Africa but the differences existed in the use of traditional medicines.

Recently there has been a shift from traditional medicine to clinical therapy. However, Benedict *et al*. [44] argues that the traditional medicine is still used as a best alternative were clinical therapy seems to fail, or other barriers to it exist. In some instances, people tend to sue both traditional medicine and clinical therapy concurrently [33]. Communities which have a high appreciation of clinical therapy have long disused the traditional medicine.

In countries like Ghana, South Africa and Zimbabwe, traditional medicine is still under the custody of traditional healers who are known to have spiritual powers to identify and administer the medicine. However, all there is no screening for early diagnosis. This challenge has further worsened the paucity of knowledge regarding prostate cancer because prostate cancer is normally associated with the works of the evils spirits. In addition, the attitude and practices of men regarding prostate cancer are indeterminable under situations of uncertainty which are associated with the traditional practices.

3.6 DISCUSSION

In Africa, PCa treatment is more inclined towards traditional methods especially in rural communities [38]. de-Graft Aikins, Unwin, Agyemang, *et al.* [37] argue that traditional healing is also prevalent among the Bapedi tribe and its efficacy in dealing with various ailments including psychological problems and cancers is also present. Moreover the surge in prostate cancer among black is testament to the inherent weaknesses of the African system particularly the lack screening [35]. Men are known to be strong and naturally resistant to many disease infections but, such generalisation has vast contributed to underrepresentation of men related diseases in healthcare systems. Musalli et al [42] argue that another limitation of traditional methods is the lack of publicity which again limits dissemination of knowledge. Thus the spread of knowledge regarding prostate cancer is limited and this also dampens the health seeking behaviour among men.

Baraneti et al [42] notes that the health status of men is symbol of strength and esteem in many rural communities. The embedded cultural beliefs among men inhibit then from acquiring knowledge about life threatening diseases such as prostate cancer. Hence their attitude regarding prostate cancer is usually negative since such unknown diseases are often associated with evil spirits.

Although men undergo certain physical health training in ceremonies such as male circumcision, there has been no known further health awareness program for elder men. This implies that any form of silent disease such as prostate cancer that affect men after marriage come unnoticed hence the delay to seek treatment. The absence of a knowledge coupled with a negative attitude regarding prostate cancer result in bad practices. This is so because the lack of traditional or scientific knowledge about the disease in rural communities implies that nothing is done to prevent it [38].

3.7 Conclusion

This review showed that knowledge and attitudes of men above 40 years of age vary due to many factors. The level of education and employment status are associated with high level of knowledge of PCa and the attitude towards screening is likely to be positive. The level of social status and age are seemingly contradicting with most of the studies point that young men have more knowledge of PCa compared to older while some say the opposite. However, cultural beliefs were found to be a major barrier towards acquisition of knowledge of PCa and the attitude of men especially those in African countries where culture plays a key role in health seeking behaviour of men. Traditional methods of treating PCa delay the screening process as clinical treatment is regarded as the last resort of assistance. It was found that most African countries lack appropriate facilities ranging from infrastructure, and human resource expertise to effectively increase the level of knowledge of men about PCa. Therefore, national government should deploy appropriate resources towards awareness raising, free screening and education of men.

ABBREVIATIONS

PCa: Prostate Cancer

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

A scoping study uses existing literature, therefore ethical approval or consent of participation was not applicable.

CONSENT OF PUBLICATION

Not applicable

AVAILABILITY OF DATA AND MATERIALS

The data supporting the conclusion of this paper are available through the detailed reference list. No original datasets are present since this is a review of the existing literature.

COMPETING INTEREST

The authors declare that they have no competing interests.

FUNDING

The study was funded not funded.

AUTHORS' CONTRIBUTIONS

DMC a Master of Public Health (MPH) student contributed in conceptualizing, designing, abstract and full article screening, quality assessment of the included studies, data extraction process as well as synthesis of data and writing the manuscript. NSM and VON are the supervisors and have contributed through guiding the MPH student in the conceptualisation and preparation of the manuscript. All authors read and approved the final manuscript.

ACKNOWLEDGEMENT

We would like to express our gratitude to Department of Public Health, university of Venda, for making available the necessary resources for completion of this research

4. REFERENCES

1. Owens OL, Jackson DD, Thomas TL, Friedman DB, Hébert JR. Prostate Cancer Knowledge and Decision Making Among African-American Men and Women in the Southeastern United States. *Int J Mens Health*. 2015;14(1):55-70.
2. American Cancer Society, *Cancer Facts & Figures 2014.*
3. World Health Organization. World health statistics overview 2019: monitoring health for the SDGs, sustainable development goals. World Health Organization; 2019.

4. Alexis O, Worsley A. An integrative review exploring black men of African and Caribbean backgrounds, their fears of prostate cancer and their attitudes towards screening. Health Educ Res. 2018; doi: 10.1093/her/cyy001.

5. Lojanapiwat B, Lee JY, Gang Z, Kim C-S, Fai NC, Hakim L et al. Report of the third Asian Prostate Cancer study meeting. Prostate International. 2019; doi.org/10.1016/j.prnil.2018.06.001

6. Aluh, DO, Anyachebelu, OC, Azubuike E, Abdulmuminu, I. Knowledge, attitudes, and perception of prostate cancer among male outpatients of a tertiary care hospital in south-east Nigeria. Journal of Applied Pharmaceutical Science. 2018; 64-68.

7. Ojewola RW, Oridota ES, Balogun OS, Ogundare EO, Alabi TO, Banjo OO, Laoye A, Adetunmbi B, Adebayo BO, Oluyombo R. Knowledge, attitudes and screening practices regarding prostatic diseases among men older than 40

years: a population-based study in Southwest Nigeria. Pan Afr Med J. 2017; doi: 10.11604/pamj.2017.27.151.10605.

8. Ghazinoory S, Majidi B, Nasri S. Correction to: Differences between health technology assessment topics in high- and middle-income countries: a scoping review. *Arch Public Health*. 2022; doi.org/10.1186/s13690-022-00808-3.

9. Dijkers M. What is a Scoping Review? KT Update. 2015. http://ktdrr.org/products/update/v4n1/index.html. Accessed 15 April 2022.

10. Munn Z, Peters MDJ, Stern C. *et al.* Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med Res Methodol*. 2018; doi.org/10.1186/s12874-018-0611-x

11. Korley J. Knowledge, attitude and perceptions about prostate cancer amomg men in the Awatu Senya East Municipality. 2018. Masters of public health degree. University of Ghana.

12. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer. 2015; doi: 10.1002/ijc.29210.

13. Le Roux HA, Urry RJ, Sartorius B, Aldous C. Prostate Cancer at a regional hospital in South Africa: we are only seeing the tip of the iceberg. S Afr J Surg. 2015; 53(3 and 4):57-62.

14. Tindall EA, Monare LR, Petersen DC, van Zyl S, Hardie RA, Segone AM, Venter PA, Bornman MS, Hayes VM. Clinical presentation of prostate cancer in black South Africans. Prostate. 2014; 74(8):880-91. doi: 10.1002/pros.22806.

15. Cassim N, Ahmad A, Wadee R, Rebbeck T, Glencross D, George J. Prostate cancer age-standardised incidence increase between 2006 and 2016 in

Gauteng Province, South Africa: A laboratory data-based analysis. *South African Medical Journal. 2021; 111*(1), 26-32. doi:10.7196/SAMJ.2020.v111i1.14850.

16. Cassell A, Yunusa B, Jalloh M, Mbodji M, Diallo A, Ndoye, M, Kouka S, Labou I, Niang L, Gueye S. A Review of Localized Prostate Cancer: An African Perspective. *World Journal Of Oncology. 2021; 10*(4-5), 162-168.

17. Araújo JS, Zago MMF. Masculinities of prostate cancer survivors: a qualitative metasynthesis. Rev Bras Enferm. 2019; 72(1):231-240. doi: 10.1590/0034-7167-2017-0730.

18. Mirone V, et al. Current benign prostatic hyperplasia treatment: impact on sexual function and management of related sexual adverse events. *Int J Clin Pract.* 2011; 65:1005–1013. doi: 10.1111/j.1742-1241.2011.02731.x.

19. Kaninjing E, Lopez I, Nguyen J, Odedina F, Young ME. Prostate Cancer Screening Perception, Beliefs, and Practices Among Men in Bamenda, Cameroon. Am J Mens Health. 2018; 12(5):1463-1472. doi: 10.1177/1557988318768596.

20. Cowman M, Holleran L, Lonergan E, O'Connor K, Birchwood M, Donohoe G. Cognitive Predictors of Social and Occupational Functioning in Early Psychosis: A Systematic Review and Meta-analysis of Cross-Sectional and Longitudinal Data. Schizophr Bull. 20210; 47(5):1243-1253. doi: 10.1093/schbul/sbab033.

21. (Stats SA, 2019). Community Survey.

22. Ly C, Greb AC, Cameron LP, Wong, JM, Barragan EV, Wilson PC, Burbach KF, Soltanzadeh Zarandi S, Sood A, Paddy MR, Duim WC, Dennis MY, McAllister AK, Ori-McKenney KM, Gray JA, Olson DE. Psychedelics Promote Structural and Functional Neural Plasticity. *Cell reports*. 2018; *23*(11). 3170–3182. doi.org/10.1016/j.celrep.2018.05.022

23. Gift S, Nancy K, Victor M. Assessment of knowledge, practice and attitude towards prostate cancer screening among male patients aged 40 years and above at Kitwe Teaching Hospital, Zambia. *Afr J Urol.* 2020; doi: 10.1186/s12301-020-00067-0.
24. Matowa PR, Gundidza M, Gwanzura L, Nhachi CFB. A survey of ethnomedicinal plants used to treat cancer by traditional medicine practitioners in Zimbabwe. BMC Complement Med Ther. 2020; 20(1):278. doi: 10.1186/s12906-020-03046-8.
25. Baobaid FM, Abdalqader MA, Ghazi HA, Sheb H, Abdalrazak HA. The Study of Knowledge, Attitude and Practice of Prostate Cancer Prevention and Its Relationship With Socio-demographic Characteristics Among Men at Ppr Lembah Subang 1, Selangor, Malaysia. *Malaysian Journal of Medicine and Health Sciences*. 2020; 16(SUPP7): 46-51.
26. Adibe MO, Aluh DO, Isah A, Anosike C. Knowledge, Attitudes and Perceptions of Prostate Cancer among Male Staff of the University of Nigeria. Asian Pac J Cancer Prev. 2017;18(7):1961-1966. doi: 10.22034/APJCP.2017.18.7.1961.
27. Nakandi H, Kirabo M, Semugabo C, Kittengo A, Kitayimbwa P, Kalungi S, Maena J. Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. Afr J Urol. 2013;19(4):165-170. doi: 10.1016/j.afju.2013.08.001.
28. Zhang K, Bangma CH, Roobol MJ. Prostate cancer screening in Europe and Asia. Asian J Urol. 2017;4(2):86-95. doi: 10.1016/j.ajur.2016.08.010.
29. Yeboah-Asiamah B, Yirenya-Tawiah D, Baafi D, Ackumey MM. Perceptions and knowledge about prostate cancer and attitudes towards prostate cancer screening among male teachers in the Sunyani Municipality, Ghana. African Journal of Urology. 2017; 23(3)184-191. doi.org/10.1016/j.afju.2016.12.003.
30. Adeloye D, David RA, Aderemi AV, Iseolorunkanmi A, Oyedokun A, Iweala EE, Omoregbe N, Ayo CK. An estimate of the incidence of prostate cancer in Africa: a systematic review and meta-analysis. PloS one. 2016;11(4).
31. Loud JT, Murphy J. Cancer Screening and Early Detection in the 21st Century. Semin Oncol Nurs. 2017;33(2):121-128. doi: 10.1016/j.soncn.2017.02.002.
32. Calys-Tagoe BN, Yarney J, Kenu E, Amanhyia NA, Enchill E, Obeng I. Profile of cancer patients' seen at Korle Bu teaching hospital in Ghana (a cancer registry review). BMC Res Notes. 2014;7:577. doi: 10.1186/1756-0500-7-577.

33. Oladimeji O, Bidemi YO, Olufisayo J-AY, Sola AO. Prostate Cancer Awareness, Knowledge, and Screening Practices among Older Men in Oyo State, Nigeria. International Quarterly of Community Health Education. 2010;30(3):271-286. doi:10.2190/IQ.30.3.g
34. Alves-Silva JM, Romane A, Efferth T, Salgueiro L. North African Medicinal Plants Traditionally Used in Cancer Therapy. Frontiers in Pharmacology. 2017; 8, 383. doi.org/10.3389/fphar.2017.00383.
35. Hayes VM, Bornman MSR. Prostate Cancer in Southern Africa: Does Africa Hold Untapped Potential to Add Value to the Current Understanding of a Common Disease? J Glob Oncol. 2018; 4:1-7. doi: 10.1200/JGO.2016.008862.
36. World Health Organization. Traditional medicine: growing needs and potential. World Health Organization; 2002.
37. de-Graft Aikins A, Unwin N, Agyemang C. *et al.* Tackling Africa's chronic disease burden: from the local to the global. *Global Health. 2010;* doi.org/10.1186/1744-8603-6-5.
38. Venter M, Venter C, Botha K. Cancer Treatment in South Africa: A Narrative Literature Review, Journal of Psychology in Africa. 2012;22:3, 459-466, DOI: 10.1080/14330237.2012.10820555.

CHAPTER 3: KNOWLEDGE, ATTITUDES AND PRACTICES OF MEN REGARDING PROSTATE CANCER IN THULAMELA MUNICIPALITY OF LIMPOPO PROVINCE, SOUTH AFRICA

The second manuscript, submitted to The Inquiry following Author Guidelines found at https://journals.sagepub.com/author-instructions/INQ and titled as follows:

Chavhalala Mathews Dakalo, Ntsieni Mashau and Vhonani Netshandama: *Knowledge, Attitudes and Practices of Men Towards Prostate Cancer in Thulamela Municipality of Limpopo Province, South Africa*. ***(Under Review)***

Knowledge, Attitudes and Practices of Men towards Prostate Cancer in Thulamela Municipality of Limpopo Province, South Africa

Chavhalala, D.M[1], Mashau, N.S[1]. Netshandama, V.O[2]

[1]Department of Public Health, Faculty of Health Sciences, University of Venda, *University of Venda, 1 University Road, Thohoyandou, 0950, South Africa; ORCID number: https://orcid.org/0000-0001-9054-2003, Email Address: dmmchavi@gmail.com*

[1]Department of Public Health, Faculty of Health Sciences, University of Venda, Thohoyandou, South Africa, ORCID number: https://orcid.org/0000-0001-7104-6768, Email Address: ntsieni.mashau@univen.ac.za

[2]Directorate of Community Engagement, Orcid number: https://orcid.org/0000-0002-2466-6099, Email Address: vhonani. netshandama@univen.ac.za

Corresponding Author: Dakalo Mathews Chavhalala, E-mail: *dmmchavi@gmail.com*, Tel: 015 962 8892, mobile: 0671965560. Postal address: P/Bag X5050, University of Venda, Thohoyandou, 0950. Department of Public Health, Faculty of Health Sciences, University of Venda, South Africa

ABSTRACT

Background: Prostate cancer (PCa) is one of the men`s killer disease globally and the number of fatalities attributed to it is on a rise. In rural communities wherein such diseases such as prostate cancer are seldom researched and known and this prompted us to carry out this study

Methods: This study adopted a quantitative, cross-sectional descriptive survey design to investigate the knowledge, attitudes and practices of men regarding prostate cancer screening in Thulamela Municipality, Vhembe District. A sample size of 285 was calculated using an automated web-based online Raosoft sample size calculator. Random sampling was used to select 280 men aged 40 years and above from Ha Budeli village. A questionnaire containing close-ended questions was used to collect data. Validity and reliability of the questionnaire was ensured. Statistical Package for Social Sciences software version 25.0 was used to analyse data. Data were summarised descriptively and presented in frequencies, tables and charts. Chi square and Phi and Cramer's V tests were used to test for association and effects size respectively at 0.5 level of significance. Respondents' knowledge as an explanatory variable, attitude and practice as response variables were assessed. Ethical measures were considered throughout the study

Findings: The findings of this study showed that 65% of men had adequate knowledge of PCa risk factors and symptoms, while just 35% showed inadequate knowledge of PCa. The results also showed that 65% of respondents has positive attitude towards PCa. However, the results shows that practice of men regarding PCa is negative with only 6% of respondents saying they have visited a clinic to consult about symptoms that made them think they had PCa. Furthermore, the study found a significant association between knowledge and attitudes. The relation between these variables was significant, X^2 (4, N=285) = 29.09, p = .001.

Conclusion: The study concludes the widespread awareness campaigns that target on raising awareness about the importance of screening and influence men to regularly go for check-ups especially those at high risk.

Key words: Prostate cancer, Knowledge, Attitude, Screening

1. Introduction

Prostate cancer is the fourth men killer disease across the world and it is considered a public health risk. Key Statistics (2021) indicate that the most vulnerable cohort of men having a high risk of contracting prostate cancer is above 40 years of age. The American Cancer Society (2018) report show that black men of African origin have a first-degree relative diagnosis PCa. Although various types of cancers are reported to claim lives of men, prostate cancer remains a challenge because of various factors that influence its diagnosis. Moreover, the intensity of infection also varies with geographical location, race and culture (WHO, 2020). For example, in New Zealand and Australia, prostate cancer regarded as the top men killer (Owen et al., 2015) argue that prostate cancer is the second most common killer of men even in developed nations such as New Zealand and Australia. In the USA and UK, mortality caused by prostate cancer is on its peak with 29 480 men dying from a total of 233 000 screenings (ACS, 2016).

In Sub Saharan Africa, prostate cancer is slowly occupying the public health discourse. Beratedi, Tshiamo, Magobe and Ferland (2020) argue the most worrying aspect in the ongoing prostate cancer challenges is the low levels of screening. Until recently, there has been a notable shift towards adoption of clinical measures to reduce the fatalities caused by prostate cancer (Maku-Barrasa, Manarikiza, Calvalho & Rebbeck, 2022). A study carried out in Ghana shows that overreliance on traditional practices is inadequate in providing sustainable cure and preventative solution to the challenges of prostate cancer (WHO, 2022). It is important to first understand the underlying levels of knowledge of men and the receptiveness to screening.

Prostate cancer screening is one of the early diagnostics measures that can assist to reduce the mortality of men. Currently, there is a lack of standardized screening approaches but the European, USA and Indian guidelines provide a good starting point for encouraging men to get screened for PCa in Africa (Kohestan, Chilov & Carlson, 2018; Rebbeck, 2017). There is need to ensure that men are adequately informed about prostate cancer using various awareness programs. Such programs should contain information about good health habits that helps to reduce exposure to

the risk of contracting PCa. For example, Araujo and Zago (2018) argue that most men tend to overlook their health habits by smoking and lack of general hygiene. The National Comprehensive Cancer Network (2019) indicate that early screening for PCa helps to transform the attitude of men towards prostate cancer and it also helps to enhance the health seeking behavior of men in South Africa.

2.Material and methods

2.1 Study Setting

According to Babbie (2020), a study setting refers to the area where the study is conducted. This study was carried out in selected Village within Thulamela Municipality, Vhembe District. It forms one of the four local municipalities comprising the Vhembe District Municipality (IDP, 2021). In the North and Eastern side are Musina and Collins Chabane municipality and in Western side is Makhado municipality (IDP, 2020). Thulamela Municipality covers 2 893.936 km²: 22° 57´ S 30° 29´ E covers vast track of tribal lands, and Thohoyandou is its political, administrativeand commercial center (IDP, 2021). The municipality is has the second largest number of residents in the district (Thulamela Municipality IDP Budget 2020/21 – 2021/23). According to Stats SA (2016) Community Survey, Thulamela has a population of 618 462 with 58.8% being the working age group of 15 to 64 years old and 6% elderly who are 64+ years old. About 47,7% of the entire Vhembe District's population lives in Thulamela Local Municipality (IDP, 2020). More than 85% of the people in this municipality live in tribal areas (IDP, 2020). The majority (55%) of the residents are women. On average, there are 0.7 men to every woman in Thulamela Municipality (Vhembe District, 2022)

selected Village has been purposively selected because of its demographic feature that most(52.2%) of its 575 households are headed by men. This means that 299 Households are headed by men who are over 40 and above. Selected Village has a population of 2 362 people of which 61% is the working age group of 15 – 64-year-olds and 5.1% is the elderly age group of 64+ year olds (Stats SA, 2016). According to records from the traditional council, it is estimated that selected Village has 774 men who are above 40 years of age. The village is situated 12 km west of Thohoyandou. selected village does not have its own clinic. The residents use a Clinic

situated at a neighbouring village because there is no clinic in the village. A regional hospital is located at about 15 kilometres. The dominant ethnic group in selected Village is Vhavenda and it is under the leadership of a traditional leader. The village is situated around tourist attraction sites such as a nearby Dam which is a busy area during holidays because most public events such as Festivals are held.

2.2 Study Population

A study population is a collection of certain objects with similar characteristics (Brink, Van der Walt & van Rensberg (2017). The study population comprised of all men residing at Vhembe district. The targeted population consisted of all men who were above the age of 40 years residing at Budeli Village. Records from the Local Traditional council show that there are 774 men who are above 40 years of residing at selected village.

2.3 Sampling and Sample

Creswell and Creswell (2018) define a sample as a sub-collection of objects from a population. In this study, a simple random technique was used to select participants. Simple random sampling technique is a probability sampling procedure that allows every member of the population an equal opportunity to be selected van (van Wyk, 2018). This assisted to ensure that the appropriatenumber of sample is selected from the targeted population in an unbiased manner since according to Babbie (2018), this method reduces the probability of sampling error.

Sampling size: the sample size was calculated using an automated web-based online Raosoft sample size calculator (Roasoft Sample size Calculator, 2004). The margin of error was at 5%, confidence level was 95%, populationsize was 774, and the response distribution was 50% and the sample size was 257.

To accommodate the probability of non-responses, the researcher added 10% to the sample size, which was about 26. Therefore, the sample size totaled 285.
In terms of the numbers above, the sample size n and margin of error E are given by

$$X = Z(c/100)^2 r(100-r)$$

$$N = N x/((N-1)E^2 + x)$$

$$E = \text{Sqrt}[(N - n)x/n(N-1)]$$

where N is the population size, r is the fraction of responses that the researcher is interested in,and Z(c/100) is the critical value for the confidence level c (Raosoft, 2004).

Inclusion criteria

All men who reside at selected village, aged 40 years and above and willing to participate were included in the study regardless of their educational level, working experience and marital status.

Exclusion criteria

All men who are aged 40 and above who show signs of mental incapacitation were not included in the study.For example, those who exhibited obvious mental disorder or any other dysfunctional behavior that influence to consent were not included. Those who refused to sign the consent form on the day of data collection were excluded from the study.

2.4 Sampling procedure

The researcher used the fishbowl technique to sample participants from the targeted population. The researcher designed a pick box with small papers marked ‘Yes’ and ‘No’. The pieces of paper with ‘Yes’ were 500 and those with ‘No’ were 275. The 285 men who picked ‘Yes’ and who were willing to form part of the study were included. The pieces of paper were placed inside a bowl in which all men from the targeted population had an equal chance to pick one piece of paper. Those who picked ‘No’ were not included in the study.

3. Measurement Instrument

A self-administered questionnaire with close-ended questions was used as a data collection instrument because close ended items in the questionnaire are amenable to statistical data analysis with minimal manipulation of raw data. Bracken (2013) also point out that questionnaires can reach out to a large sample and place minimal demands on personnel, and can be totally anonymous. In this study, the questionnaire was developed by the researcher guided by the study objectives and literature from previous studies. The questionnaire was in the form of a three-point dichotomous question scale. When responding to this survey instrument, respondents were asked yes, no or don't know with each statement.

The English language was used to develop the questionnaire which was translated into Tshivenda by a language expert from University of Venda to suit participants' home language. The questionnaire comprised of 5 sections. Section 1 consisted of biographical information of the respondents, Section 2 addressed the knowledge of risk factors, Section 3 addressed the knowledge of symptoms, Section 4 addressed the attitudes of respondents and Section 5 addressed men's practice regarding prostate cancer.

4. RESULTS

The findings of this study are presented in four distinct sections. The first section contains the biographical characteristics followed by the knowledge of men regarding prostate cancer. The subsequent sections present results regarding the attitude and practices of men regarding prostate cancer. The last section gives a brief discussion of the findings.

4.1 Response rate

The response rate was 99% (283). This means that only 1% (2) questionnaires were discarded because they were incomplete. The response rate was important for keeping track with the sample. The sample should remain representative of the population characteristics and this was verified by calculating the response rate.

4.2 Demographic characteristics of respondents

Table 4.1 shows demographic profile of the respondents. The majority of participants +(52%) were aged 40 – 49 years old, while only 9% were aged 80 years and above. Most participants (69%) were married and very few (6%) were single. Furthermore, about 63% have jobs from which they earn a salary, while 37% do not have jobs.

Table 4.1 Demographic characteristics of participants (n=285)

Variable	Frequency and percentages
Age:	
40 – 49 years	148 (52%)
50 – 59 years	54 (19%)
60 – 69 years	17 (6%)
70 – 79 years	39 (14%)
80 years and above	25 (9%)
Marital status:	
Living together with a partner	18 (6%)
Married	195 (69%)
Single	18 (6%)
Widowed	52 (18%)
Level of education:	
More than secondary	123 (43%)
No schooling	53 (19%)
Primary incomplete	17 (6%)
Secondary complete	72 (25%)
Secondary incomplete	18 (6%)
Income Status:	
Have jobs which they earn salary	179 (63%)
Do not have jobs which they earn salary	104 (37%)
Type of dwelling:	

Brick house/apartment **Dwelling structure made of traditional materials**	265 (94%) 18 (6%)
Electricity status in the dwelling property: **Have electricity** **Do not have electricity**	 265 (94%) 18 (6%)
Water status in the dwelling property: **Have tap water** **Do not have tap water**	 268 (95%) 15 (5%)
Availability of toilet in the dwelling property: **Have toilets** **Do not have toilets**	 285 (100%)
Availability of radio in the dwelling property: **Have radio** **Do not have radio**	 283 (100%)
Availability of Television in the dwelling property: **Have television** **Do not have television**	 283 (100%)
Access to internet: **Have internet access** **Do not have internet access**	 283 (100%)
Language spoken in the household: **Tshivenda** **Other**	 283 (100%)
Eco-town for shopping: **Thohoyandou**	 283 (100%)

Majority of the participants (43%) have above secondary school education, while just 19% have no schooling at all. All participants have access to electricity, water, radio, television and internet in their dwellings.

Objective 1: Knowledge of men regarding prostate cancer

4.3 The knowledge of men regarding prostate cancer screening

Table 4.2 shows the results of Knowledge of men regarding prostate cancer in selected village (n=285). Knowledge statements were categorised into risk factors and symptoms. The results show that most of the participants had an idea that someone who had previously been diagnosed with prostate cancer has a higher chance of getting infected again. Only a smaller proportion did not know that once one has been infected with prostate cancer, they have a higher chance of contracting the disease. This clearly shows that many people do not know the effect of alcohol consumption on men's health. As indicated in the table 6.2 below, most of the participants 57% (n=167) knew that having HIV/AIDS increases the chance of contracting prostate cancer. Only 12 % (n=34) said no and 31% (89) did not know. Most of the participants 57% (n=161) knew that having STI increases the chance of contracting prostate cancer. Only 18% (n=52) said no and 20% (n=70) did not know that having STIs increases the chance of contracting prostate cancer. Most of the participants 68% (n=193) did not know that having unprotected sex with a partner who has been taking family planning pills for a period more than 5 years increases the chance of men contracting prostate cancer while 25% (n=53) and 7% (n=13) said no and did not know respectively.

Table 4.2: Knowledge of men regarding prostate cancer screening (n=285)

KNOWLEDGE STATEMENTS (PROSTATE CANCER RISK FACTORS)	**FREQUENCY and percentages**
Could someone who have had cancer previously have increased chance of getting Prostate cancer again?	
Yes	125 (44%)
No	54 (19%)
I don't know	104 (37%)

Could Drinking more than 1 bottle of beer or 1 glass of other types of alcohol per day increase chances of getting Prostate Cancer?	
Yes	36 (13%)
No	124 (44%)
I don't know	123 (43%)
Could being infected by HIV/AIDS increase chances of having prostate cancer?	
Yes	160 (57%)
No	34 (12%)
I don't know	89 (31%)
Could being infected with other sexually transmitted diseases increase chances of getting prostate cancer?	
Yes	161 (57%)
No	52 (18%)
I don't know	70 (20%)
Could having unprotected sex with a partner who is using birth control pills/family planning for more than 5 years increase chances of getting prostate cancer?	
Yes	37 (13%)
No	53 (19%)
I don't know	197 (68%)
Could wearing a tight underwear increase chances of getting prostate cancer?	
Yes	89 (31%)
No	33 (12%)
I don't know	160 (57%)
Could having unprotected sex increase chances of getting prostate cancer?	
Yes	142 (50%)
No	70 (25%)

I don't know	71 (25%)
Could Smoking any cigarettes at all increase chances of getting prostate cancer?	
Yes	36 (13%)
No	124 (44%)
I don't know	123 (43%)
Could having sex at a young age Increase chances of getting prostate cancer?	
Yes	70 (25%)
No	107 (38%)
I don't know	106 (36%)
Could poor personal hygiene e.g. not washing one's penisand testicles well, staying for long without bathing or wearing wet underpants increase chances of getting prostate cancer?	176 (62%)
Yes	54 (19%)
No	53 (19%)
I don't know	
Could having many sexual partners increase chances of getting prostate cancer?	
Yes	141 (50%)
No	89 (31%)
I don't know	53 (19%)
Could being bewitched by witchcraft or possessed by evil spirits increase chances of getting prostate cancer?	104 (37%)
Yes	54 (19%)
No	125 (44%)
I don't know	
Could being overweight increase chances of getting prostate cancer?	18 (6%)
Yes	89 (31%)

No **I don't know**	176 (62%)
Could doing little physical activity or manual labour increase chances of getting prostate cancer? **Yes** **No** **I don't know**	 36 (13%) 89 (31%) 158 (56%)
Could putting a mobile phone in between your legs increase chances of getting prostate cancer? **Yes** **No** **I don't know**	 72 (25%) 71 (25%) 140 (49%)
Could being exposed to dirty air or water increase chances of getting prostate cancer? **Yes** **No** **I don't**	 90 (32%) 53 (19%) 140 (49%)
Could aging/growing old increase chances of getting prostate cancer? **Yes** **No** **I don't know**	 72 (25%) 71 (25%) 140 (49%)
KNOWLEDGE STATEMENTS (PROSTATE CANCER SYMPTOMS)	
Is frequent urination a symptom of Prostate cancer? **Yes** **No** **I don't know**	 161 (57%) 35 (12%) 87 (31%)
Is Weak or interrupted urine flow or the need to strain to empty the bladder a symptom of	

prostate cancer?	179 (63%)
Yes	33 (12%)
No	70 (25%)
I don't know	
Is the urge to urinate frequently at night a symptom of prostate cancer?	
Yes	144 (51%)
No	53 (19%)
I don't know	86 (30%)
Is having blood in the urine a symptom of prostate cancer?	196 (69%)
Yes	36 (13%)
No	51 (18%)
I don't know	
Is having new onset of erectile dysfunction a symptom of prostate cancer?	
Yes	179 (63%)
No	36 (13%)
I don't know	68 (24%)
Is having pain or burning during urination a symptom of prostate cancer?	
Yes	196 (69%)
No	36 (13%)
I don't know	51 (18%)
Is having discomfort or pain when sitting, caused by an enlarged prostate a symptom of prostate cancer?	
Yes	196 (69%)
No	36 (13%)
I don't know	51 (18%)

As indicated in table 4.2, most of the participants 57% (n=160) did not know that wearing tight underwear increase the chance of prostate cancer. Meanwhile, 31%

(n=89) knew that wearing tight underwear increase the chance of contracting prostate cancer and only 12% (33) said no. Most of the participants 50% (n=70) said they knew that having unprotected sex can increase the chance of contracting prostate cancer and 25% (n=70) said that having unprotected sex does not cause prostate cancer and another 25% (n=70) did not know. Regarding smoking cigarettes, most of the participants 44% (124) said smoking does not cause prostate cancer. Another larger proportion 43% (n=123) did not know that smoking cigarettes causes prostate cancer and only knew it. Most of the participants 38% (107) said that they know that having sex at a young age does not cause prostate cancer followed by 36% (n=106) who did not know. Only 25% (70) knew that having sex at a young age causes prostate cancer.

As shown in table 4.2 above, most participants 62% (n=176) knew that poor hygiene such as not washing one's penis and wearing wet pants increases the chance of contracting prostate cancer and 19% (n=54) said no and did not know respectively. Regarding having sex with multiple partners, most of the participants 50% (n=141) knew that it causes prostate cancer and 31% (n=89) said no. Only 19% (n=53) did not know that having sex with multiple partners causes prostate cancer. Most of the participants 44% (125) did not know that being witched or having been attached by evil spirits causes prostate cancer while another bigger proportion 37% (n=104) did not know. Most of the participants did not know that being overweight causes prostate cancer and only 6% (18) knew that being overweight causes prostate cancer. Most of the participants 49% (n=140) did not know that putting a phone between the legs can cause prostate cancer and 25% (n=72) knew that putting phones between the legs can cause prostate cancer.

Most of the participants 49% (n=140) did not know that being exposed to dirty air or water can cause prostate cancer followed by about 32% (n=90) said it does not cause prostate cancer. Only 19% (n=53) knew that being exposed to dirty water or air causes prostate cancer. Regarding ageing, most of the participants 49% (n=140) did not know that growing older increases the chance of conducting prostate cancer and about 25% (n=72) knew that getting older increases the chance of contracting prostate cancer and another 25% (n=71) said it does not cause prostate cancer.

4.3.1 Level of knowledge about prostate cancer

The level of knowledge of participation was coded 1- correct answer, 0 – no correct answer and then sums all of the knowledge items to calculate a score for the knowledge items. The level of knowledge about prostate cancer is shown in table 4.3. The level of knowledge was measured using Likert Scale of high and low. The results show that about 65% ((n=182) indicated had sufficient knowledge prostate cancer while 35% (n=101) indicated their knowledge regarding prostate cancer was low.

Table 4.3: Level of knowledge about prostate cancer

Knowledge about prostate cancer	**Frequency (n) & Percentage (%)**
Adequate	65% (n=184)
Inadequate	35% (n=101)
Total	**283**

4.3.2 Association between the level of knowledge regarding prostate cancer and demographic details

The results of the level of association between the levels of knowledge of men regrinding prostate cancer are presented in table 4.4 below. The results shows that age, level of education and income are significantly associated (p-value <0.001) with the level of knowledge regarding prostate cancer.

Table 4.4: Association between the level of knowledge prostate about cancer and demographic characteristics (n=285)

		Knowledge regarding Prostate cancer		Level of significance
		Adequate (n)	**Inadequate (n)**	
Age	40-49 years	85	15	<0.001
	50-59 years	41	20	
	60-69years	35	35	
	70-79years	24	6	
	80 years and above	17	7	
Education	No school	38	15	<0.001
	Primary Incomplete	13	4	
	Secondary Incomplete	13	5	
	Secondary complete	55	21	
	More than secondary	81	38	
Relationship status	Married	140	55	<0.001
	Living with partner	13	5	
	Widowed	37	17	
	Single	12	6	
Income	Yes	127	52	<0.001
	No	75	31	
Dwelling	Brick/ Apartment	47	1	<0.001
	Traditional Housing	113	65	
	Sharks/ Informal	30	2	
	Roundervels	12	14	

As indicated in table 4.4 above, a high level of knowledge was observed among the 40-49years of age 30% (n=85) with more than secondary level of education 28% (n=81). Most of the participants who are married 50% (n=141) had high level of knowledge about the prostate cancer and those who had a source of income 45% (n=127) were having a high level of prostate cancer and living those living in traditional housing 40% (n=131).

Objective 2: Attitude of men regarding prostate cancer

4.4.1 The attitudes of men towards prostate cancer in Thulamela Municipality

The results regarding the attitude of men on prostate cancer in presented in table 4.5 below. Overall, the results exhibit a negative attitude of men towards prostate cancer due to many factors listed in table 5.5 below. It is shown that most of the participants, 43 % (n= 124) did not know that prostate cancer exists and 25% (n=72) said prostate cancer does not exist while only 31% (n=89) agree that prostate cancer exist. Most of the participants 43% (n=124) did not know that prostate cancer is associated with witchcraft or evil spirits while 19% (n=54) said it is not caused by that. Only 24% (n=70) said prostate cancer is caused by evil spirits or witchcraft. Regarding prostate cancer screening 63% (n=179) affirmed that all men should undergo prostate cancer screening while 37% (n=106) did not know.

Table 5.5: Attitudes of men towards prostate cancer

ATTITUDE OF MEN TOWARDS PROSTATE CANCER	**FREQUENCY (n) = 285 AND PERCENTAGES**
Prostate cancer does not exist **Yes** **No** **I don't know**	 31% (n=89) 25% (n=72) 43% (n=124)
Prostate cancer is caused by witchcraft/evil spirits	
Yes	24% (n=70)

No	19% (n=54)
I don't know	43% (n=124)
All male adults must undergo prostate cancer screening	
Yes	63% (n=179)
No	
I don't know	37% (n=106)
Early diagnosis of prostate cancer improves clinical outcome	
Yes	63% (n=179)
No	
I don't know	37% (n=106)
All male adults must consider medical and surgical treatment to cure prostate cancer	
Yes	63% (n=179)
No	
I don't know	37% (n=106)
Screening of prostate cancer is not necessary if one is healthy and fit	
Yes	25% (n=71)
No	43% (n=125)
I don't know	31% (n=89)
I will be considering going to the clinic if I get sick	
Yes	37% (n=108)
No	24% (n=70)
I don't know	37% (n=107)

As indicated in table 4.5 above, most of the participants 63% (n=179) affirmed that early diagnosis improves clinical outcome. Regarding the method of cure most of the participants 63% (n=179) affirmed that all males should consider medical or surgical cure of prostate cancer while 37% (n=106) did not know of such. About 25% (n=71) affirmed that screening of prostate cancer is not necessary when one is healthy and fit whereas 43% (n=125) said no.

4.4.2 Association between attitude of men regarding prostate cancer and demographic characteristics

The relationship between attitude of men regarding prostate cancer and demographic characteristics was performed using the Spearmen correlation coefficient and the results are shown in table 4.7. The results show that there is a significant relationship between positive attitude regarding prostate cancer and education, income, relationship status and

Table 4.6: Association between the attitude of men regarding prostate cancer and demographic characteristics (n=285)

		Attitude of men regarding Prostate cancer		**Level of significance**
		Adequate (n)	**Inadequate (n)**	
Age	40-49 years	87	10	<0.001
	50-59 years	46	25	
	60-69years	30	31	
	70-79years	24	10	
	80 years and above	15	9	
Education	No school	40	13	<0.001
	Primary Incomplete	13	5	
	Secondary Incomplete	12	4	
	Secondary complete	50	28	
	More than secondary	86	30	
Relationship status	Married	143	5	<0.001
	Living with partner	10	5	
	Widowed	30	10	
	Single	19	13	
Income	Yes	120	53	<0.001
	No	75	30	
Dwelling	Brick/ Apartment	54	2	<0.0001
	Traditional Housing	110	63	
	Sharks/ Informal	33	14	
	Roundervels	12	2	

Most of the participants 65% (n=183) showed a positive attitude towards prostate cancer and 35% (n=100) showed a negative attitude.

4.5 Practices of men regarding prostate cancer in Thulamela Municipality, Vhembe District

Practices of men regarding prostate cancer included prayer from God, use of traditional herbs and visiting the clinic. Table 4.7 shows the results from practices of men towards prostate cancer. Most of the participants 94% (n=268) said they never visited any traditional healer to consult about symptoms of prostate cancer and 6% (n=17) did not know. Only 6% (18) affirmed that they visited a nurse or clinical officer to consult about symptoms that made them think something was wrong like a symptom of prostate cancer and most of them 88% (n=250) never consulted and 6% (n=17) did not know. Most of the participants 75% (214) refuted to have had prayed to God for protection from prostate cancer while 19% (n=54) affirmed to have prayed from protection against prostate cancer and 6% (n=17) did not know.

Table 4.7: Practices of men regarding prostate cancer

Practices regarding prostate cancer	**Frequency (n) & Percentage (%)**
Have you ever been to see a traditional healer about a symptom that made you think something was wrong, like a symptom of prostate cancer?	
No **Yes**	94% (n=268) 6% (n=17)
Have you ever been to see a nurse or clinical officer or doctor about a symptom that made you think something was wrong, like a symptom of prostate cancer?	
Yes **No** **Don't know**	6.3% (n=18) 87.7 % (250) 6% (n=17)

I pray to God to protect me from prostate cancer	
Yes **No** **I don't know**	18.9% (n=54) 75.1% (n=214) 6% (n=17)
I use traditional herbs to protect myself from prostate cancer	
Yes **No** **Don't know**	12.6% (n=36) 69.1% (n=197) 18.3% (n=32)

Most of the participants 69% (n=197) said they don't use traditional herbs to protect themselves from prostate cancer, while 13% (n=36) affirmed to using traditional herbs and 18% (n=52) did not know

Table 4.8: Chi-square distribution test (n=285)

Variables		**Knowledge about PCa**		**Df**			
		Adequate	**Inadequate**		**χ2**	**p-value**	**ϕ**
Attitude toward PCa	Positive	182 (64%)	2(0.007)	1	35.79	0.001	0.275
	Negative	101 (36%)	100 (35%)	1			

In this study, the test for independence of variables was performed using a chi-square test. It was found that the relationship between the variables was significant. For example, the relationship between biographical information and the level of knowledge regarding [prostate cancer screening was X^2 (4, N=285) = 35.79, p = .001. This means the level of knowledge regarding prostate cancer screenings was significantly related to education, age, and source of income. Meanwhile, the level of significance between the attitude of participants and the level of knowledge regarding prostate cancer was significant X^2 (2, N=285)=34,66, P=0.01

Hypothesis 4: H1 – We accept the hypothesis that there is a positive relationship between biographical information and the level of knowledge regarding prostate cancer.

5. Discussion

The results of the study indicate that, the demographic characteristics of men have a are associated to their knowledge, attitude and practices regarding prostate cancer. Married men staying who stay with their spouses have adequate knowledge and positive attitude regarding prostate cancer. However, for practices reagrding prostate cancer, it was noted that most men lack the encouragement to get screening services. The results concur with Necku, Anaba and abousi (2019) who reporte low levels of cancer screening in Ghana. In addition, the ACS (2018) report concur that marital status is a vital variable when analysing the knowledge and attitude of men regarding prostate cancer. Necku et al. (2019) carried out a study on the impact of marriage on over survival of prostate cancer patients and they concluded that marital status is associated with positive patient outcomes, thus supporting the current findings of this study. Furthermore, another study conducted on Nigeria reported similar results indicating that the more than half of the participants (60%) were married (Adibe et al., 2017).

Having a source of income is associated with the knowledge, attitude and practices of men regarding prostate cancer. Having access to a stable inocme influences the health sekking behaviour of many people and they can also afford to finance volunatry screening services. Menwhile the poor lack access to to ehalth servioces due to lack of adequate finances. Coughling (2020) argue that that income is one of the socio-demographic variables found to have an impact the level of knowledge on prostate cancer. Similar findings were reported by Mofolo et al. (2015) noting that most of the participants 25% interviewed regarding prostate cancer were having a source of income. However, spatial differences may occur regarding income sources because developing countries have low employment rates compared to their developed counterparts. For example, contrasting findings in a study carried out in Italy show that more than 90% of the participants were employed and having a stable source of

income but had low levels knowledge oof prostate cancer screening (Morlando et al., 2017).

The current study shows that the level of knowledge of participants regarding prostate cancer is low or inadequate. This was assessed using the extent to which participants knew and understood the risk factors and symptoms of prostate cancer. The actual result shows that 65% have inadequate knowledge about prostate cancer. These results concur with Mofolo et al. (2015) who found the level of knowledge of prostate cancer among men in South Africa was low. However, a study carried out in Nigeria show contrasting results that more than half of the participants had adequate knowledge of prostate cancer (Aluh et al., 2018).

Another study in the same country alluded that more than 54% of participants had adequate knowledge of prostate cancer (Adibe et al., 2017). The most differentiating factor is that the study was carried out on outpatients at a tertiary hospital in Nigeria. A similar study that focused on motorcyclists found that about 80% had knowledge of prostate cancer (Maladze, 2020). Besides the spatial differences, Nigeria seems to be championing the awareness campaigns for prostate cancer with huge intensity. Arnold-Reed, Hince, Bulsara, and Ngo (2008) argue that there is a deficit in knowledge about prostate cancer among men in the at-risk age group, encompassing areas that could delay diagnosis and treatment in Australia. They further demonstrated that more than 80% of the participants lacked knowledge of the basic function of cancer, treatment options, and side effects of the various treatments for prostate cancer. The results found in Australia are congruent to those reported in this study. There could be identical correlating factors that contribute to limited knowledge of prostate cancer in such countries. The key factor among these countries is the lack of awareness campaigns for prostate cancer.

The results show that most of the participants knew that being overweight increases the chances of being diagnosed with prostate cancer. Salmon et al. (2021) argue that there many pathways to being diagnosed with prostate cancer, however there is a shared understanding that prostate cancer is more prevalent among persistent drinking and smoking. The International Agency for Research on Cancer (2018) reported that prostate cancer like any other type of cancer is caused by many of the

factors mentioned in this study including being overweight, overconsumption of alcoholic beverages and having a history of being infected with other cancers.

The results of the current study show that most men where not aware of the fact putiing cellphone in the pocket or near the legs can cause prostate cancer. Moreover, there is overwhelming empirical evidence which points to the fact that cellphones have a long term effect of increasing the risk of contacting prostate cancer among men (Mahmoud et al., 2022; Mensah & Mensah, 2020; Yeboa-Asiamah et al., 2017). The findings from these studies show that frequent use of cell phones increased the PSA and MDA levels over a period of two years. Saad-Hussein, Ibrahim, & Soliman, (2020) further warn that sources such as mobile phones, computers, and power transmission lines, radars, and electrical equipment are increasing the amount of human exposure to non-ionising electromagnetic radiations. Not having the knowledge of symptoms of prostate cancer may lead to delay in seeking medical help because most people in rural communities have different beliefs regarding the symptoms of prostate cancer.

Results of the current study show that most of the participants 64% who had adequate knowledge of prostate cancer had a positive attitude towards prostate cancer. For participants who exhibited inadequate knowledge about prostate cancer, their attitude was way lower at 34%. The results regarding the positive attitude of men towards prostate cancer are similar to those found in Namibia (Nakwafila, Nyarko, Quaye & Angula, 2017; Nakwafila, 2017). A study by (Maladze 2020) reported that 91.1% of participants who had better knowledge about prostate cancer had a positive attitude towards prostate cancer. The findings are also congruent with those found in MulderDrift (2021) which reported that 72% of its participants had a positive attitude towards prostate cancer.

In this study age, relationship status, and level of education were correlated with the attitude of men towards prostate cancer. It was noted that most men in rural communities of Thulamela municipality have low levels of education and this influences theior attitude regarding prostate cancer. Similar findings were reported by Korley (2018) who argue that attitudes of men toward prostate cancer in academic institutions were found to be higher in many instances and lower in rural communities. Pudrovska and Ashinkin (2016) used longitudinal data to clarify the positive

association between prostate cancer and the level of education. They argue that a higher utilization of prostate cancer screening and lower mortality after the diagnosis are important explanations for higher prostate rates among more educated men. The findings also align with findings by Stafford et al. (2018) which studied the association between social connectedness and attitude of men towards prostate cancer.

Besides the obvious correlating factors, the study also found that having access to sources of information such as radio, television, and internet devices help have a significant impact on influencing the attitude of men towards prostate cancer. This means, a lot of investment in aspects of awareness campaigns can be heavily relied on to curtail the current lack of knowledge which then result in a negative attitude towards prostate cancer.

The results show that many participants do not use traditional herbs when they feel symptoms of prostate cancer. This contrasts with the vast amount of literature which points to fact that many men resort to first using traditional herbs before using any other form treatment (Sak, 2014; Wang et al., 2018). Traditional herbs have long been used for treating different ailments including prostate cancer. However, the fact that most men are no longer relying on them does not exclude them from treating prostate cancer.

Regarding the practice of visiting the nurse or medical practitioners, only 6.3% participants affirmed that they did so when they felt peculiar symptoms related to prostate cancer. The findings concur with Maladze, (2020) who reported that men have a lower motivation to seek clinical services when they have symptoms of prostate cancer. Similar conclusions were made by Olaoye, Baderinwa, and Oyerinde, (2022) in a study carried out in Nigeria. However, there are revelations that the frequency of men visiting clinics for screening is steadily increasing. Nwagwo et al. (2020) argues that this is due to increased awareness campaigns on prostate cancer awareness. According to Stafford et al. (2021) the number of men going for screening depends on the level of education, awareness and personal experience. However, Mafolo et al. (2015) argues that most black men fail to visit clinical facilities because of lack of facilities that do the testing or screening. This could be the reason most men are diagnosed with advanced prostate cancer.

Results show that most men do not involve God for protection against prostate cancer. However, Nkoana et al. (2022) argue that men who are diagnosed with prostate cancer priorities praying for healing. The main contrast is that men seek divine healing after diagnosis but not before the disease. Bowei et al. (2017) carried out a study which focused on the influence of prayer on men's decisions regarding the treatment for prostate cancer. The study argue that cancer is normally regarded as a punishment from God and prayer is the solution to cancer since it has no scientific cure. Meanwhile none of the participants have ever visited a traditional healer for treatment of symptoms of prostate cancer. The results contradict with the findings of Asuzu et al. (2019) which found that prostate cancer patients first seek traditional healers and later visit the clinics which often complicate the healing process because both traditional healers and patients have poor understanding of the causes of prostate cancer.

6. Conclusion

The findings showed that the level of knowledge about prostate cancer is associated with demographic variables and the attitude of men toward prostate cancer is also associated with the level of knowledge they possess about prostate cancer. It can be concluded that the findings regarding the knowledge of men regarding prostate cancer is not unique to previous studies but it is peculiar in the study area. The health seeking behaviour discussed in this study show that prostate cancer is a serious disease which require appropriate awareness strategies because many people still perceive it as a traditional infection which makes them to delay seeking professional medical attention.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical clearance was issued by the University of Venda Ethics Committee to carry out this study (See Annexure A).

CONSENT OF PUBLICATION

Not applicable

AVAILABILITY OF DATA AND MATERIALS

The data supporting the conclusion of this paper are available through the detailed reference list. No original datasets are present since this is a review of the existing literature.

COMPETING INTEREST

The authors declare that they have no competing interests.

FUNDING

The study was not funded by any institution or body.

AUTHORS' CONTRIBUTIONS

DMC a Master of Public Health (MPH) student contributed in conceptualizing, designing, abstract and full article screening, quality assessment of the included studies, data extraction process as well as synthesis of data and writing the manuscript. NSM and VON are the supervisors and have contributed through guiding the MPH student in the conceptualisation and preparation of the manuscript. All authors read and approved the final manuscript.

ACKNOWLEDGEMENT

We would like to express our gratitude to Department of Public Health, university of Venda, for making available the necessary resources for completion of this research

7. REFERENCES

1. Adeloye, D., Harhay, M. O., Ayepola, O. O., Dos Santos, J. P., David, R. A., Ogunlana, O. O., ... & Rebbeck, T. R. (2019). Estimate of the incidence of bladder cancer in Africa: A systematic review and Bayesian meta-analysis. *International Journal of Urology*, *26*(1), 102-112.
2. Adibe, M. O., Aluh, D. O., Isah, A., & Anosike, C. (2017). Knowledge, attitudes and perceptions of prostate cancer among male staff of the University of Nigeria. *Asian Pacific journal of cancer prevention: APJCP*, *18*(7), 1961.
3. Alexis, O., & Worsley, A. (2018). An integrative review exploring black men of African and Caribbean backgrounds, their fears of prostate cancer and their attitudes towards screening. *Health Education Research*, *33*(2), 155-166.

4. Aluh, D. O., Anyachebelu, O. C., Azubuike, E. A., & Abdulmuminu, I. (2018). Knowledge, attitudes, and perception of prostate cancer among male outpatients of a tertiary care hospital in south-east Nigeria. *Journal of Applied Pharmaceutical Science*, *8*(11), 064-068.
5. American Cancer Society. (2014). Cancer Fact and Figures 2014. American Cancer Society,Atlanta, GA, USA.
6. Araújo, J. S., & Zago, M. M. F. (2019). Masculinities of prostate cancer survivors: a qualitative metasynthesis. *Revista brasileira de enfermagem*, *72*, 231-240.
7. Arnold-Reed, D. E., Hince, D. A., Bulsara, M. K., Ngo, H., Eaton, M., Wright, A. R., ... & Brett, T. D. (2008). Knowledge and attitudes of men about prostate cancer. *Medical Journal of Australia*, *189*(6), 312-314.
8. Babbie, E. R. (2020). *The practice of social research*. Cengage learning.
9. Bowie, J. V., Bell, C. N., Ewing, A., Kinlock, B., Ezema, A., Thorpe Jr, R. J., & LaVeist, T. A. (2017). Religious coping and types and sources of information used in making prostate cancer treatment decisions. *American journal of men's health*, *11*(4), 1237-1246.
10. Bracken, B. A., Geisinger, K. F., & American Psychological Association. (2013). *APA handbook of testing and assessment in psychology, Vol. 2, Testing and assessment in clinical andcounseling psychology*. Washington, D.C: American Psychological Association.
11. Cassim, N., Ahmad, A., Wadee, R., Rebbeck, T. R., Glencross, D. K., & George, J. A. (2021). Prostate cancer age-standardised incidence increase between 2006 and 2016 in Gauteng Province, South Africa: A laboratory data-based analysis. *South African Medical Journal*, *111*(1), 26-32.
12. Coughlin, S. S. (2020). A review of social determinants of prostate cancer risk, stage, and survival. *Prostate international*, *8*(2), 49-54.
13. Cowman, S., Cowman, J. G., Almumin, A., Altailasan, F. A. F. M., & Weathers, E. (2021, June). Knowledge and Attitudes of Men in Bahrain Toward Prostate Cancer. In *Seminars in Oncology Nursing* (Vol. 37, No. 3, p. 151158). WB Saunders.
14. de-Graft Aikins, A., Boynton, P., & Atanga, L. L. (2010). Developing effective chronic disease interventions in Africa: insights from Ghana and Cameroon. *Globalization and health*, *6*(1), 1-15.

15. Gacci, M., Noale, M., Artibani, W., Bassi, P. F., Bertoni, F., Bracarda, S., ... & Maggi, S. (2017). Quality of life after prostate cancer diagnosis: data from the Pros-IT CNR. *European urology focus*, *3*(4), 321-324.
16. Hayes, V. M., & Bornman, M. R. (2018). Prostate cancer in Southern Africa: does Africa hold untapped potential to add value to the current understanding of a common disease?. *Journal of Global Oncology*, *4*.
17. Kaninjing, E., Lopez, I., Nguyen, J., Odedina, F., & Young, M. E. (2018). Prostate cancer screening perception, beliefs, and practices among men in Bamenda, Cameroon. *American Journal of Men's Health*, *12*(5), 1463-1472.
18. Karen, G. (2015). Health Behavior: Theory, Research and Practice. River, B. K. J., Wiswanath, K. (Kasisomajajule) (5th Ed.). San Fransisco. CA.
19. Korley, J. E. N. N. I. F. E. R. (2018). *Knowledge, Attitude and Practices about Prostate Cancer among Men in the Awutu Senya East Municipality* (Doctoral dissertation, University Of Ghana).
20. Le Roux, H. A., Urry, R. J., & Sartorius, B. (2015). Prostate Cancer at a regional hospital in South Africa: we are only seeing the tip of the iceberg: urology. *South African Journal of Surgery*, *53*(3-4), 1-6.
21. Liu, X., Yu, C., Bi, Y., & Zhang, Z. J. (2019). Trends and age-period-cohort effect on incidence and mortality of prostate cancer from 1990 to 2017 in China. *Public health*, *172*, 70-80.
22. Lojanapiwat, B., Lee, J. Y., Gang, Z., Kim, C. S., Fai, N. C., Hakim, L., ... & Akaza, H. (2019). Report of the third Asian Prostate Cancer study meeting. *Prostate international*, *7*(2), 60-67.
23. Loud, J. T., & Murphy, J. (2017, May). Cancer screening and early detection in the 21st century. In *Seminars in oncology nursing* (Vol. 33, No. 2, pp. 121-128). WB Saunders.
24. Maladze, N. T. (2020). *Knowledge and attitudes towards prostate cancer screening among males at Dzingahe Village, Limpopo Province* (Doctoral dissertation).
25. Matowa, P. R., Gundidza, M., Gwanzura, L., & Nhachi, C. F. (2020). A survey of ethnomedicinal plants used to treat cancer by traditional medicine practitioners in Zimbabwe. *BMC Complementary Medicine and Therapies*, *20*(1), 1-13.

26. Mofolo, N., Betshu, O., Kenna, O., Koroma, S., Lebeko, T., Claassen, F. M., & Joubert, G. (2015). Knowledge of prostate cancer among males attending a urology clinic, a South African study. *Springerplus*, *4*(1), 1-6.
27. Morlando, M., Pelullo, C. P., & Di Giuseppe, G. (2017). Prostate cancer screening: Knowledge, attitudes and practices in a sample of men in Italy. A survey. *PloS one*, *12*(10), e0186332.
28. Nakandi, H., Kirabo, M., Semugabo, C., Kittengo, A., Kitayimbwa, P., Kalungi, S., & Maena, J. (2013). Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. *African Journal of Urology*, *19*(4), 165-170.
29. Nakwafila, O. (2017). *Knowledge and attitudes towards prostate cancer screening amongst men in Oshana region, Namibia* (Doctoral dissertation, University of Namibia).
30. Nkoana, S., Sodi, T., Makgahlela, M., & Mokwena, J. (2022). Cancer survivorship: religion in meaning making and coping among a group of black prostate cancer patients in South Africa. *Journal of religion and health*, *61*(2), 1390-1400.
31. Nwagwu, S.A.J., Ibebuike, J.E. & Nwokike, G.I. (2020). Knowledge and attitude of men (50 years and above) about prostate cancer in Umugolo, Ehime Mbano L.G.A Imo state. *Nurse Care Open Acces Journal*. 7(2):39-43. DOI: 10.15406/ncoaj.2020.07.00215
32. Oystacher, T., Blasco, D., He, E., Huang, D., Schear, R., McGoldrick, D., ... & Yang, L. H. (2018). Understanding stigma as a barrier to accessing cancer treatment in South Africa: implications for public health campaigns. *Pan African Medical Journal*, *29*(1), 1-12.
33. Raosoft (2004) Raosoft Sample Size Calculator. Raosoft, Inc., Seattle. http://www.raosoft.com/samplesize.html
34. Saad-Hussein, A., Ibrahim, H., & Soliman, F. (2020). Impact of Long-Term use of Mobile Phones on the Prostate in Human users.
35. Sak, K. (2014). Cytotoxicity of dietary flavonoids on different human cancer

types. *Pharmacognosy reviews*, *8*(16), 122.

36. Salmon, C., Song, L., Muir, K., Pashayan, N., Dunning, A. M., Batra, J., ... & Parent, M. E. (2021). Marital status and prostate cancer incidence: a pooled analysis of 12 case–control studies from the PRACTICAL consortium. *European journal of epidemiology*, *36*(9), 913-925.

37. Siegel, R., Ma, J., Zou, Z., & Jemal, A. (2014). Cancer statistics, 2014. *CA: a cancer journal for clinicians*, *64*(1), 9-29.

38. Stafford, M. C., Willoughby, C. E., Walsh, C. P., & McKenna, D. J. (2022). Prognostic value of miR-21 for prostate cancer: a systematic review and meta-analysis. *Bioscience reports*, *42*(1), BSR20211972.

39. Wang, X., Fang, G., & Pang, Y. (2018). Chinese medicines in the treatment of prostate cancer: From formulas to extracts and compounds. *Nutrients*, *10*(3), 283.

40. World Health Organization. (2020). WHO report on cancer: setting priorities, investing wisely and providing care for all.

41. Yeboah-Asiamah, B., Yirenya-Tawiah, D., Baafi, D., & Ackumey, M. M. (2017). Perceptions and knowledge about prostate cancer and attitudes towards prostate cancer screening among male teachers in the Sunyani Municipality, Ghana. *African Journal of Urology*, *23*(4).

CHAPTER 4: STUDY SUMMARY, STRENGTHS AND LIMITATIONS, AND RECOMMENDATIONS

4.1 INTRODUCTION

This section gives an overview of the study limitations, recommendations and conclusion of the study.

4.2 SUMMARY

The main aim of the study was to investigate the knowledge, attitudes and practices of men towards prostate cancer in Thulamela municipality.

The first objective was to determine the knowledge of men regarding prostate in Thulamela municipality. The results of the study showed that the knowledge regarding prostate cancer is low and the aggravating factors included low levels of education and being old age. Age, relationship status, level of education and having a source of income were significantly associated with the knowledge of men regarding prostate cancer.

The second objective aimed at analysing the attitude of men regarding prostate cancer. Again age, relationship status and level of education were positively associated with the attitude of men regarding prostate cancer screening.

The last objective was on assessing the practices of men regarding prostate cancer. The demographic characteristics such as age, source of income, level of education and relationship status were associated with the practices of men regarding prostate cancer screening.

The results of the study revealed that men's practices towards prostate cancer are very much poor and the lack good hygiene and self-care practices exacerbated the incidences of prostate cancer among men. In this study, a sample of 285 participants was randomly selected to participate in the study. The study employed a cross-sectional descriptive design based on a quantitative research methodology.

4.3 RECOMMENDATIONS

4.3.1 Recommendations for the Department of Health

The findings from the present study revealed that there was adequate knowledge regarding prostate cancer. Most of the participants knew most of the factors that causes prostate cancer. However, cell phones which are being widely used are causing a major risk to the spread of prostate cancer but most of the participants did not know that. In this regard, it is recommended that the government and other Non-Governmental organisations should design and implement awareness campaigns that target to educate men in rural areas about the epidemiology of prostate cancer including the possible sources of infection.

It is recommended that the department of health should ensure that PCa screening services are available, accessible and affordable in primary healthcare facilities to those individuals who are at high risk. There is need to train primary health care providers at local rural health care facilities and equipped with knowledge about PCa and ways to manage it so that they can be able to impart this knowledge to men upon general consultations at primary healthcare facilities. This may reduce incidents and mortality cases related to PCa in our country as the public would be more aware of PCa and how it can be managed.

4.3.2 Recommendations for policy makers

The policy makers should develop, strengthen and implement policies that will ensure that the media fraternity includes programs that focus on creating awareness to the public about prostate cancer so that it can reach large number of citizens.

The current study also revealed that there is negative attitude towards prostate cancer. Attitude of men towards prostate cancer is important because it influences the actions of men especially the health seeking behaviour. In many instances the negative attitude towards prostate cancer is mainly influenced by lack of knowledge of prostate cancer and financial constraints. Policies should be derived in manner that offer opportunities for routine check-up/screen for prostate cancer when they seek care from any health facility. This mightincrease the uptake of PCa screening and levelling up the attitude of men towards prostate.

The findings from the current study also showed PCa screening practices were very poor. As most participants rely on traditional herbs and people believe that prostate cancer is a punishment from God. It is recommended that policy makers should initiate policies and programs in clinics, research councils and schools that will encourage youths and adults into action towards screening. It is recommended that availability and accessibility of prostate cancer screening services be established andimproved. The public should also be equipped with knowledge about prostate cancerin general and the screening services.

Furthermore, the public health department should create and plug posters in public places that demonstrate prostate cancer, its risk factors, health effects, management, prevention and screening. In order to ensure early detection and treatment of prostate cancer, it is vital for healthcare providers to teach the public about risk factors for the development of prostate cancer and the essence of early screening. The government and NGO's should also create and implement awareness campaigns that target on raising awareness about the importance of screening and influence men to regularly go for check-ups especially those at high risk. Women within the community should also be included, provided with education on the epidemiology and aetiology of prostate cancer so that they can also be aware and encourage their spouse to go for regular screening especially those at high risk.

4.3.3 Recommendations for further research

The results from this study prompts other researchers to investigate measures which being implemented to raise awareness of prostate cancer in rural communities. It is also important to study the impact of such interventions and evaluating the extent at which the awareness campaigns helped to change the perceptions of men towards prostate cancer.

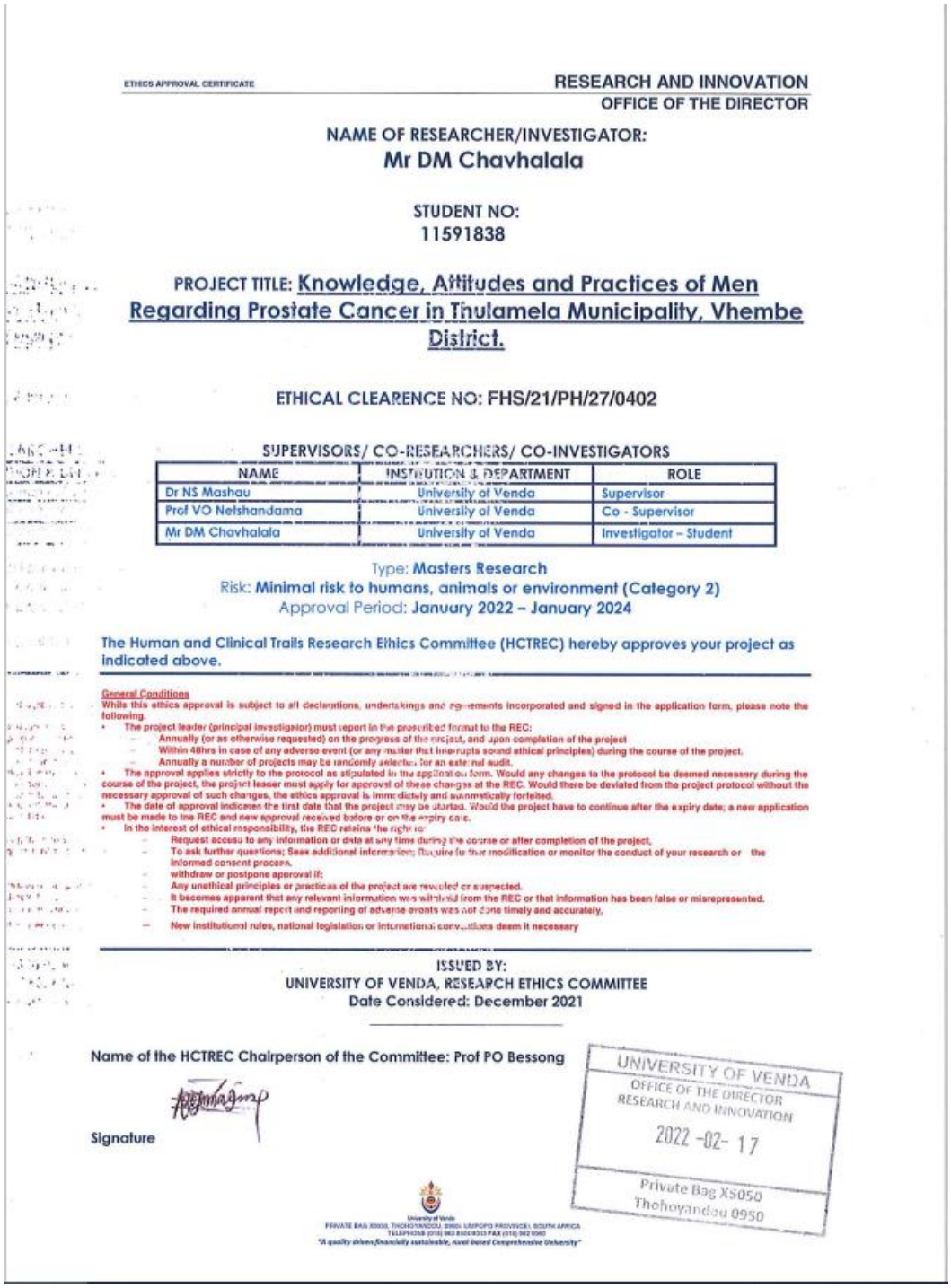
4.4 STRENGTHS AND LIMITATIONS

Strength of this study includes that the participants from this study were selected randomly giving each unit an equal chance of being selected. The English version questionnaire was translated into Tshivenda version and provided respondents an opportunity to choose their preferred version which they would understand better as they are Tshivenda speaking people. Two hundred and eighty three participants were selected in this study, and they all successfully completed the survey questionnaire. This study also had certain limitations. The study used a descriptive survey design and therefore only measured the relationship between the variables at a single point in time. The study was also carried out in a selected village in Thulamela local municipality and the generalizability of such results is limited to the study area.

4.5 CONCLUSION

This is a descriptive exploratory study of knowledge, attitudes and practices of men towards prostate cancer in Thulamela local municipality. The results of this study show that the level of knowledge is adequate, but this could be influence by the age mix in this study. The age at risk age seems not to be having adequate knowledge of prostate cancer. This is further reflected in the negative attitude of men prostate cancer. The results concur with most of the studies carried out in South Africa but contrasts with those carried out in North Africa and Europe. The lack of knowledge and negative attitude of men towards prostate cancer affect the health seeking behaviour of men. It is recommended that the government, NGO’s and other international organisation should invest heavily in public awareness campaigns targeted at increasing the level of knowledge of prostate cancer. This should be a process from young boys so that they grow up knowing the health risks they may face in the later stages of life. Further research should be carryout out to investigate feasible approaches of disseminating information to men about prostate cancer. In addition, the government policies should be monitored so that they penetrate the rural communities which are constantly left behind in health programs such as prostate cancer.

Appendix A: Ethical clearance Letter



ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Mr DM Chavhalala

STUDENT NO:
11591838

PROJECT TITLE: Knowledge, Attitudes and Practices of Men Regarding Prostate Cancer in Thulamela Municipality, Vhembe District.

ETHICAL CLEARENCE NO: FHS/21/PH/27/0402

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Dr NS Mashau	University of Venda	Supervisor
Prof VO Nelshandama	University of Venda	Co - Supervisor
Mr DM Chavhalala	University of Venda	Investigator – Student

Type: Masters Research
Risk: Minimal risk to humans, animals or environment (Category 2)
Approval Period: January 2022 – January 2024

The Human and Clinical Trails Research Ethics Committee (HCTREC) hereby approves your project as indicated above.

General Conditions
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following.

- The project leader (principal investigator) must report in the prescribed format to the REC:
  - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project
  - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
  - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
  - Request access to any information or data at any time during the course or after completion of the project,
  - To ask further questions; Seek additional information; Require to the modification or monitor the conduct of your research or the informed consent process,
  - withdraw or postpone approval if:
  - Any unethical principles or practices of the project are revealed or suspected.
  - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
  - The required annual report and reporting of adverse events was not done timely and accurately,
  - New institutional rules, national legislation or international conventions deem it necessary

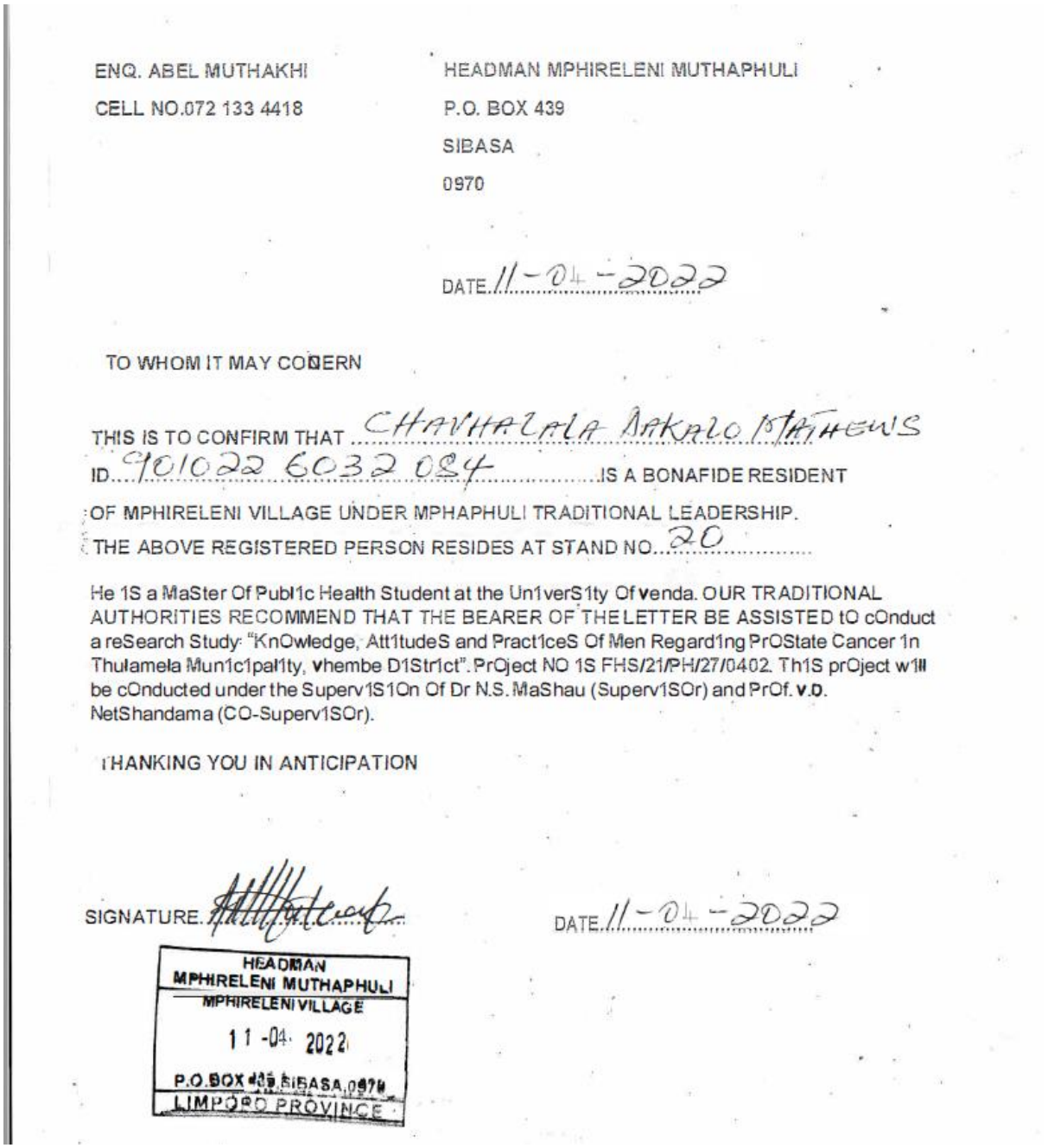
ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: December 2021

Name of the HCTREC Chairperson of the Committee: Prof PO Bessong

Signature

UNIVERSITY OF VENDA
OFFICE OF THE DIRECTOR
RESEARCH AND INNOVATION
2022 -02- 17
Private Bag X5050
Thohoyandou 0950

Appendix B: Permission letter from the Royal Traditional Council of Budeli Village



ENQ. ABEL MUTHAKHI
CELL NO.072 133 4418

HEADMAN MPHIRELENI MUTHAPHULI
P.O. BOX 439
SIBASA
0970

DATE. 11-04-2022

TO WHOM IT MAY CONCERN

THIS IS TO CONFIRM THAT CHAVHALALA BAKALO MATHEWS
ID. 901022 6032 084 IS A BONAFIDE RESIDENT
OF MPHIRELENI VILLAGE UNDER MPHAPHULI TRADITIONAL LEADERSHIP.
THE ABOVE REGISTERED PERSON RESIDES AT STAND NO. 20

He 1S a MaSter Of Publ1c Health Student at the Un1verS1ty Of venda. OUR TRADITIONAL AUTHORITIES RECOMMEND THAT THE BEARER OF THE LETTER BE ASSISTED tO cOnduct a reSearch Study "KnOwledge, Att1tudeS and Pract1ceS Of Men Regard1ng PrOState Cancer 1n Thulamela Mun1c1pal1ty, vhembe D1Str1ct". PrOject NO 1S FHS/21/PH/27/0402. Th1S prOject w1ll be cOnducted under the Superv1S1On Of Dr N.S. MaShau (Superv1SOr) and PrOf. v.D. NetShandama (CO-Superv1SOr).

THANKING YOU IN ANTICIPATION

SIGNATURE. [signature]

DATE. 11-04-2022

HEADMAN
MPHIRELENI MUTHAPHULI
MPHIRELENI VILLAGE
11-04-2022
P.O.BOX 439 SIBASA, 0970
LIMPOPO PROVINCE

Appendix C: Information leaflet and informed consent form

Title of the Research Study : Prostate cancer: An exploration of Knowledge, Attitudes and Practices of Men Regarding Prostate Cancer in Vhembe District, South Africa

Principal Investigator/s/ researcher : (*D.M. Chavhalala, B Social Work*)

Co-Investigator/s/supervisor/s : (*Prof. N.S. Mashau and Prof. V.O. Netshandama*)

Brief Introduction and Purpose of the Study: Prostate cancer is the second largest men's killer disease in the world. There is an increase in prostate cancer cases in South Africa as well. The proposed study will investigate the knowledge, attitudes and practices of men regarding prostate cancer in Vhembe District in the Limpopo Province of South Africa. The findings will be used to develop appropriate strategies for raising prostate cancer awareness.

Outline of the Procedures: The research will take place at convenient times and places that offer the best comfort for participants after they would have consented to participate. During data collection, participants will be expected to give responses to the questions asked. However, participants will not be limited to the set questions to allow for the discovery of new knowledge about prostate cancer. In carrying out this study, the researcher will be the one collecting data from every participant. The questionnaire guide is expected to take at least 30 minutes. There will be an allowance for more time if the participant agrees and new knowledge is being generated. Each participant will only have one chance of participating in the study. Risks or Discomforts to the Participant: In the carrying out this study, no risks are anticipated because no experiments will be conducted that may jeopardise the safety of participants. In addition, data will be collected at comfortable places chosen by participants. This is a nonexperimental study and therefore it has no adverse effects.

Benefits: Participants will be informed that there will be no direct benefits that will accrue to them as a result of participating in this study. An indirect benefit is that participants may become aware of prostate cancer and may want to act on their knowledge after participating in the study.

Reason/s why the Participant May Withdraw from the Study: Participants Will withdraw from this study on voluntary basis if they no longer wish to proceed.

Remuneration: Participants will be informed that there will be no monetary remuneration or any other non-monetary benefits directly or indirectly linked to their participation in the study.

Costs of the Study: The participants will not incur any financial costs because of participating in this study.

Confidentiality: Information provided by participants will remain confidential and will only be used for this r study. The information will only be shared with the supervisor.

Research-related Injury: This study will not involve any use of heavy materials or machinery.

Therefore, there is no research related injury that is expected during or after this study.

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher (0678571135.), my supervisor (015 962 8892) or the University

Research Ethics Committee Secretariat on 015 962 9058. Complaints can be reported to the

Director: Research and Innovation, Prof GE Ekosse on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

General:

Potential participants must be assured that participation is voluntary and the approximate number of participants to be included should be disclosed. A copy of the information letter should be issued to participants. The information letter and

consent form must be translated and provided in the primary spoken language of the research population.

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, (*Chavhalala, D. M*), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _,
- I have also received, read and understood the above written information (*Participant Letter of Information*) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation from the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant Date Time Signature

I, …… …… …… ……..

(*Dakalo Chavhalala*) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

…… Date……

Signature……

Full Name of Witness (If applicable)

……. Date …….
Signature……..

Full Name of Legal Guardian (If applicable)

…… Date……
Signature…….

Please note the following:

Research details must be provided in a clear, simple and culturally appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade 10 level- use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counseling (Department of Health, 2004)

If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant e.g. parent, sibling, friend, pastor, etc. should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).

If anyone makes a mistake completing this document e.g. a wrong date or spelling mistake, a new document has to be completed. The incomplete original document has to be kept in the participant's file and not thrown away, and copies thereof must be issued to the participant.

Appendix D: English version questionnaire

Prostate cancer: An exploration of Knowledge, Attitudes and Practices of Men regarding Prostate Cancer in Vhembe District, South Africa Instructions:

1. Please do not write your name or identity number on any part of this questionnaire

2. Answer all questions to the best of your ability

3. Please tick in the approximate spaces provided.

SECTION 1: BIOGRAPHICAL INFORMATION OF THE PARTICIPANT

number	questions	responses
1.	How old are you?	_____ years
2.	What is your current relationship status?	Married Living together with a partner Single Separated/Divorced Widowed
3.	What is your highest level of education?	No schooling Primary incomplete Primary complete Secondary incomplete Secondary complete More than secondary
4.	What is the main language spoken at your home?	_____
5.	What is your eco-town?	_____
6.	Do you have a job for which you get paid or from which you earn money?	Yes No
7.	In what type of dwelling or housing do you live?	Brick house/apartment, Informal dwelling/shack (e.g. in an informal or squatter settlement), Traditional dwelling/hut/structure made of traditional materials,

		Other (please specify) ……
8.	Can you tell me whether you have any of the following where you live:	
8.1	Do you have electricity or a generator or a solar panel?	Yes No
8.2	Do you have tap water in your house, compound, or property?	Yes No
8.3	Do you have any type of toilet in your house, compound, or property?	Yes No
8.4	Do you or does anyone living with you have a radio?	Yes No
8.5	Do you or does anyone living with you have a television?	Yes No
8.6	Do you or does anyone living with you have internet access on a computer, a laptop or a mobile phone?	Yes No

SECTION 2: KNOWLEDGE OF PROSTATE CANCER RISK FACTORS

Number	Questions	responses
	Could any of the following increase chances of getting prostate cancer?	
9.	Having had prostate cancer previously.	Yes No Don`t know

10.	Drinking more than 1 bottle of beer or 1 glass of other types of alcohol per day.	Yes No Don't know
11.	Could any of the following increase any man's risks of getting prostate cancer?	
11.1	HIV/AIDS	Yes No Don't know
11.2	Being infected with other sexually transmitted diseases?	Yes No Don't know
11.3	When your partner is using birth control pills/family planning for more than 5 years	Yes No Don't know
11.4	Wearing a tight underwear	Yes No Don't know
11.5	Having unprotected sex	Yes No Don't know
11.6	Smoking any cigarettes at all	Yes No Don't know
11.7	Having sex at a young age?	Yes No Don't know
11.8	Poor personal hygiene e.g. not washing one's penis and testicles well, staying for long without bathing or wearing wet underpants	Yes No Don't know
11.9	Having many sexual partners	Yes No Don't know
11.10	Bewitched/witchcraft/evil spirits	Yes
		No Don't know

11.11	Being overweight	Yes No Don't know
11.12	Doing little physical activity or manual labour?	Yes No Don't know
11.13	Putting a mobile phone in between your legs	Yes No Don't know
11.14	Being exposed to dirty air or water	Yes No Don't know
11.15	Aging/growing old	Yes No Don't know

SECTION 3: KNOWLEDGE OF PROSTATE CANCER'S SYMPTOMS

Number	Questions	Responses
12	Can you tell me if you think the following could be signs of prostate cancer:	
12.1	Frequent urination	Yes No Don't know
12.2	Weak or interrupted urine flow or the need to strain to empty the bladder	Yes No Don't know
12.3	The urge to urinate frequently at night	Yes No
		Don't know

12.4	Blood in the urine	Yes No Don't know
12.5	New onset of erectile dysfunction	Yes No Don't know
12.6	Pain or burning during urination?	Yes No Don't know
12.7	Discomfort or pain when sitting, caused by an enlarged prostate	Yes No Don't know

SECTION 4: ATTITUDE OF MEN ABOUT PROSTATE CANCER

13.	Prostate Cancer does not exist.	Yes No Don't know
14.	Prostate cancer is caused by witchcraft/evil spirits	Yes No Don't know
15.	All male adults must undergo prostate cancer screening	Yes No Don't know
16.	Early diagnosis of prostate cancer improves clinical outcome	Yes No Don't know
17.	All male adults must consider medical and surgical treatment to cure prostate cancer	Yes No
		Don't know

18.	Screening of prostate cancer is not necessary if one is healthy and fit	Yes No Don't know
19.	I will be considering going to the clinic if I get sick	Yes No Don't know

SECTION 5: PRACTICE OF MEN REGARDING PROSTATE CANCER

20.	I use traditional herbs to protect myself from prostate cancer.	Yes No Don't know
21.	I pray to God to protect me from prostate cancer	Yes No Don't know
22.	Have you ever been to see a nurse or clinical officer or doctor about a symptom that made you think something was wrong, like a symptom of prostate cancer?	Yes No Don't know
23.	Have you ever been to see a traditional healer about a symptom that made you think something was wrong, like a symptom of prostate cancer?	Yes No Don't know

Thank you

Appendix E: Tshivenda Version Questionnaire

An exploration of Knowledge, Attitudes and Practices of Men regarding Prostate Cancer in Vhembe District, South Africa

Zwitevhedzwa:

1. Vha songo nwala zwidodombedzwa zwi ne zwa do vha dzumbulula madzina a vho.

2. Kha vha fhindule mbudziso dzothe dzi re a fho fhasi.

3. Kha vha nwale khuroso (X) ho teaho zwi tshi elana na phindulo ya vho.

Khethekanyo 1: Vhuvha ha Muthu

nomboro	Mbudziso	Phindulo
1.	Vha na minwaha mingana?	_____
2.	Kha vha sumbedze tshiimo tsha vho tsha mbingano?	Ndo Vhinga Ndi dzula na muthu ri so ngo vhingana A thi ngo vhinga Ndo talana Ndo lovhelwa nga mufumakadzi
3.	Kha vha sumbedze ndalukanyo dza vho dza pfunzo dza tshikolo?	A thongo dzhena tshikolo naluthihi Phuraimari Sekondari Kholedzhi Yunevesithi
4.	Hayani vha shumisa luambo de kha u davhidzana?	_____
5.	Dorobo ine vha I shumisa ndi ifhio?	_____
6.	Kha sumbedze hune vha wela hone siani la mushumo	Ndi a shuma A thi shumi Ndi hola mundende Ndi to di shuma

7.	Vha dzula kha nndu ya hani?	Nndu ya zwidina na mazennge/zwileithi Fulethe Mukhukhu Nndu ya mahatsi
		Arali nndu ya vho I songo bulwa afho ntha kha I nwale nga fhasi ……
8.	Kha sumbedze zwine nndu ya vho ya vha na zwo kha zwo nwaliwaho afho fhasi:	
8.1	Huna mudagasi hune vha dzula hone?	Ee Hai
8.2	Huna madi a nduni hune vha dzula hone?	Ee Hai
8.3	Huna thoilethe ya nduni hune vha dzula hone?	Ee Hai
8.4	Huna radio hune vha dzula hone kana vha a kona u thetshelesa radio hune vha dzula hone?	Ee Hai
8.5	Huna thelevishini hune vha dzula hone?	Ee Hai
8.6	Huna khomphutha kana founu I no kona u dzhena kha inthanethe hune vha dzula hone?	Ee Hai

Khethekanyo 2: Ndivho ya zwithu zwino engedza magavhelo a u wana khentsa ya vhudzimu ha vhanna?

Nomboro	Mbudziso	Phindulo
	Zwithu zwo nwaliwaho afho fhasi zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	
9.	Muthu o no vhuyaho a vha na khentsa ya vhudzimu ha vhanna a nga do vha a vha nayo?	Ee Hai A thi divhi

10.	U nwa halwa, bodelo kana ngilasi dzi no vhira nthihi nga duvha zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
	Zwitevhelaho zwi nga engedza kana u ita uri muthu a vhe na khentsa ya vhudzimu ha vhanna	
11. 1	U kavhiwa nga tshitzhili tsha HIV/AIDS zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.2	U kavhiwa nga malwadze manwevho a no da nga vhedzekani vhu so ngo tsireledzeaho zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.3	Arali mufumakadzi wa vho kana muthu ane vha seisana nae a tshi shumisa mishonga ya uri a si vhifhe muvhilini zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.4	U ambara vhurukhu ha nga ngomu hono pata zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.5	U ita vhudzekani vhu so ngo tsireledzeaho zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi

11.6	U daha fola zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.7	U di dzhenisa kha zwiito zwa vhudzekani u tshe mutuku nga minwaha zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.8	u dzula u songo tamba tshifhinga tshilapfu kana nau ambara vhurukhu ha nga ngomu ho nukalaho zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.9	U di dzhenisa kha zwiito zwa vhudzekani na vhathu vhanzhi zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.10	U loiwa kana u vha na mimuya zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.11	U vha nga nntha ha tshikalo tsho tewaho tsha muvhili zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.12	U sa ita nyonyoloso dza muvhili zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.13	U vhea founu vhukati ha milenzhe zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
11.14	U nwa kana u shumisa madi o tshikafhalaho zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi

11.15	U vha mualuwa nga minwaha zwi nga ita uri muthu a wane khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi

Khethekanyo 3: Ndivho ya tsumba dwadze ya khenta ya vhudzimu ha vhanna

Nomboro	Mbudziso	Phindulo
12	Zwo nwalaho a fho fhasi zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna:	
12.1	U tambuluwa tshifhinga tshinzhi kha duvha lithihi zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna?	Ee Hai A thi divhi
12.2	U vha na mutambuluwo u ne wa bva u tshi khathuwa kana u di wana u tshi kokomodza dundelo uri u kone u tambuluwa zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna?	Ee Hai A thi divhi
12.3	U tambuluwa tshifhinga tshinzhi vhusiku zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna?	Ee Hai A thi divhi
		Don’t know
12.4	U bvisa mutambuluwo u ne wavha na malofha zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna?	Ee Hai A thi divhi

12.5	U sa vuwa ha vhudzimu ha munna zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna?	Ee Hai A thi divhi
12.6	U pfa u vhavha kana u fhiselwa kha vhudzimu ha munna musi u tshi tambuluwa zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna?	Ee Hai A thi divhi
12.7	U sa dzulisea zwavhudi kana u pfa u vhavha na u fhiselwa zwi tshi khou itiwa nga u kukumuwa ha vhudzimu ha munna zwi sumbedza tsumba dwadze ya khentsa ha vhudzimu ha vhanna?	Ee Hai A thi divhi

SECTION 4: Vhudipfi ha vhanna nga ha Khentsa ya vhudzimu ha vhanna

13.	Khentsa ya vhudzimu ha vhanna a I ho?	Ee Hai A thi divhi
14.	Khentsa ya vhudzimu ha vhanna I vhangiwa nga u loiwa kana nga dzheniwa nga mimuya mivhi	Ee Hai A thi divhi
15.	Vhanna vhothe vha tea u toliwa khentsa ya vhudzimu ha vhanna	Ee Hai A thi divhi
16.	U toliwa na u wanuluswa ha vhulwadze khentsa ya vhudzimu ha vhanna I sa aathu fhadalala na muvhili zwi nga thusa kha u khwinisa dzilafho la khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi

17.	Vhanna vhothe vha tea u shumisa dzilafho la kiliniki kana sibadela arali vha di wana vha na khentsa ya vhudzimu ha vhanna?	Ee Hai A thi divhi
		Don't know
18.	U toliwa Khentsa ya vhudzimu ha vhanna a zwi ngo tea arali muthu a mutakalo wavhudzi?	Ee Hai A thi divhi
19.	Nne ndi nga shumisa kiliniki kana sibadela arali nda di pfa u nga ndi na tsumba dwadze kana ndi tshi khou lwala khentsa ya vhudzimu ha vhanna	Ee Hai A thi divhi

Khethekanyo 5: Maitele a vhanna zwi tshi da kha khentsa ya vhudzimu ha vhanna

20.	Ndi shumisa mishonga ya tshirema u di tsireledza kha khentsa ya vhudzimu ha vhanna	Ee Hai A thi divhi
21.	Ndi rabela mudzimu u di tsireledza kha khentsa ya vhudzimu ha vhanna	Ee Hai A thi divhi
22.	Ndo no di wana ndi kho uya kiliniki kana sibadela nga murahu ha musi ndi khou vhona tsumba dwadze dza khentsa ya vhudzimu ha vhanna	Ee Hai A thi divhi
23.	Ndo no di wana ndi kho uya nangani nga murahu ha musi ndo vhona tsumba dwadze dza khentsa ya vhudzimu ha vhanna	Ee Hai A thi divhi

Ndo livhuwa!