PROSTATE CANCER EDUCATIONAL INTERVENTION AS A STRATEGY FOR ENHANCING KNOWLEDGE AND SCREENING UPTAKE OF MEN IN SELECTED HOSPITALS IN CROSS RIVER STATE, NIGERIA

BY

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MATRIC NUMBER: 135305

A Thesis in the Department of Nursing

Submitted to the Faculty of Clinical Sciences in partial fulfilment of

the requirements for the Degree of

DOCTOR OF PHILOSOPHY

of the

UNIVERSITY OF IBADAN

MAY, 2019

ABSTRACT

Prostate Cancer (PC) is a common cause of cancer-related death among men. In developing countries, available evidence indicates that factors responsible for high PC-related mortality rate include poor knowledge and low uptake of screening practices. In Nigeria, there is paucity of literature on PC-specific health promotion package that emphasise knowledge and screening uptake of men. This study, therefore, was designed to evaluate prostate cancer educational intervention as a strategy for enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, Nigeria.

A mixed method research comprising of focus group discussion and a quasi-experimental pretest-posttest research design was used. The study was conducted in four randomly selected General hospitals in three senatorial districts in Cross River State. The hospitals in Ogoja and Ugep were purposively designated Intervention Group (IG) while Akamkpa and Calabar constituted the Control Group (CG). A sample of 420 men out of 980 regular Out Patient Department attendees was proportionately distributed 210 to IG and CG respectively. An educational training package on knowledge and screening uptake of PC with four teaching sessions of 60 minutes each was administered weekly to participants in IG while CG received the traditional health education on wide range of health promotion and disease prevention activities. A validated structured questionnaire ($r = 0.89$) was used to assess knowledge and PC screening uptake of men at baseline (PT_1), immediate post intervention (PT_2), at three months (PT_3) and six months post intervention (PT_4) periods. The participants' knowledge was scored on a scale of 1-100 and then categorised into good (60 - 100%), fair (40 -59%) and poor (0 - 39%). The PC screening uptake was assessed using questionnaire and authenticated by Prostate Specific Antigen assay and Digital Rectal Examination. The participants were then categorised as users and non-users. Data were analysed using descriptive statistics, student t-test, and Cochran Q test at $\alpha_{0.05}$.

Mean age of IG and CG was (51.4 ± 8.9) and (54.1 ± 8.2) years respectively. At baseline, there was a significant difference between knowledge scores of IG (10.1 ±3.0) and CG (9.1 ± 4.8). In the IG, there was an increase in knowledge scores to 19.4 ± 2.0 at PT_2, 16.6 ± 2.7 at PT_3 and 17 ±2.7 at PT_4. Similarly, the knowledge scores increased slightly in CG to 9.8 ± 3.6 at PT_2, 11.3 ± 2.1 at PT_3 and decreased to 10.7 ± 2.3 at PT_4. The observed increment in knowledge scores was significantly higher among IG than CG. At baseline only 2.4% of participants had utilized PC screening uptake, 5.2% at PT_2, 10.5% at PT_3 and 45.2% at PT_4 among IG. Likewise among the CG, only 2.9% of participants had utilized PC screening uptake at baseline and at PT_2, 5.4% at PT_3 and at 8.1% at PT_4. The observed increment in utilisation of PC screening uptake was significantly higher among IG than CG.

The Prostate cancer specific educational intervention improved the knowledge of men about prostate cancer and enhanced uptake of prostate cancer screening. It is therefore recommended for routine use in susceptible men.

Keywords: Prostate cancer, Educational Intervention, Prostate cancer screening uptake

Word count: 497

CERTTIFICATION

I certify that this project was carried out by Justin Agorye INGWU in the Department of Nursing, Faculty of Clinical Sciences, College of Medicine, University of Ibadan

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DEDICATION

This study is dedicated to the glory of the Almighty God, my Alpha and Omega, who is able to do immeasurably more than all we ask or imagine and on whose hands my life rests.

ACKNOWLEDGMENTS

I would like to express my gratitude to the Almighty God for the guidance and mercy granted me during this programme. In fact, the privilege to accomplish my career aspiration in Nursing is God's. My sincere appreciation goes to my erudite supervisor, Dr Beatrice Mgboro Ohaeri and Professor Okeke for their painstaking supervision and invaluable criticisms. I am particularly grateful to Prof. Olabisi Prisca Adejumo, who laid the solid foundation during my Masters programme and the Head of Department, for discharging her academic and administrative responsibilities diligently. Many regards to Dr Oluwatosin Abimbola, Dr Onibokun, Dr Okanlawon, Dr Rose Ilesanmi, the Post Graduate Co-ordinator, Dr Ndikom and other academic staff in the department for their inspiration and erudition. I equally acknowledged Dr Modupe Oyetunde of blessed memory for her inspiration and support.

I remain grateful to the Ministry of Health Headquarters, Calabar, for granting me the ethical approval for this work. The management and staff of General Hospitals, Ogoja, Ugep, Akamkpa and Calabar are also worthy of appreciation. They were very supportive. I am highly indebted to the management of University of Nigeria, Nsukka, for providing the opportunity to serve. To Prof (Mrs) Agnes Anarado, Dr Ada Nwaneri, Dr Nwonu, Dr (Mrs) Pat. Okpala, Prof (Mrs) I.L. Okoronkwo, Dr (Mrs) A. Chinweuba, Dr (Mrs) Ogbonnaya, Dr (Mrs) Peace Iheanacho, Dr (Mrs) Splendor Ihiedebube and other academic and non - academic staff of the Department of Nursing Sciences, UNEC, I say thank you.

My sincere appreciation also goes to my relations, friends and their families, for their encouragement and consistent prayers during the course of this programme. They include Mr & Mrs Kevin Ingwu, Mr & Mrs Ernest Ekabo, Mr & Mrs Harrison Abang, Mr & Mrs Joe Ingwu, Mr & Mrs Godwin Ukwu, Mr & Dr(Mrs.) Peter Abu Agim , Mr & Mrs Sylvester Ugor, Dr & Mrs Boniface Ushie, Dr & Mrs David Ugal, Mr & Mrs John Undie, Mr & Mrs Ubenaye Ashi, Mr & Mrs Anake Ashi, Dr Romanus Aboh, and Dr & Mrs Fidelis Atseye, Prof and Mrs Jones Ingwu, Mr & Mrs Peter Ingwu. May God bless you abundantly (Amen).

I appreciate the contribution of my data analysts, Mr Abiona Taiwo and Mr Godstime Onungwu for facilitating this project work. For others too numerous to mention, I

appreciate all your efforts and contributions. May the Almighty God, who sees the heart of all men, reward you abundantly in Jesus name (Amen).

Finally, I am highly indebted to my beloved wife, Mrs Mary Agorye Ashi- Ingwu and my beloved children, Magdalene, Kevin-Joe and Emmanuel for their understanding, inspiration and support during the course of this programme. My thanks also go to my mother, Mrs Angelina Ashi-Ingwu and the rest of the Ingwu's family for their prayers and support throughout the programme. May the almighty God who knows the heart of man bless and reward them dearly in Jesus name. Amen.

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ACS	American Cancer Society
DRE	Digital Rectal Examination
GD	Focus Group Discussion
GHA	General Hospital Akamkpa
GHC	General Hospital Calabar
GHO	General Hospital Ogoja
GHU	General Hospital Ugep
KPCS	Knowledge of Prostate Cancer Screening
MOH	Ministry of Health
NGO	Non-Governmental Organisations
OPD	Out Patient Department
PC	Prostate Cancer
PCS	Prostate Cancer screening
PSA	Prostate Specific Antigen Test
QGFGD	Questionnaire Guide on Focus Group Discussion
RAs	Research Assistants
UCTH	University of Calabar Teaching Hospital
UNTH	University of Nigeria Teaching Hospital
WHO	World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Globally, the incidence of cancer has reached an intractable proportion. The high frequency of occurrence is evidenced in developing countries that hitherto had low incidence. For instance, Okobia (2008), Ajape, Babata and Abiola (2010), observed that the rising global incidence of malignant diseases constitutes a serious health concern, particularly in developing countries where the increase is in multiples. Cancer is the second highest cause of death in Africa and has been killing a lot of people silently to such an extent that one can safely say that it kills more people than HIV/AIDS, tuberculosis and malaria (WHO, 2011). Ogunbiyi (2013) corroborated the earlier findings that HIV is an additional cause of the increased incidence of cancer in Nigeria.

Prostate Cancer (PC) has been discovered to be the number one cancer in men with increasing incidence and morbidity in men of black ancestry (Delongchamps, Singh and Hass, 2007). Its incidence and prevalence in black men is higher than among men from other races (Odedna, Ogbunbiyi and Ukoli, 2011). African-American men are 2.5 times more likely to develop the disease than any other ethnic groups in the USA, and are two to three times more likely to die of the disease (Arnold-Reed (2008). The American Cancer Society (ACS) (2013), reports an estimated 230,110 new cases of PC in the year 2012 alone, and emphasises that it has become the number one cancer in men of black ancestry. In the United States, approximately one in 11 men will develop PC during their lifetime. Prostate cancer becomes increasingly common with each decade of life; over 80 percent of all cases are diagnosed in men who are over 65 years of age.

Cancer starts when cells in the body begin to grow out of control. Cells in any part of the body can turned to become a cancer cell and spread across. It begins in bit and grows uncontrollably. According to Ogunsanya, Brown, Odedina, Barner, Adedipe, and Corbell, (2017), prostate cancer occurs more often in African-American men and in Caribbean men of African ancestry than in men of other races. Also, African-American men are also more than twice as likely to die of prostate cancer as white men. It occur

less often in Asian-American and Hispanic/Latino men than in Non-Hispanic whites. It was affirmed that the reasons for these racial and ethnic differences are not clear.

Available evidence indicates that the prevalence of (PC) is uppermost in Canada, the United States and the Scandinavia, but most minuscule in Asian countries (Hass, Delongchamps, Brawley, Wang and Roza, 2009). Asians have a PC incidence rate of 127.6 per 100,000 while Caucasians have a rate of 172.9 per 100,000. Investigations have revealed that African-Americans have the highest PC incidence rate of 275.3 per 100,000 (Arnold-Reed 2012). However, Hass, Delongchamps, Brawley, Wang and Roza, (2009) observe that at the point when national patterns in mortality are contrasted against occurrence figures, a vast difference is noted for the United States, where substantial quantities of men are determined to have PC, and relatively few die of the disease.

Prostate cancer is a disease of public health importance world-wide with 70% occurrence in more developed countries and regions of Australia, New Zealand, and America (WHO, 2012; Brawley, 2012). In Africa, prostate cancer is the leading cancer in both occurrence and death rate statistics (Rebbeck, Devesa, Chang, Bunker, Cheng, Cooney, 2013). It is relatively high in South Africa (Mofolo et .al, 2015), second most common in Ghana among men next to liver cancer with an incidence of more than 200 cases per 100, 000 of the population per year (MOH, 2016)

On the contrary, in numerous Asian and African nations, where the rate might be lower, most men will in the end capitulate to PC. This seems to suggest that American men are more aware of the disease and may be diagnosed earlier, when the disease is at a curable state (Rebbeck, Zeigler-Johnson et al, 2011). Not surprisingly, most data about PC among dark men exist for African - Americans. This reality, be that as it may, has ended up being of specific importance for other dark men vulnerable to this illness around the globe. The discoveries among African - American men are interesting in light of the fact that they bring up issues about the hereditary underpinnings of prostate cancer. At the end of the day, given the discoveries among African-American men, and the way that African-Americans share a lot of hereditary make-up with Africans, would one in this manner hope to discover correspondingly high prostate malignancy rates among Nigerian men for example.

Already, several Nigerian researchers have explored this conundrum. According to

Shittu and Kamara (2008), there has been a rise in the reported cases of carcinoma of the prostate gland among Nigerians in recent years, and PC is becoming a major cause of death among men. In what has been hailed as a milestone examination, prostate cancer remains the second most commonly diagnosed cancer in men, with an estimated 1.1 million diagnoses worldwide in 2012, accounting for 15% of all cancers diagnosis (Ferlay et al 2012). The frequency of autopsy detected prostate cancer is roughly the same worldwide (Haas et al, 2008). An autopsy studies revealed the alarming rate of prostate cancer at age <30 years of 5% (95% CI: 3-8%), increasing by an odds ratio of 1.7 (1.6-1.8) per decade, to a prevalence of 59% (48-71%) by age >79 years (Bell, 2015). Moreover, investigations have revealed that 4% of all apparently healthy Nigerian men aged 40 years and above, and living in the South-South region of Nigeria, had their PSA levels elevated beyond the normal range without health promotion activities being undertaken by the individuals or government or its agencies (Ejike, 2006). Accordant with WHO (2013), cancer represents 13 per cent of all deaths enlisted comprehensively and 70 per cent of that figure happened in low income and middle nations, for example, Nigeria. In major cancer treatment Centres in Nigeria, it is estimated that one out of ten cases of cancer reported will be prostate cancer (Ogunbiyi, 2013).

Prostate cancer spreads at a higher rate in Nigerian environment (Ogunbiyi, 2013). The clinical prostate malignancy rate among Nigerians might be as high as the one noted in dark men (or African - American) in the United States. Ogunbiyi and Shittu (2006), maintain that PC is undoubtedly the main cancer among Nigerian men and it comprises around 11% of all male cancer cases reported. Similarly, Ukoli (2006) concludes that the level of men with prostate cancer specific antigen (PSA) more than or equivalent to 4 ng/ml which is practically identical to that of unscreened populaces with a high occurrence of PC, for example, African-American men.

Moreover, investigations have revealed that 4% of all apparently healthy Nigerian men of year 40 and above, and living in the South-South region of Nigeria, had their PSA levels elevated beyond the normal range without health promotion activities being undertaken by the individuals or government or its agencies (Ejike, 2006). According to WHO (2013), the disease represents 13 per cent of all bereavements enrolled all around and 70 per cent of that figure happened in low pay nations, for example, Nigeria.

In Nigeria, evaluated quantities of 10,000 tumour cases are recorded every year while

250,000 new cases are recorded yearly (World Health Organization, 2013). In University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla, the three most occurring cancer among patients from January 2008 to October 2014 are breast cancer (54.7%), prostate cancer (30.5%) and cervical cancer (14.8%) out of 1,502 patients that presented and were diagnosed of these types of cancer within this period (UNTH Cancer Registry, 2012). Almost all the PC issues identified in UNTH from 2008 to 2012 were opportunistic, thus, the primary intention was not for prostate cancer screening. Prostate cancer scholars advocate that men should be adequately informed about the disease and mass screening programmes should be organized among men. The rising incidence of PC in developing countries and the increasing mortality from the disease are major health concerns.

Modeste, Caleb-Drayton and Montgomey (2010), argue that a primary reason for this escalating mortality is lack of health promotion initiative and screening uptake. Unavailability of PC screening is no-doubt a consequence of lack of awareness, which manifests in most developing countries including Nigeria. Also, the growing incidence of PC among men in developing countries has also been attributed to low priority for cancer care and interventions. This is because over the years, efforts have been placed on the control of communicable diseases and improving environmental sanitation to the neglect of preventing non-communicable diseases such as cancer (Okobia, 2008). Hence, Ferlay, Bray, Forman, Mathers and Parkin (2010) assert that with improvements in the control of communicable diseases and the concomitant increase in life expectancy, the proportion of deaths attributed to cancers, would continue to increase.

This is because despite the dangers posed by the disease, its awareness tends to be relatively low on the list of health care priorities even among the more affluent men in Nigeria (Odusanya and Tayo, 2007). Most studies conducted on men's knowledge, attitude and practice relating to PC (Pillay, 2006; Odusanya and Tayo, 2007; Ajape, Babata and Abiola, 2012), show that Nigerian men are not properly informed about PC and have negative attitude towards its prevention. For instance, it was discovered that PC generally receive little funding, media coverage, and consequentially, people with PC receive inadequate treatment and have poorer outcomes compared to female oriented cancers (Cooperberg, Broering, and Carroll, 2013). In Nigeria, as a result of low level of awareness and limited government efforts towards the prevention and control of PC, people generally present late for treatment, thus increasing the likelihood of poor treatment outcomes.

Therefore, to corroborate Okobia (2008), that the situation calls for a state of emergency which include constantly embarking on health educational programme. Educating people on how to detect the disease earlier, its prevention and treatment must be prioritized. According to Ottawa Charter for Health promotion (2007), health educational programmes enable people have knowledge about their health condition and how to live a healthy life generally. Furthermore, Charter (2007) posits that health promotion standards and procedures can be advanced to various sorts of populace gatherings, hazard components, sicknesses and different settings such as schools, hospitals, churches, among others. Although, these programmes can be carried out in different settings, the hospital is one of such settings where programmes on PC can be organized with positive results as it indicated an extremely crucial function in enhancing sound health, averting illnesses and providing rehabilitation services.

Nurses constitute the higher percentage of health workers and they provide health care services across all the sectors of health care delivery. Therefore, it is expected that nurses apply their skills in educating men and give proper information about the disease. Certainly, high level of educational will be required from the nurses to inform the men about the dangers associated with this deadly disease. The enlightenment on early detection measures is essential in order to aid them in taking decisive decisions on prevention of PC as well as promotion of healthy living and their care. Hence, the need for prostate cancer educational intervention as a strategy for enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, South-South, Nigeria.

1.2 Statement of the Problem

The high mortality rate in PC can be curbed through enlightenment about screening uptake which include Digital Rectal Examination (DRE) and Prostate Specific Antigen (PSA) tests in hospitals. Although the role of DRE and PSA in reducing the mortality of prostate cancer is still questionable, the ACS still recommends that all men over 40 years of age of African descent and with a family history of prostate cancer should perform DRE and PSA tests annually (American Cancer Society, 2011).

For early diagnosis and treatment programmes of any malignancy to be effective, the members of the public must be aware of the disease and its impact, presentation and potential treatments. Earlier investigations have revealed that health education campaigns in developed and developing countries have greatly increased awareness of breast and cervical cancers in women who are at risk, and have led to increased rates of

early diagnosis and treatment. According to Ogundipe and Obinna (2010), there is low level of awareness of PC and screening uptake among Nigerian men and this engenders a negative attitude towards prevention as most Nigerian men do not go for regular medical check-ups.

Therefore, symptoms of PC which they should have observed in order to assist in early detection and reduction in morbidity are neglected. Such deferral is critical in view of the poorer prognosis and increase cost of treatment associated with the advanced stage of the disease. Moreover, PC is a chronic debilitating disease which has continued to cause extreme distress and anxiety for patients, carers and their families, and poses challenging clinical problems to nurses. The problem associated with PC is not only limited to the men, the family as a whole is affected. The economic effect of being affected with PC is high because it diverts the economic resources budgeted for family upkeep and children's education, to managing PC which is expensive. The children of the affected family may be made vulnerable to social vices because they may not be adequately cared for as the attention of the family will be distracted. These children may also be abused physically and sexually in their quest for survival.

According to Abdulkareem (2009), current data from most parts of the country show PC to be the third most common cancer except in Calabar where a very high figure was recorded. Data available from records in tertiary hospitals of Cross River State, show significant morbidity and mortality rate among men. At the University of Calabar Teaching Hospital (UCTH), for instance, records indicates that out of about 500 men referred to the hospital by physicians, following some clinical symptoms for prostate specific antigen screening between 2012 and 2015, over 150 were admitted due to PC, out of which more than 20 died. Despite the recorded high incidence of morbidity and mortality among men due to PC in that setting and the state in general, there exists no comprehensive health information package for PC awareness and screening uptake of PC for men at risk of developing the disease hence there is urgent need for prostate cancer educational intervention as a strategy in enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, South-South, Nigeria.

Secondly, nurses working in the health care settings give general health information to men on a wide range of health promotion and disease prevention activities during their visit to the hospital for medical care without particular emphasis on PC awareness

creation and screening uptake. Also, limited studies have measured the impact of the general health education given to clients, the efficacy of structured PC awareness, and screening uptake such as the practice of Digital Rectal Examination (DRE) and PSA tests for early detection measures of PC in the health care settings. This creates a knowledge gap among the men hence the need for prostate cancer educational intervention as a strategy in enhancing knowledge and screening uptake of men to create awareness and informed decision making for the screening uptake.

An informal interaction by the researcher with some of the men during typical Out Patient Department (OPD) visit to the hospitals for medical check-up revealed that a significant number of these men lack adequate knowledge about PC and its screening uptake. This further creates a gap in assessing the effect of educational campaigns on awareness and screening uptake of PC in the area under consideration. Therefore, this study seeks to evaluate prostate cancer educational intervention as a strategy in enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, South-South, Nigeria.

1.3 Purpose of the Study

The study is designed to determine the prostate cancer educational intervention as a strategy for enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, Nigeria.

1.4 Specific Objectives of the Study

The specific objectives of the study are to:

1. assess the level of knowledge on prostate cancer among the intervention and the control groups before and after the intervention programme.
2. assess the attitude towards prostate cancer screening uptake among the intervention and the control groups before and after the intervention programme.
3. investigate the screening uptake of Digital Rectal Examination (DRE) and Prostate Specific Antigen (PSA) test among the participants before and after the intervention programme.
4. identify the perceived reasons that influence screening uptake for prostate cancer among the intervention and control groups before and after prostate cancer intervention programme.

1.5 Research Questions

Based on the specific objectives, the following research questions are raised:

1. what is the level of knowledge of prostate cancer and its risk factors among the intervention and the control groups?
2. what is the attitude of participants towards prostate cancer screening uptake among the intervention and the control groups?
3. to what extent is the screening uptake of prostate specific antigen test and digital rectal examination are being utilized by participants in the intervention and control groups?
4. what are the perceived reasons that influence the participants screening uptake for early detection of prostate cancer among the intervention and control groups before and after the prostate cancer intervention package?

1.6 Significance of the Study

Considering the threat posed by PC to human health and the socio-economic implications, this piece of research endour will be significant in many respects. The findings from this study will enable policy makers to formulate policies and programmes aimed at reducing PC related morbidity and mortality.

The outcome of this study could increase public awareness in the community regarding prostate cancer and importance of screening uptake among male population. This is particularly important to the elderly who are at risk of developing prostate gland abnormalities and to those high-risk groups or individuals prone to develop prostate cancer. Increased knowledge about PC and screening uptake will help men to appreciate the need for practice of early detection measures and ensure the ability to recognize the signs and symptoms of PC.

The results of this study will promote the activities of a public health advocacy groups such as WHO, USAID and Global Fund as well as Non-Governmental Organisations (NGOs). Prostate cancer awareness and importance of regular screening uptake of prostate specific antigen test and digital rectal examination will control the incidence of PC.

The work stands as a contribution to the existing knowledge of the practices controlling, preventing and early detection of PC disease. It is also an addition to the existing

academic debate on the effect of nursing education on awareness and prevention of PC. The work will give credence to both theoretical and empirical evidence.

In addition, this study emphasizes health promotion, early detection, risk reduction and early treatment of the disease. In a supportive environment, this can positively influence health behaviour and health outcomes.

Finally, this study will also form a basis for further research, as the uniqueness of the study on the interventional studies on prostate cancer are rare in the literature while contributing to scientific basis of nursing knowledge which is imperative for professionalism.

1.7 Delimitation of the Study

This study was delimited to men of 40-70 years of age and to the various outpatient clinics of general hospitals in Cross River State. The study is also delimited or confined to educating male population regarding prostate cancer knowledge and importance of utilization of screening uptake of prostate cancer.

1.8 Limitations of the study

The design of this study imposed certain constraints upon generalization of the findings. A purposive sample (age) was used in selecting the participants for the study, thus, the results may not be representative of all men who might be prone to PC in the state. Though it is the researcher hope that all participants answered the self-reported measure of prostate cancer screening uptake as honestly as possible, no verification of the reported data was possible. In addition, it is possible that participants may not have accurately recalled screening uptake participation or were not aware that they were being screened, for example, with blood testing for the PSA and there was lack of proper records in the study settings.

1.9 Operational Definition of Terms

Prostate Cancer Educational Intervention: This **r**efers to a systematically planned intervention package designed to provide information regarding prostate cancer such as meaning, causes, signs and symptoms, management, screening uptake, prevention and detection measures by the researcher for the study. It comprises lecture–discussion,

group discussions, demonstrations, information leaflets/handbill/video, questions and answers time on prostate cancer.

Men in selected hospitals: This refers to male clients/patients who are between 40-70 years of age with no previous history of prostate cancer and who visit outpatient departments in general hospitals of Cross River State for follow-up of their health conditions.

Screening uptake: This refers to man's participation in prostate cancer screening such as having a digital rectal examination and /or prostate specific antigen (PSA) test at least once in the past one to two years.

Prostate cancer: Prostate cancer refers to the medical condition in which there is a form of tumour that develops in the prostate, a gland in the male reproductive system which may cause pain, difficulty in urinating, problems during sexual intercourse or erectile dysfunction.

Knowledge: It is the understanding of information about prostate cancer and its preventive measures in adult males which have been measured by structured schedule.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A systematic literature search of Medline, EMBASE and Global Health with additional search of Google Scholar, International Association of Cancer Registries (IACR), International Agency for Research on Cancer (IARC), and WHO African region websites was done to review literature of related materials under the following headings: historical perspective of prostate cancer, anatomy of the prostate, aetiology/risk factors of prostate cancer, clinical presentation, diagnosis and treatment of prostate cancer, prostate cancer staging, epidemiology of prostate cancer, knowledge of PC in Nigeria, beliefs about cancer, health education about cancer, screening benefits and barriers, screening controversy, empirical review, the conceptual model and hypotheses.

2.2 Historical Perspective of Prostate Cancer

According to Adams (1853) the prostate was first depicted by Venetian anatomist Niccolo Massa in 1536 and outlined by Flemish anatomist Andreas Vesalius in 1537. Prostate growth was not distinguished until 1853 and was at first thought about as uncommon infection, likely in light of shorter futures and poorer identification strategies in the nineteenth century. The primary medicines of a prostate tumour were were surgeries to relieve urinary obstruction (Lytton 2006). As indicated by Young (1905), the expulsion of the whole organ (radical perineal prostatectomy) was first performed in 1904 by Hugh Young at John Hopkins Hospital. Careful evaluation of the testicles (orchidectomy) to treat prostate growth was first performed in the 1890s, yet with restricted achievement. Transurethral resection of the prostate (TURP) substituted radical prostatectomy for the symptomatic help of obstacle amidst the twentieth century since it could all the more likely safeguard penile erectile capacity. Radical retropubic prostatectomy was produced in 1983 by Patrick (Walsh, Lepor and Eggleton, 1983). In 1941, Charles Huggins distributed examinations in which he utilized estrogen to restrict testosterone creation in men with metastatic prostate growth.

Radiation treatment for prostate malignancy was first created in the mid-twentieth century and at first, comprised of intraprostatic radium inserts. External beam radiation at that point turned out to be more prevalent as stronger radiation sources were much

accessible amidst the twentieth century. Brachytherapy with embedded seeds was first portrayed in 1983 (Denmeade and Isaacs, 2002). Systemic chemotherapy for prostate malignancy was first researched in the 1970s. The underlying regimen of cyclophosphamide was immediately joined by various regimens utilizing a large group of other fundamental chemotherapy drugs (Scott, Johnson, and Schmidt, 1975). Owen (2010) published a series of studies in science during which they had introduced viruses which were known to cause cancerous mutation in prostate cells: AKT, ERG, and AR into disengaged tests of basal and luminal cells and united the treated tissue into mice. Following four months, none of the luminal tests had experienced harmful transformation, while the basal examples had changed into prostate-like tubules which had then created threat and shaped malignant tumours, which seemed indistinguishable to human examples under magnification. This prompted the end that the prostate basal cell might be the most likely "site of origin" of prostate cancer (Witte, 2010).

2.3 Anatomy of the Prostate

The prostate is part of the male reproductive system that helps to make and store seminal fluid. In grown-up men, a common place prostate is around three centimetres in length and weighs around twenty grams. It is situated in the pelvis, under the urinary bladder and before the rectum. The prostate encompasses some portion of the urethra (the tube that conveys urine from the bladder and semen amid discharge). According to Mofolo, Betshu, Kenna, Koroma, Lebeko, Claassen, et al. (2015), the prostate cancer plays a prominent role in ejaculation as it contains seminal fluid that nourishes and transports sperms. Explicitly, it produces the fluid in semen and helps push this fluid out when a man ejaculates. This organ is situated inside the body at the base of the penis, just underneath the bladder and before the rectum. It is made out of the glandular and fibrous tissue enclosed in a capsule of connective tissue. The prostate is in the state of a doughnut and about the span of a walnut.

Normal functions of the prostate depend on the presence of the male hormone testosterone, which is produced by the testes. The prostate produces semen, the thick, whitish liquid that conveys sperm. The prostate gland is under androgenic control. Prostate cells require the androgen testosterone (and its more potent reduced form dihydrotestosterone (DHT) for proper growth, differentiation and apoptosis (Ball and Risbridger, 2003). Alterations in the balance of hormones due to ageing or lifestyle

changes are thought to result in aberrant growth of prostate cells.

2.4 Prostate Pathologies

The prostate can be afflicted with three major diseases, namely prostate cancer (PC), benign prostate hyperplasia (BPH) and Prostatitis. Prostatitis is an illness characterized by the inflammation of the prostate gland, often due to microbial infection. BPH is an age-related excessive but benign growth of the cells of the prostate gland. PC, unlike BPH, is the carcinogenic growth of the prostate organ. In terms of etiology, BPH and PC are closely related. What differentiates the two is that in PC, a carcinogen is required to initiate cancerous growth. Rates of the location of prostate growths change broadly over the world, with South and East Asia recognizing less as often as possible than in Europe, and particularly the United States. Prostate malignancy has a tendency to create in men beyond fifty-one years old in spite of the fact that it is a standout amongst the most widely recognized kinds of growth in men.

Many of the victims of prostate cancer never have symptoms; they do not undergo therapy, and eventually die of other causes ((Lister, 2009). This is because cancer of the prostate is, in most cases, slow-growing, symptom-free, and since men with the condition are older, they often die of causes unrelated to the prostate cancer, such as heart/circulatory disease, pneumonia, other unconnected cancers, or old age. About 2/3 of cases are slow growing, the other third more aggressive and fast developing (Lister, 2009). According to Hass, Nicholas Delongchamps, Brawley, Wang, and Gusstavo de la Roza, (2008), Prostate cancer is the most prevalent diagnosed non-skin cancer in the United States and the third leading cause of deaths associated with cancer.

In many industrialized countries like United States, it is one of the prevalent cancers and it's among the leading causes of cancer deaths (Hass et al, 2008). It may be less common developing countries but with a high incidence and mortality rate (Deongchamps, Singh, & Haas, (2007); as cited in Hass et al, (2008). Incidence of prostate cancer is influenced by the intensity of diagnostic measures and efforts, and the mortality figures reported for any particular geographic region depend on the reliability of their cancer registries (Nicholas et al, 2008).

United States has a standout amongst the most dynamic prostate tumour early detection

programmes in the universe, and furthermore the most noteworthy frequency of prostate disease, this is ascribed to great malignancy registry in United States (Potosky, Miller, Albertsen and Kramer, (1995) as referred to in Hass et al, (2008). Prostate malignancy pervasiveness is higher among American men of Caucasian and African birthplace, yet the patterns are compared with every single other nation reports (Sanchez-Chapado, Olmedilla, Cabeza, Donat, and Ruiz, 2003) and (Hass, et al, 2008). The United States have experienced a constant drop in mortality rate since the last decade (Deongchamps, Singh and Haas, 2007). The clinical incidence, mortality and to a lesser degree prevalence of prostate cancer varies among different geographical regions of the world (GlOBOCAN, 2008). Prostate cancer is the most common in Southern Africa, Sub-Sahara, Western Africa and Africa at large and also the leading cause of deaths in Sub-Sahara, Western and Africa in general in 2008 (GlOBOCAN, 2008) as cited in American Cancer Society (2011). According to National cancer registry, (2004) and CANSA, (2013), Prostate cancer is most prevalent among white South African males than black. Recent statistics indicates that black South African males are at increase rate of prostate cancer and mostly develop the aggressive type (CANSA, 2013). According to Health (2012), results have shown that 20% of South African men have prostate cancer and have chance of 78% increase by 2030.

In Sub-Sahara Africa, Nigeria positioned first, with Republic of Congo second and Uganda third position separately with the frequency rate of prostate disease (Nnodimele et al, 2010). In West African nations, in Ghana, prostate cancer is found to be the second leading cause of deaths associated with cancer among Ghanaian men. Investigations have shown that almost 1,000 Ghanaian men are diagnosed with prostate cancer and may die untimely. According to Mathew, Mensah, Gepi-Attee, Kwami, Kwabena, Asante, Klufo and Yeboah (2013), about 750 men die of prostate cancer every year.

2.5 Causes of Prostate Cancer

According to Hsing and Chokkalingam (2006), the main cause of prostate cancer remains unknown while the earliest risk factors are age and family history. Researchers believe that cancer of the prostate develops over a period of many years as a result of gradual changes in the cells. There has not been any particular theory that explains the development of this disease, but a number of possible causes have been suggested by various researchers and scholars. Investigations have been centred on four main general

areas of: genetic predisposition (heredity), hormonal influences, environmental and lifestyle factors, and sexually transmitted agents, including viruses. Data from population studies have produced diversionary results entirely.

A few investigations recommend a hereditary inclination to prostate growth and an expanded hazard for blood relatives of men with the infection (Hass et.al, 2009). In any case, different examinations have not built up a hereditary connection. Information from investigations of individuals moving to start with one land region then onto the next point 3to the significance of the earth as a factor, including diet, in the advancement of prostate disease make a few specialists recommend that an eating regimen wealthy in fat builds the danger of prostate malignancy. Researchers have certified that hormones add to the improvement of prostate growth. They said that men whose testicles were removed before puberty have little risk of developing this disease, apparently because the primary source of male hormones was removed (Hsing and Chokkalingam, 2006).

Currently, scientists are comparing testosterone production and metabolism in prostate cancer patients and their brothers as well as in men from families who do not have prostate cancer. Many investigations have also been carried out on cancer causing agents. The results have not been very conclusive. The possible role of sexually transmitted viral diseases in the development of prostate cancer has been examined by many researchers (Miller, Gruber, Hollenbeck, Montie and Wei, 2006). Currently there are no conclusive results, but scientists are working hard.

2.6 Risk Factors for Prostate Cancer

A risk factor can be defined or described as anything that affects one's chance of getting a disease such as cancer. According to Cancer.Net Editorial board (2018), some people with several known risk factors never develop cancer, while others with a well known and certified risk factors do. Hence, identifying and knowing one’s risk factors and talking about it with specialist go a long way to make one live a more informed lifestyle and better decision as regards health care choices For example, exposing skin to strong sunlight is a risk factor for skin cancer. Smoking has also been discovered to be a risk factor for various types of cancer.

Researchers further stated that risk factors don't tell us everything as many people with one or more risk factors never get cancer, while others with this disease may have had no known risk factors. In the views of American Cancer Society (2010), complete

understanding of the causes of prostate cancer is still uncertain, but researchers have discovered several factors that change the risk of contracting the disease. For some of these factors, the link to prostate cancer risk is not yet clear and such factors include:

2.6.1 Age

According to Bostwick, Burk, Djakiew, Euling, Ho, Landolph, Morrison, Sonawane, Shifflet, Waters and Timms (2004), age is undoubtedly the most grounded hazard factor for prostate malignancy. Prostate disease is exceptionally uncommon before the age of 40, yet the chance of having prostate growth rises quickly after age 50. Very nearly two out of three prostate malignancies are found in men beyond 65 years old.

2.6.2 Race/Ethnicity

Prostate cancer features mostly among African-American men than in men of other races. African-American men are also more likely to be diagnosed at an advanced stage, and are more than twice as likely to die of prostate cancer as white men. Prostate cancer takes place less often in Asian-American and Hispanic/Latino men than in non-Hispanic whites. The reasons for these racial and ethnic differences are not clear.

2.6.3 Nationality

Prostate cancer has been observed to be most common in North America, North-Western Europe, Africa, Australia, and on Caribbean islands. It is less common in Asia, Central America and South America. The reasons for this have not been made known by researchers. Investigations have shown that more intensive screening in some developed countries likely accounts for at least part of this difference, but there are still other factors to be considered. For example, lifestyle differences (diet and others) may be important. Men of Asian origin living in the United States have a lower risk of prostate cancer than white Americans, but their risk is higher than that of men of similar backgrounds living in Asia.

2.6.4 Family History

According to Mofolo, Betshu, Kenna, Koroma, Lebeko, Claassen, et al. (2015), and Cancer.Net Editorial board (2018), prostate cancer which runs in family are called “familial prostate cancer”. It is capable of occurring about 20% of the time and develops solely because of the combination of shared genes, environment, lifestyles and

peculiarities between and among family members. It is capable of being inherited from relatives or family blood tie individuals, though rare but accounts for about 5% of all cases. Having a father or brother with prostate cancer more than doubles a man's risk of developing this disease. (The risk is at a higher percentage for men with an affected brother than for those with an affected father). The risk is much higher for men with many affected relatives, particularly if their relatives were young at the time the cancer was found.

2.6.5 Genes

Genetic background has been found to be a major contributor to prostate cancer's risk, as suggested by associations with race, family and specific gene variants. Investigations have revealed that men who have a first-degree relative (father or brother) with prostate cancer have twice the risk of developing prostate cancer, and those with two first-degree relatives affected have a five-fold higher risk compared with men with no family history (Steinberg, Carter, Beaty, Childs and Walsh, 2010). In the United States, prostate cancer commonly affects black men than white or Hispanic men, and is also more deadly in black men (Hoffman, Gilliland, Eley and Harlan, 2011). In contrast, the incidence and mortality rates for Hispanic men are one third lower than for non-Hispanic whites.

According to Lichtenstein, Holms, Verkasalo Illiadou, Kaprio (2000) studies of twins in Scandinavia suggests that forty percent of prostate cancer risk can be investigated or analyzed by inherited factors. According to Struewing, Hartge, Wacholder, Baker and Berlin (2007), no single gene could be said to be responsible for prostate cancer; many different genes have been implicated. Mutations in BRCA1 and BRCA2 are important risk factors for ovarian cancer and breast cancer in women, and have also been implicated in prostate cancer. Loss of cancer suppressor genes, early in the prostatic carcinogenesis, has been localized to chromosomes 8p, 10q, 13q and 16q. Mutations in the primary prostate cancer are relatively low and are more frequently seen in metastatic settings, hence, mutations are late event in pathology of prostate cancer. Other tumour suppressor genes that are thought to play a role in prostate cancer include PTEN (gene). According to scientists (2004), up to 70 percent of men with prostate cancer have lost one copy of the PTEN gene at the time of diagnosis with relative frequency of loss of E-cadherin. Scientists have discovered many inherited genes that seem to raise prostate cancer risk, but they probably account for only a small number of cases overall. Genetic

testing for most of these genes is not yet available. Recently, some common gene variations have been linked to the risk of prostate cancer. Studies to confirm these results are needed to see if testing for the gene variants will be useful in predicting prostate cancer risk (Steinberg, 2009).

2.6.6 Diet

Proof from epidemiological examinations underpins a conceivable defensive job in decreasing prostate tumour by dietary Vitamin B6, vitamin E, lycopene and soy sustenances (Lee, Gomez, Chang, Wey and Wang, 2003). An examination completed in 2007 provide a reason to feel ambiguous about the viability of lycopene found in tomatoes in decreasing the danger of prostate growth (Peters, Leitzmann, Chatterjee and Wang, 2007). As indicated by Wigle, Tuerner, Gomes and Parent (2008), bring down blood levels of vitamin D may expand the danger of creating prostate malignancy. This might be ascribed to bring down the presentation to bright (UV) light since UV light introduction can build vitamin D in the body.

As per Brink, Reulen, Kellen, Buntinx and Zeegers (2006) examines contrasting men who live in zones and large amounts of selenium to men in territories with low levels recommend that this mineral ensures against prostate growth. Selenium has the ability to lessen the danger of creating prostate disease since it shields cells from multiplying or vanishing in a quick or uncommon way. An examination of the Nutritional Prevention of Cancer Trial completed in 2002 exhibited that the men who took selenium supplements on regular routine were half as prone to be determined to have a prostate tumour (Duffield-lillico, 2002). These examinations have been affirmed in most observational investigations (Brinkman and Zeegers, 2006). In any case, in 2008, the Selenium and Vitamin E Cancer Prevention Trial (SELECT) demonstrated that neither selenium nor vitamin E, alone or in the mix, was powerful for the essential aversion of a prostate tumour (Klein, 2001; Lippman, 2008; Portes and France, 2009).

Discoveries in the examinations completed by Lawson, Wright, Subar, Mouw, Hollenbeck (2007) proposes that taking multivitamins in excess of seven times each week can expand the dangers of getting the illness. This exploration was not ready to pinpoint the correct vitamins in charge of this expansion (twofold), in spite of the fact that they prescribe that vitamin A, vitamin E and beta-carotene may lie at its heart. It is prudent that those taking multivitamins never surpass the expressed day by day dosage

on the name. An examination by Krish, Peters, mayne, Subar, (2007) found that men eating cauliflower or one of the alternate cruciferous vegetables, more than once per week, were 40% more averse to create prostate growth than men who barely ate those vegetables. Numerous specialists prescribe supplements to prostate growth patients however right now, the viability of supplement supplements stay obscure.

Supplements may not be as advantageous to prostate wellbeing as micronutrients acquired normally from the eating routine (Pond and Mcvary, 2009). As indicated by Pond and Mcvary (2009), folic corrosive supplements have as of late been credited to an expansion in danger of creating prostate disease. A ten-year old research completed by a gathering of scientists in University of Southern California demonstrated that men who took every day folic corrosive supplements of 1 mg were three times more inclined to be determined to have prostate malignancy than men who took a fake treatment (Figueiredo, Grau, Haile, Sandler et.al, 2009). Folate assumes an unpredictable job in prostate disease and folic corrosive supplements differently affect prostate tumour than folate normally found in nourishment. A little Swedish investigation of 254 subjects, with a middle age of 64, and a follow up of 5 years proposed that folate status isn't defensive against prostate disease, notwithstanding, and like folic corrosive may even outcome in a three folds increment in early prostate tumour advancement and hazard (Huldin, Guelpen, Bergh, Hallmans and Stattin, 2005).

Mama and Chapman (2008) directed an investigation on “a precise audit of the impact of eating routine in prostate tumour anticipation and treatment" which says that dietary treatment has been proposed as a financially savvy and non-obtrusive method for lessening the danger of prostate disease (PC) and its movement. There is a substantial volume of distributed examinations portraying the job of eating regimen in the counteractive action and treatment of PC. This examination audits the information for dietary-based treatment in the avoidance of PC, and in addition in the administration of patients with PC, with the point of giving the clearness encompassing the job of eating routine in averting and treating PC. Albeit definitive proof is restricted, the present information is characteristic that an eating regimen low in fat, high in vegetables and natural products, and keeping away from high vitality admission, unreasonable meat, exorbitant dairy items and calcium consumption, is conceivably powerful in counteracting PC.

In any case, the alert must be taken to guarantee that individuals from the general population don't take exorbitant measures of dietary supplements in light of the fact that there might be negative responses related with their overutilization. The dietary proposals for patients determined to have PC are like those meant to lessen their danger of PC. Weight control plans high in red meat, as well as high-fat dairy items, are related with expanded prostate malignancy hazard, while diets wealthy in products of the soil are related with bringing down hazard (American Cancer Society, 2006).

A few epidemiological investigations additionally bolster the theory that eating methodologies wealthy in tomatoes and tomato items are related to a diminished danger of prostate disease (Cooper, Jorgensen and Memitt, 2003). In 2003, the National Cancer Institute (NCI) propelled a battle to support African - American men to eat nine servings of foods grown from the ground multi-day. Each sort of eating regimen related disease lopsidedly influences African - American men, yet they eat a minimal amount of foods grown from the ground of any gathering, and momentum patterns recommend that even these levels are declining (Stroud, Ross and Rose, 2006). Different examinations have affirmed that dark men have higher and more continuous utilization of meat and quick nourishments than white men (Krueger, 2004) and are less inclined to know about the significance of devouring products of the soil in decreasing the danger of specific diseases (Stroud, Ross and Rose, 2006).

2.6.7 High Alcohol

Shannon, Phoutrides, Palma, Farris et.al (2009) assert that high intake of alcohol may increase the risk of prostate cancer and interfere with folate metabolism. Low folate intake and high alcohol intake may increase the risk of prostate cancer to a greater extent than the sole effect of either one by itself. They further conducted a case control study consisting of 137 veterans to address this hypothesis and the outcomes were that high folate intake was related to a 79% lower risk of developing prostate cancer and there was no link between alcohol consumption by itself and prostate cancer risk. Folate's effect however was only significant when coupled with low alcohol intake. They therefore concluded that there is a significant decrease in risk of prostate cancer with increasing dietary folate intake but this relationship only remains in individuals with low levels of alcohol consumption. There was no association found in this investigation between folic acid supplements and risk of prostate cancer. Leitzmann, Stamfer, Wu, Colditz, et.al (2003) observe that the prostate gland has a high concentration of zinc and so zinc may

have a significant role in prostate cancer.

The above researchers investigated the relationship between zinc supplement intake of 100 mg/day and the risk of prostate cancer in 46, 974 US men over a 14-year period and reported in 2003 that long term zinc supplement of over 100 mg/day intake seems to be associated with approximately double the risk of developing prostate cancer.

Greater intake of milk, calcium, or dairy calcium has been consistently associated with an elevated risk of prostate cancer in several studies (Chan, Gann, and Giovannucci, 2005). In summary, the exact role of diet in prostate cancer is not clear, but several different factors have been studied. Research has revealed that men who eat too much of red meat or high-fat dairy products have the tendency to have a higher chance of getting prostate cancer. These men also tend to eat fewer fruits and vegetables. Some researchers have suggested that men who consume a lot of calcium (through food or supplements) may have a higher risk of developing advanced prostate cancer. Most of the investigations carried out have not found such a link with the levels of calcium found in the average diet, and it's crucial to note that calcium is known to have other important health benefits.

2.6.8 Obesity

Most of the investigations carried out have not proved that being obese (having a high amount of extra body fat) has anything to do with a higher risk of getting prostate cancer. Some investigations have discovered that obese men have a lower risk of getting a low-grade (less dangerous) form of the disease, but a higher risk of getting more dangerous prostate cancer. The reasons for this are unknown. Also, several investigations have discovered that obese men may be at greater risk for having more advanced prostate cancer and of dying from prostate cancer, but this assertion was not seen in other studies.

2.6.9 Exercise

Physical activity also plays an indispensable role in cancer morbidity and mortality. According to Blocker, Romocki and Thomas, (2006) inactive men have higher rates of prostate cancer compared to men who are very physically active, and physical activity may reduce men's risk for prostate cancer by 10- 30%. Approximately two-thirds of

African - American men in one study reported their fitness levels as poor as or worse than average compared to fewer than half of the non-African - American men. In most studies, exercise has not been proved to lower the chance of getting prostate cancer. But some investigations have discovered that high levels of physical activity, particularly in older men, may lower the risk of advanced prostate cancer. More investigations in this area is needed.

2.6.10 Smoking

An ongoing report connected smoking to a little increment in the danger of death from prostate growth. This is another finding and should be affirmed by different investigations (Steinberg, Carter, Beaty, Childs, Walsh, 2000).

2.6.11 Inflammation of the Prostate

Some investigations have suggested that prostatitis (inflammation of the prostate gland) may be associated with an increased risk of prostate cancer, but other investigations have not discovered such a link. Inflammation is often observed in samples of prostate tissue that also contain cancer. The link between the two is not yet clear, but this is an active area of research.

2.6.12 Infection

Specialists have explored to confirm if sexually transmitted infections (like gonorrhoea or chlamydia) may build the danger of prostate malignancy. These diseases could expand growth hazard by prompting infection of the prostate. So far, investigations have not agreed, and no firm conclusions have been reached (Steinberg, Carter, Beaty, Childs, and Walsh, 2000).

2.6.13 Vasectomy

Some earlier investigations had suggested that men who had a vasectomy especially those who are less than 35 years in age at the time of the procedure, may have a slightly increased risk for prostate cancer. But most of the recent investigations have not established any increased risk among men who have had this operation. Fear of an increased risk of prostate cancer should not be a reason to avoid a vasectomy.

2.6.14 Medication Exposure

There are a few connections between prostate malignancy and drugs, medicinal methods, and therapeutic conditions. As indicated by Shannon, Tewoderos, Garzotto, Beer and Farris (2005), utilization of the cholesterol-bringing down medications known as the statins may likewise diminish prostate disease's hazard.

2.6.15 Inflammation of the prostate Infection or aggravation

Inflammation of the prostate (prostatitis) may increase the chance for prostate cancer while another research shows that infection may help prevent prostate cancer by increasing blood to the area. In particular, infection with the sexually transmitted infections such as gonorrhea or syphilis seems to increase risk (Dennis, Lynch and Torner, 2002).

2.7 Signs and Symptoms

American Cancer Society (2010), proposes that early prostate disease causes no signs and symptoms. Sometimes, prostate cancer shows symptoms, often similar to those of diseases such as benign prostatic hyperplasia. Prostate cancer is linked with urinary dysfunction as the prostate gland surrounds the prostatic urethra. Changes within the gland, therefore, directly affect urinary function. These include frequent urination, difficulty starting and maintaining a steady stream of urine, and dysuria (painful urination).

Some signs and symptoms that may indicate prostate disease include: a weak urinary stream; difficulty starting urination; frequent urination; urgency (difficulty postponing urination); awakening frequently at night to urinate; interruption of the stream (stopping and starting); blood in urine; pain or burning on urination. It is necessary to note that Prostate cancer causes no symptoms in the early stages when treatment is most likely to result in a cure (Achebe, 2005).

Due to the function of the vas deferens deposits seminal fluid into the prostatic urethra, and secretions from the prostate gland itself are included in semen content, prostate cancer may also cause problems with sexual function and performance, such as difficulty achieving erection or painful ejaculation (Miller, Hafez, Stewart, Montie and Wei, 2003). Advanced prostate cancer can spread to other parts of the body, possibly causing additional symptoms.

The most prevalent symptom is bone pain often in the vertebrae (bones of the spine), pelvis or ribs. Spread of cancer into other bones such as the femur is usually to the proximal part of the bone. Prostate cancer in the spine can also compress the spinal cord, causing leg weakness and urinary and faecal incontinence (Vander Cruijsen-Koeter, Vis, Roobol, Wildhag, Koning, Van der Kwast and Schroder, 2005).

2.8 Prostate Cancer Staging

An important part of evaluating prostate cancer is determining the stage or how far the cancer has spread. Knowing the stage helps define prognosis and is useful when selecting therapies. The most common system is the four-stage Tumour/Nodes/ Metastases (TNM) system. Its components include the size of the tumour, the number of involved lymph nodes and the presence of any other metastases. The most significant distinction made by any staging system is whether or not the cancer is still confined to the prostate. In the TNM system, clinical T1 and T2 cancers are found only in the prostate, while T3 and T4 cancers have spread elsewhere. Several tests can be used to look for evidence of spread. These include computed tomography to evaluate spread within the pelvis, bone scans to look for spread to the bones, and endorectal coil magnetic resonance imaging to closely evaluate the prostatic capsule and the seminal vesicles.

Bone scans should showcase osteoblastic appearance due to increased bone density in the areas of bone metastasis-opposite to what is discovered in many other cancers that metastasize (Klein, 2001). After a prostate biopsy, a pathologist looks at the samples under a microscope. If cancer is present, the pathologist reports the grade of the tumour. The grade tells how much the tumour tissue differs from normal prostate tissue and suggests how fast the tumour is likely to grow. The Gleason system is used to grade prostate tumours from 2 to 10, where a Gleason score of 10 indicates the most abnormalities. The pathologist assigns a number from 1 to 5 for the most common pattern observed under the microscope, and then does the same for the second-most-common pattern. The sum of these two numbers is the Gleason score. The Whitmore-Jewett stage is another method sometimes used (ACS, fact sheets, 2010).

2.9.0 Epidemiology of Prostate cancer

2.9.1 Cancer of the Prostate in Africans in Diaspora

Cancer of the Prostate in Africans in Diaspora Cancer of the prostate in Africans in

diaspora include mainly black people in West Indies including Jamaica, Trinidad and Tobago, Brazil, the United States of America and the significant West Indian population in the United Kingdom among others. Cancer of the prostate has been reported as the most common male cancer in Kingston Jamaica (Hancard, 2001). Up to this point, African Americans in Alameda nation, California, in the United States had the most astounding revealed instances of a prostate tumour at 160 for each 100,000. In 1992, the age-balanced rate of prostate malignancy for the United States high contrast men was accounted for in 249 for every 100,000 men and 82 for every 100,000 men separately (Angwafo, 2000).

The mean patients' age at diagnosis was 72 years similar to the findings of Coard (2002). Also, Shirley, Coffey, Sargent and Tulloch (2002), reports late presentation and a mean of 72.3 years in a clinico- pathological study of prostate cancer in Jamaican men. Furthermore, familiar aggregation of prostate cancer has been reported as clearly evident in black Jamaican men.

Risk for prostate cancer has been discovered to be very high among black Americans. Furthermore, prostate disease frequency and mortality of dark Americans are known to be among the most noteworthy on the planet, and to date, the reasons have not been enough clarified. A few investigations on prostate tumour have been completed in dark American men and contrasted and prostate disease in dark African men in Africa. The Preliminary report of this investigation suggests that prostate cancer was prevalent in both black American and Nigerian African men at 196 per 1,000 autopsies, and 67 per 1000 autopsies respectively. They reported that the tumour was of higher histologic grade (less differentiated) and more tumour foci. In a continuation of the investigation, the recurrence of small-scale and obtrusive prostate growth was resolved in back to back necropsy cases from healing centres in Ibadan, Nigeria, Accra, Ghana, both in Africa and Washington DC in the United States. The aftereffects of this clinical epidemiologic and morphologic examination were accounted for with a pinnacle frequency in Nigerian men in Ibadan and the American men in Washington DC were in the 65-multi-year age gathering. The middle age was 66.4 years in the Ibadan gathering and 69.2 years in the Washington DC amass individually. Seventy-five per cent of patients were in stages III (C) and IV (D) of the sickness, while just 49% of the American patients in Washington DC were in stages III and IV of the infection.

Jones, Liu, Araujo, Kasl, Stephanie, Soler-Vila, Curnen and Dubrow (2013), carried out a study to explain the race differences in prostate cancer stage at diagnosis. They opined that there is a striking racial and ethnic differences in prostate cancer incidence and mortality rates in the US, with Black males 1.6 times more likely to be diagnosed and 2.4 times more likely to die with prostate cancer than whites. Olopade (2013), lays credence to the reports that African descendents have a higher incidence of prostate cancer than other groups while Change (2016), re-affirmed that African or African Caribbean men from the age of 50 and above are likely to suffer from prostate cancer than white or Asians men

Adeloye et .al (2016), carried out a study on an estimate of the incidence of prostate cancer in Africa: a systematic review and meta-analysis. The reports show that African men suffer disproportionately from prostate cancer compared to men from other parts of the world. It is still quite difficult to accurately describe the burden of prostate cancer in Africa due to poor cancer registration systems. A systematic literature search of Medline, EMBASE and Global Health from January 1980 to June 2015 was conducted, with additional search of Google Scholar, International Association of Cancer Registries (IACR), International Agency for Research on Cancer (IARC), and WHO African region websites, for studies that estimated incidence rate of prostate cancer in any African countries. The search returned 9766 records, with 40 studies spreading across 16 African countries meeting the selection criteria. It estimated a pooled prostate cancer incidence rate of 22.0 (95% CI: 19.93–23.97) per 100,000 population, and also reported a median incidence rate of 19.5 per 100,000 population. There is an observation of an increasing trend in prostate cancer incidence with advancing age, and over the main years covered.
The frequency rate of obtrusive carcinoma was anyway even after modifications for age still higher in dark American men in Washington DC than dark African men in Ibadan, Nigeria. In Guyana between 2000 and 2006, the prevalence of prostate cancer was remarkably higher in African descendants (65%) than in any other group (19% in Indo-Guyanese, 2% in Amerindians, and 14% in other/non-specified) (Best Plummer, Persaud, Layne, 2009). In a study in Brazil that used cancer registry data from São Paulo, Bouchardy et al. (2011) showed that mulatto men and men of African descent had a 40% and 80% higher risk of prostate cancer than white men, respectively. Similarly, in a study conducted in Ipirá, Bahia (Brazil), of prostate cancer screening volunteers aged 40–79 years using prostate-specific antigen (PSA), Paschoalin et al. (2003) found that the

prevalence of biopsy-confirmed prostate cancer cases (n = 121) was higher in mulatto men and men of African descent than in white men (6.7%, 8.5%, and 0.6%, respectively; P = 0.006). In contrast, in a study of prostate cancer during a screening campaign among 1432 men at a public hospital in São Paulo, Glina et al. (2001) observed a similar prevalence of prostate cancer among men of African descent and white men (P > 0.05); white men (n = 1140) had the largest number of biopsies and number of tumours (212 and 17 respectively) while men of African (n = 202) and Asian (n = 43) descent had the smallest numbers (33 and 2, and 5 and 0, respectively).

In order to fully comprehend the role of genetics and environment in prostate cancer disparity between black Africans and black Americans, Odedina, Ogunbiyi and Ukoli (2006) carried out a study. They reported that based on WHO Worldwide cancer data, West African men have been reported to have much lower prostate cancer incidence and mortality compared to African-American men. They reported that compared to Nigerian men, African American men were ten times more likely to develop prostate cancer and 3.5 times more likely to die from the ailment. However, contrary to the global ranking by WHO, investigations in the literature has proved severally that prostate cancer incidence in at least one West African country is similar to rates reported in black men in the United States and the Caribbean Islands.

2.9.2 Carcinoma of the Prostate in East Africans

Vint in 1935 reviewed 546 malignant male tumours in Kenya and reported no prostatic carcinoma and Davies in 1948 first reported the incidence of prostatic carcinoma in Ugandan Africans. He performed 2,162 autopsies and found 143 malignant male tumours of which three (2.1 %) only were prostatic carcinoma. He reported histological diagnosis in 57 out of 97 patients. In the other 40 patients, diagnosis was based on radiological and clinical findings only. In 1966, the first reported occurrence of invasive PC in Uganda males was low at 4.4 per one thousand. All these patients presented late with advanced disease. However, in an investigation conducted by Drury and Owe (1981), it was reported that Ugandan men had fewer late prostate cancers than Western Europeans from Germany or Sweden and Negroes from Jamaica, but more than the Chinese in Hong Kong and Singapore.

Magoha (1995) studied the epidemiologic and medical facets of minor prostate cancer in Africans and compared his knowledge at the Kenyan National Hospital, Nairobi, Kenya,

to Lagos University Teaching Hospital, Lagos. He reported similarities in the mean age of 66 years in the Nairobi gathering and 61 years in the Lagos assemble individually and in the pinnacle occurrences. High review undifferentiated accidental carcinoma of the prostate was available in 20% of the Lagos gathering and 20.8% of the Nairobi gathering. In the two gatherings, the dominant part, 80% of the patients in the Lagos gathering and 79.2% in the Nairobi assemble gave late comparable indications of prostatic obstacle.

2.9.3 Prostate Cancer in West Africa

The gold standard study on prostate cancer in black Nigerian men was researched by Osegbe (1997) at the School of Medicine and Lagos University Teaching Hospital in Lagos, Nigeria. The investigation affirmed the genuine frequency of a prostate tumour in Nigeria, the biggest grouping of indigenous dark patients on the planet, to learn whether the worldwide positioning as a generally safe prostate disease zone is exact. In a forthcoming report, patients with histological positive or prostate growth were broke down for facility neurotic highlights, tumour qualities and survival. The healing facility rate, national prostate disease hazard, pool and passing rate were computed from clinic confirmation information and national populace insights. He detailed a mean age of 68.3 ± 9.4 years. The doctor's facility rate was 127 for every 100,000 cases. The growth pool was 2% of patients; the demise rate was 20,000 yearly from a pool of 110,000 cases. Most of the patients presented with advanced disease, 64% of them dying within two years of diagnosis. This study clearly indicated that prostate disease frequency and the size of the hazard in Nigerian dark populace may have been terribly thought little of before.

Clinical prostate disease rate among Nigerians might be as high as that prominent in dark men in the United States, and the Caribbean Islands of Jamaica and Trinidad and Tobago which may propose a typical upgrading hereditary inclination in dark men (Osegbe, 1997). Be that as it may, Ekwere and Egbe (2002), at the College of Medical Sciences, University of Calabar, Nigeria, in a multi-year healing facility based review consider for the frequency and clinical example of a prostate disease in Southern Nigeria, affirms Osegbe's discoveries. The examination affirmed an upward yet direct pattern in the frequency of prostate malignancy in Nigeria. Yawe, Tahir and Nggada (2006) from Maiduguri, Northern Nigeria, also reported that late presentation with advanced prostate

cancer was common and should be suspected in black men aged 50 years and above who present with symptoms of prostatism and should be investigated promptly and suggested that aggressive screening of men in this age group would facilitate early diagnosis and probably improve prognosis.

In Dakar, Senegal, two important studies on prostate cancer were carried out in the recent past. Gueye et al (2010), studied clinical characteristics of PC in black men of Senegal descent and compared these attributes with those from black and white American men. The investigation was carried out on 121 patients diagnosed with prostate cancer in Dakar Senegal from 1997- 2002. Clinic pathological features and prostate cancer characteristics including prostate specific antigen levels were evaluated. The outcome of the findings was then contrasted with a taster of four hundred and fifty-five pallid and sixty black American men with PC. The study reported men of Senegal descent shows a considerably bad tumour stage, and significantly higher mean PSA levels at diagnosis than in the American men. Senegalese patients had an average age of 69 years contrasted to 61 years for the Americans and most Senegalese patients presented late with prostatic symptoms. The clinical characteristics reported by this group are similar to Osegbe's findings in Lagos.

2.9.4 Prostate cancer in Nigeria

As indicated by World Health Organization (2004), as referred to in Nnodimele (2010), in Africa, Nigeria was evaluated first out of the nine nations with most elevated rate of prostate malignancy in 2004. This is suggestive of hereditary inclination and that it is assessed that various new cases every year was 6,236, and the quantity of deaths were 5,098 every year (WHO Impact on Nigeria, 2005). As per Nnodimele et.al (2010), consequences of little prostate disease screening activity among 200 already untested provincial Nigerians uncover that the occurrence of PSA (prostate specific antigen) levels was more prominent than or equivalents to 4ng/ml and was tantamount to that of unscreened populace with high frequency of prostate tumor in African- American men.

As indicated by World Health Organization (2004), it was uncovered that among the best ten nations on the planet with the prostate disease, Nigeria was appraised third in death rate from prostate tumor universally, and eleventh position from bosom malignancy deaths in the year 2004. The aggregate demise from this sickness was 13,700 after India with a sum of 18,200 and United States with 35,300 deaths (Nnodimele et.al, 2010).

Prostate tumour has been found to be the most well-known disease in Nigerian men, having overwhelmed liver growth. It represents 6.1-19.5% and the frequency is expanding (Abdulkareem, 2009). Different information from larger part of the towns and urban areas in Nigeria uncovered that it is the most predominant tumour in all states in Nigeria with the exception of in Calabar, Cross River state where a high figure was recorded for prostate disease as the most well-known representing 34.7% (Abdulkareem, 2009).

The increase in cancer among Nigerian men has been linked to introduction of PSA screening test which enable early diagnosis of cancer cases. Compared to African-American men, Nigerian men are 10 times more likely to have prostate cancer and 3.5 times more likely to die from it (Abdulkareem, 2009). Comparing indigenous and immigrant Nigerian men's diet, alcohol consumption, tobacco use and physical activities were enough differences to provoke deeper search for the high cases of prostate cancer in Nigeria (Kumar, Yu, Akinremi and Odedina, 2009). According to Ejike and Ezeanyiwa (2009), they suggested that lifestyle changes in Nigerian men leading to westernized diet may bring about increase in the incidence of chronic diseases like cancer. Age above 40 years, positive family history, high fat diet and high serum androgens levels are also attributed to the high incidence (Abdulkareem, 2009).

In Nigeria, like other developing countries in Sub-Sahara Africa, there is no national cancer mortality database or active screening programme which has posed difficulties in determining the true burden of prostate cancer (Albertsen, 2010). Prostate cancer in Nigeria had a 45.3 fold increase reported in individuals between the age groups of 30 - 44 and 45 - 50 for age-specific deaths for 2005 (Mathers, Lopex and Murray, 2006). Various series of investigations carried out in Nigeria revealed that with high prevalence of prostate cancer, most cases are diagnosed late, patients are less likely to receive curative treatment and most common treatment are androgen deprivation (Nwofor and Oranusi, 2004).

2.10.1 Knowledge of Prostate Cancer

The most potent weapon against cancer is knowledge and it is powerful in reduction, prevention and early detection (CANSA, 2013). Knowledge about the cancer burden gives room for the development, implementation, monitoring and evaluation of cancer strategies that prevent, cure and care. This knowledge is lacking in many low and

middle-income countries, making cancer control efforts less effective (International Agency for Research on Cancer and Cancer Research, UK, 2012). Awareness on cancer is an indispensable aspect, and physicians need to focus on that as well, just as on prevention of heart disease and diabetes. Fortunately, many of the recommendations for lowering the risk of other chronic conditions are applicable to reducing the risk for cancer. Thus, it is crucial for physicians and other medical personnel to understand the importance that lifestyle can play in reducing cancer risk. Furthermore, it has been discovered that patients in Sub-Sahara region of Africa present with locally advanced or metastatic disease due to limited screening programme, inadequate diagnostic facilities, lack of health education, limited skilled oncology personnel, poor access to health care facilities, past negative experience, physicians' attitudes, cultural and religious beliefs, and ignorance (Woods, Montgomery, Belliard, Johnny and Colwick, 2004).

2.10.2 Knowledge about cancer in Nigeria

Generally, most Nigerians are still of the opinion that cancer is an illness of the rich, aged and urbanized nations, while victims of the ailment in Nigeria still see it as their destiny (Andreas, 2013). Most Nigerians are not adequately informed about cancer screening (Ajape, Babata and Abiola, 2010). In addition to the treatment complexity and cost, death rate from prostate cancer are increasing daily due to negative attitude, beliefs, poor knowledge towards prostate cancer screening and poor management skills (National Cancer Society, 2012). Instruction and information about prostate tumour and screening is low in Nigeria (Akinremi, Ogo and Olutunde, 2011).

According to Ejike and Ezeanyiwa (2009), lifestyle changes among Nigerian men such as eating of westernized diet may result in increment in rate of incessant ailments like disease. According to Odedina, Akinremi, Reams, et al (2009) and Akinremi, Ogo and Olatunde, (2011), immigration of Nigerian men to the United States have significant impact on prostate cancer awareness and beliefs. As per Nnodimele (2010), awareness and knowledge about prostate cancer is low in Nigeria and only 1.5% of Nigerian research participants were able to identify specific symptoms. According to Nnodimele et al, (2010), some of their participants that have not been aware of prostate cancer can prevent one from having prostate cancer and they believe that prostate cancer has no cure. There is also lack of awareness among men in Benin-City about prostate cancer screening (Oghenetejiri, 2007).

2.11 Beliefs about cancer in Nigeria

According to Olasoji, Babagana, Tligali and Yahaya (2008), cancer is believed to be as a result of curses from wicked people, ancestors' punishment as a result of family's wrong doing. According to Olasoji, Babagana, Tligali and Yahaya (2008), in Nigeria, lots of men believe that not monitoring prostate growth can keep them from the ailment. They also believe that prostate cancer is incurable and does not kill, therefore, screening is not necessary (Nnodimele et.al, 2010). Many patients are of the opinion that cancer diagnosis is a death sentence; therefore, they see no reason for cancer screening (Guz, Gursel and Ozbek, 2010).

In Nigeria, individuals from the general population still trust that malignancy is an ailment of the rich, elderly and created nations, while casualties of the illness in Nigeria still view it as their destiny and all things considered, the demise rate is high (Abdulkareem, 2009). According to Osinubi (2011) , the increasing cases of cancer in Nigeria is as a result of lack of awareness and apathy and this has led to late stage presentation of patients to hospitals where only radiation and palliative care is the best option.

2.12 Health education about cancer in Nigeria

Education about prostate cancer is absolutely low in Nigeria (Akinremi, Ogo and Olutunde, 2011).The findings of Ajape, Babata and Abiola (2010) stated that education is lagging among health care providers as regards sensitizing Nigerians about the threat of prostate cancer. They emphasise the need to educate Nigerians about cancer prevention, the state of cancer management in Nigeria, prevalent cancers in Nigeria, nuclear medicine, public education needs and areas of possible research collaborations (Newsroom, 2007).

According to Akinremi, Ogo and Olatunde (2011), studies revealed that education and knowledge about prostate cancer is very low in Nigeria, and suggested that medical students and other health care professionals need better training. The literature suggests that income, education, age and marital status may significantly impact an individual's knowledge and perception related to prostate cancer screening (Weinrich et al, 1998; Wilkinson et al, 2003).

Knowledge of prostate cancer and prostate cancer screening may also influence participation in screening practices, especially among African American men (Guttman, 2001; Weinrich, Seger, Miller, Davis, Kim and Wheeler, et al, 2004). A more recent study identified access, economic barriers and physician trust as factors that may influence knowledge and behaviour (Talcott et al, 2007).

2.13 Prostate Cancer Educational Intervention

Many educational materials have been developed specifically to help patients make result oriented decisions about prostate cancer screening. These materials include printed brochures, patient informed consent forms, and video tape (Flood, Wennberg, Nease and Ding, 2007). Studies of patient education efforts designed to increase knowledge and rates of screening among African American men show that brief, print-based interventions increased knowledge of symptoms and risk factors as well as rates of screening. According to Wolf, Nasser, Shorling (2006), studies suggest that decision aids can increase knowledge about prostate cancer and encourage informed decision making. The effect of decision aids on actual receipt or prostate specific antigen (PSA) testing is variable (Volk and Spann, 2000) as follow up period in these investigations is often too short to allow assumption that screening has or has not taken place as a result of the intervention. In an investigation conducted by Volk, Spann, Cass and Hewley (2003) of an education video tape intended to promote informed decision making about prostate cancer screening demonstrates that a decision aid can affect patient screening behaviour and knowledge fully one year after the intervention.

Also, the relationship between intentions to be screened reported by patients at the two weeks follow up and their subsequent screening behaviour suggests that the educational programme is largely responsible for the differences in the screening rates observed in the study. Also, the impact of the intervention on screening behaviour was observed for PSA testing among the participants, African-American men who viewed the video tape were almost times two as likely as white men to have been screened by the time of the one year follow-up. They said further possible explanation for this investigation is that African American men may have focused on the portions of the video tape that dealt with ethnicity and prostate cancer risk, in which the increased risk has been shown to affect the willingness of African-American men to undergo PSA testing. Previous studies of decision aids for prostate cancer screening have shown a variable impact on screening

behaviour.

Schapira and Vanruiswyk (2000) observe that in studies where patients were presented for screening (e.g. free screening clinics or solicited by mail) decision aids have had no impact on screening rates because nearly all patients present opted to be screened. They further stated that studies of patients presenting routine primary care have shown a lower screening rate among those receiving a decision - aid intervention compared to other patients presenting specifically for screening.

This is premised on creating awareness on the maintenance of good health rather than on curative aspect. This is in line with what Shireffs (2008) posits that if the medical profession began to focus attention on the prevention of diseases and health promotion, in future, the effects of health on the nation would no doubt be significantly improved. Most diseases and accidents can be curbed through adequate and effective health promotion. Good health is seen by every thinking man as an important ingredient for a happy living. It is when one's health fails that hospital attention is required. Health is wealth and poor or bad health will result in low productivity. WHO (2006), define health as a state of complete physical, mental and social well being and not merely the absence of disease or informalities. According to Ogunsanya, Brown, Odedina, Barner, Adedipe, and Corbell (2017) defines it at a physical, mental, and social well being, and as a resource for living a full life. However, health is not merely absence of illness or disability. It is very unfortunate to state that very few Nigerians take care of their health and most of them believe in curative medicine, “prevention is better than cure”, which is a slogan used always but never adhered to. Research has shown that greater number of people lack knowledge about prostate cancer and health in general. They are so ignorant that they see health as a mere absence of illness or disease. If they were to be judged by their attitude to health, they will prefer going to the hospital, only when they are sick.

Molazem, Ebadi, Khademian, and Zare (2018) carried out a study on the effects of an educational programme for prostate cancer prevention on knowledge and prostate specific antigen testing in men over 50 years old in community areas of Shiraz in 2016. This clinical trial was conducted among 93 men over 50 years old who were randomly divided into an intervention (n=48) and a control (n=45) group. The intervention group took part in an educational programme focusing on the importance of prostate cancer prevention with emphasis on cultural and economic issues. The results showed that the

intervention group's participation in PSA testing increased from 6.12% to 36.4% three months after the intervention. However, no significant change was observed in the control group. in addition, the intervention group's mean score of knowledge increased by about 2.69 points after the intervention, and a significant difference was observed between the two groups in this regard ($p<0.05$)

Health promotion is the science and art of helping people change their life style to move toward a state of optimal health. The WHO (2004) defined health promotion as the process of enabling people increase control over and improves their health. Furthermore, the WHO posits that health promotion principles and strategies can be applied to a variety of population groups, risk factors, diseases and various settings such as schools, hospitals, churches etc. It equally spelt out the objectives of health promotion which include to promote health in the setting where people live, work, learn and play, to prevent dangers associated with age specific developmental stages throughout the life course, to allow individuals and communities to modify risks caused by unhealthy lifestyles, behaviour and the environment aid to reduce the vulnerability of groups that are marginalised because of gender, age, ethnicity, and socio-economic status. Optimal health is defined as a balance of physical, emotional, social, spiritual and intellectual health. Lifestyle change can be enhanced through a combination of efforts to enhance awareness, change behaviour and create environments that support good health practices. Of the three, supportive environments will probably have the greatest impact in producing lasting change (American Journal of Health Promotion, 2009).

The essence of health promotion is to help people embrace health behaviour that are shown to be positive for their overall wellbeing, help people change their current lifestyles, make a positive contribution to the improvement of human health. In fact, health promotion is critical to improving outcomes in the prevention and control of both chronic and communicable diseases, and in meeting the health related millennium Development Goals. It supports personal and social development through providing information, education for health and enhancing life skills. By so doing, it increases the options made available to people to exercise more control over their own health and environments. Poor health attitudes and practices by most Nigerians stem from poor health knowledge. We still believe that most Nigerians today are illiterate and the literate ones are very ignorant about practising the required behaviour.

Abone (2008) states that for a change in behaviour to occur in people, appropriate information which is of value to them must be given in an acceptable manner. Therefore, for effective health promotion to take place in our communities, awareness must be created on the many areas. People should know about their nutritional status. They should be conversant with balanced diet and disabuse their minds about food fads. Many of our local foods have a lot of nutritional values. There are enormous problems caused to our health by eating refined and canned foods.

2.14 Prostate cancer screening

According to the National Cancer Institute (2010), prostate cancer screening refers to testing to find a disease (like cancer) in people who do not have symptoms of that disease. For some types of cancer, screening can help find cancers in an early stage when they are more easily cured. The goal of screening is to find it early, with the hope that it can be treated more effectively, help people live healthier and longer lives. Internationally, a consensus of opinion in support of screening for prostate cancer is lacking, partly due to beliefs regarding the efficacy of screening in the United States (Weinrich, 2006; NCI, 2008; ACS, 2011). Preliminary results of the Prostate, Lung, Colorectal and Ovarian (PLCO) cancer screening trials do not support the validity of prostate cancer screening, nor do the results prove otherwise concerning prostate cancer screening (NCI, 2011). It is believed that if cancer is diagnosed, many males may have a slow-growing or latent form of prostate cancer that may never cause any problem (Thompson, Resnick and Klein, 2001). Some data are of the view that men may be more likely to die of other causes.

Consequently, the controversy regarding the necessity for screening for prostate cancer is also affected by the potential for over-screening. This “over screening” may result in over-diagnosis, over-treatment and potential harm to patients with the possible discovery of clinically insignificant tumors (Brawley and Kramer, 2005; Thompson, Resnick and Klein, 2001). The United States Preventive Services Task Force [USPSTF] (2002) concluded that due to mixed and inconclusive evidence, a recommendation for or against prostate cancer screening would not be given. According to the documents, recommendations for routine prostate cancer screening using PSA testing or the DRE have not changed from prior recommendations.

Furthermore, the USPSTF documents risk factor information for prostate cancer as follows: “Men older than 45 who are at increased risk include African-American men and men with a family history of a first-degree relative with prostate cancer”. These reports substantiate the controversy concerning prostate cancer screening. According to a report issued by the National Prostate Cancer Coalition (2007), each of the 50 states and the District of Columbia receive a Prostate Cancer Report Card that is graded on the basis of critical areas including mortality/screening rates and accessibility of clinical trial sites. At present, 49 states require that insurance companies provide coverage for breast cancer screening. In contrast, as of 2006, only 28 states had existing laws that required insurance companies to cover screening for prostate cancer. This investigation was conducted in Alabama. Alabama was not among these 28 states, although the death rate from prostate cancer in Alabama is the third highest in the nation. On June 13, 2007, the Governor of Alabama signed into law a bill mandating insurance coverage of physician-ordered prostate examinations. By joining the original 28 states, Alabama has taken a definitive position in the fight against prostate cancer, and thus has made a profound statement regarding the significance of prostate cancer screening for men's health (National Prostate Cancer Coalition, 2007).

2.15 Health Disparities: Though there are numerous hypotheses concerning the reason for wellbeing aberrations, what is clear is that wellbeing incongruities are a noteworthy issue of worry in disease, particularly prostate tumor in African-American men. The occurrence of prostate disease among African American men is 60% higher than that of Caucasian men. The passing rate is two times higher among African American men contrasted with some other racial or ethnic gathering (Office of Minority Health, 2007). It is of the sentiment of this analyst that inconsistencies keep on flourishing among African-American populace identified with the weight of prostate tumor sickness and passing. U.S. Sound People 2010 (2000) ascribed a few reasons for wellbeing variations to individual boundaries, for example, social contrasts.

As per Brawley (2000) social contrasts; financial obstructions, absence of medical coverage and access, all add to weakness results of minorities. Dialect contrasts, natural difficulties or just not realizing what should be done likewise add to poor results. As per the U.S. Bureau of Health and Human Services prove report and confirmation based proposals (2006),"Black men have the most astounding relative danger of biting the dust

from tumor". The National Cancer Institute [NCI] (2008) Prostate Cancer Outcomes Study (PCOS) uncovered that African-American men were at higher hazard for prostate disease than Hispanics or Caucasian men. Prostate malignancies in an all the more clinically propelled arrange were recognized all the more regularly in African-American men versus Hispanic or Caucasian men.

The African-American Hereditary Prostate Cancer Study, supported by the National Institute of Health, looks at the relationship of innate components and prostate growth in African American men (National Institute of Health, 2008), "deficient data might be an obstruction to acquiring screening among Black men". In their examination including in excess of 67,000 men age 65 years and more established, Avorn, Kantoff, Wang, and Levin (2004) found that African Americans were 35% more outlandish than Caucasians to experience prostate-particular antigen (PSA) testing.

As indicated by the Behavioral Risk Factor Surveillance System Survey (a national review of preventive and wellbeing hazard practices) results rundown of discoveries (Robert Wood Johnson Foundation, 2007), African American men have significantly higher predominance rate contrasted with Whites or Latino Americans. Stage and grade of prostate growth, alongside financial status were distinguished powerful on survival contrasts among those men determined to have prostate disease. This investigation likewise discovered that wellbeing screening rates were bring down for African American men; particularly these men were more averse to finish indicative procedures. Over 20% of the grown-ups in the territory of Alabama that were 18 years or more established, detailed having reasonable for weakness. Particularly identified with this examination, as indicated by the investigation's outcomes, 54.9 to 57.2 percent of the men in Alabama matured 40+ announced having a PSA test inside the previous two years. Factors, for example, monetary status, access to human services, protection, instruction, social disparities, social hindrances, and social conventions may have an impact on a man's danger of creating growth (NCI, 2006).

As indicated by NCI's (2006) Surveillance, Epidemiology, and End Results (SEER), African American men are 56% more inclined to create prostate malignancy than are Caucasian men. Contrasted with Caucasian men, mortality from prostate malignancy is twice as likely among African American men. National Cancer Institute (2008) and Nielsen et al (2007) revealed comparable discoveries. Men of higher financial status

(SES) have a lifted occurrence of prostate disease than men with bringing down SES. In any case, prostate malignancy mortality is found in men of lower SES. The creators prescribed the advancement of mediations to separate obstructions for social insurance use, particularly in bringing down SES populaces without free access to medicinal consideration. The rate of prostate tumor in African American guys' surpasses that of Caucasians.

The danger of creating prostate malignancy for a Caucasian male with no family history of the illness starts at age 50, while chance for African American men starts as ahead of schedule as age 40 (ACS, 2006). These revelations are confirmation of a proceeded with pattern of prostate growth difference identified with African American men and prostate disease. The way that African American men delay or abstain from screening has been distinguished as a conceivable purpose behind variations in prostate disease conclusion and mortality in African American men (Parchment, 2008).

Weinrich, Yoon and Weinrich (2008) found that notwithstanding when free prostate tumour screenings were offered, African American men were more outlandish than Caucasian men to be screened for prostate growth. Industry work locales in 11 areas in focal South Carolina were enlisted. One hundred and seventy-nine men partook in the examination. Sixty-four per cent of the example populace was African American (n = 115). In the wake of finishing a review, a slide-tape indicate created by the analysts was appeared. The slide-tape indicates exhibited a talk of the prostate; the American Cancer Society screening rules for DRE and PSA; side effects of prostate growth; the significance of the early location, and a short diagram of treatment choices including careful pausing.

Every one of the members was given a voucher to take to his doctor of decision for a free prostate growth screening that incorporated a DRE and PSA. The discoveries demonstrated that just 47% of the African American men made themselves accessible for the free screenings, contrasted with 71.9% of the white guys (n = 179). These discoveries bolster Parchment's (2008) recommendation that African American men delay or evade screenings. Joined with differences in access to medicinal services, wellbeing screening deferrals could affect early finding and mortality in African American men.

2.16 Culture Sensitivity

In a focus group study (n = 104) exploring the knowledge, attitudes, behaviour and views about prostate cancer of African American men, participants revealed barriers related to screening for prostate cancer that included lack of knowledge, life style characteristics, cultural beliefs, fear, embarrassment, distrust in government, lack of access and availability of tests (Forrester-Anderson, 2005). Many of these barriers could be a result of cultural issues, such as African American's long history of racial inequalities (Baldwin, 2003; Parchment, 2004). Some studies pinpointed lack of cultural sensitivity on the part of healthcare providers as a concern when approaching issues such as prostate cancer with minorities (Baldwin, 2003; Parchment, 2008; Plowden, 2008). The available Literature suggests that there is a missing link in the community related to prostate cancer in minorities. There is an apparent need to assess for this "missing link". More research need to be carried out to determine whether the link is related to education, knowledge, beliefs or a lack of awareness related to cultural differences.

2.17 Environment

All across the world, people are facing wealth of new and challenging environmental problems daily. Some of them are minute and only affects a few ecosystems, but others are drastically changing the landscape. The planet is poised at the brink of a severe environmental crisis, and people of the world are in a state of planetary emergency, with environmental problems pilling up high around (Lasso De Lavega, 2014, Bartosh, 2013). However, no matter what indicator is used, residents in these rural areas usually have "less" than their metropolitan counterparts (e.g., per capita income, educational opportunities). In addition, access to health care is often limited by geographic, economic and cultural barriers prevalent in rural areas (National Rural Health Association, 2006). The health of people living in rural areas is characterized by significant disparities compared to urban populations (Casey, Thiede and Kinger, 2001).

Health care resources have long been considered deficient in most of rural America (Moscovice and Rosenblatt, 2000). The available literature suggests that there are differences in cancer staging among rural populations. Rural populations' cancers tend to be diagnosed at a more advanced stage (Gosschalk and Carozza, 2004). In a study by Higginbotham et al (2001) African Americans living in rural areas were particularly at risk of late stage cancer diagnosis. Casey, Thiede and Kinger (2001) documented that rural dwellers are reported to have less access to and/or less utilization of early cancer

detection programmes. According to Environmental Science and Management (2010), it lucidly opined that environment, whether rural or urban, it serves as the backdrop of the unfolding narrative of the history, the habitats and resources that humans exploit, the 'hinterland' that surrounds human settlements, hence, people's level of knowledge, attitudes, values and practices are critical to the state of their environment, and how they utilize their environment for their own well-beings (Omoniyi, 2016). Current environmental problems make human beings vulnerable to diseases, disasters and tragedies, now and in the future. It, then requires urgent attention as it affects greatly the health of the people with prostate cancer not exempted.

The current health care policy issues and screening controversies could have a tremendous effect on prostate cancer and screening behaviours of men, especially within the rural health communities. According to Smedley, Stith, and Nelson (2003) "Health status disparities observed between many minorities and non-minority populations in the United States likely reflect a complex interplay of social, economic, biologic and environmental factors". Because poverty and health care are intertwined at the rural level, poverty is noted not to be an individual problem but a regional problem. Community wide economic constraints lead to more limited access to health care, health care education and access to screenings.

2.18.1 Screening Benefits

Large-scale clinical trials such as the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO) are being conducted to determine whether completion of certain cancer screening tests cause a reduction in death from the disease. For prostate cancer, PLCO researchers are trying to find out whether or not the performance of a digital rectal examination (DRE), plus a blood test for prostate specific antigen (PSA), will result in decreased deaths due to prostate cancer (NCI, 2008). Though the effectiveness of prostate cancer screening is unproven, there are screening guidelines that recommend communication of information regarding the limitations, as well as the benefits of prostate cancer screening (ACS, 2010; Weinrich, 2008; Weinrich et al., 2004).

The prostate-specific antigen blood test (PSA) and the digital rectal examination (DRE) are procedures used for screening and early detection of prostate cancer (ACS, 2010; Brawley and Kramer, 2008; NCI, 2006). In an investigation conducted by Wahnfired, Strigo, Catoe (2009) on knowledge, belief and prior screening behaviour among men

result revealed that the four leading reasons reported for attending prostate cancer screening uptake were identical between blacks and whites. “Peace of mind”, “it was time for a check-up”, “it was free”, and “prostate” cancer have been in the news” account for approximately 70% of all responses for both groups. The figures given regarding how men heard about the screening clinics differed between racial groups. Whites were more likely to list the newspaper as their primary source, as opposed to blacks, who identified television. Also, most of the men in both groups knew that annual DRE are recommended but few men reported ever done DRE. Regarding risk factors identification, significantly more blacks were able to distinguish black race as a risk factor for prostate cancer than whites.

2.18.2 Screening Barriers

A number of factors identified in the literature serve as barriers to screening. Some of these include: structural barriers, barriers surrounding education and resources, fears related to treatment outcomes for the patient, and lack of cultural sensitivity on the part of the healthcare professional (Parchment, 2008). Parchment surveyed a convenience sample, consisting of 100 African American and Caribbean men ages 37 to 89 years from three South Miami Dade county churches. Eighty percent of the men stated that a dislike of the digital rectal examination and perceived effects of prostate cancer (impotence and incontinence) prevented them from pursuing regular screenings (Parchment, 2008). In contrast, Boyle, Moore and Edwards (2003) also using a convenience sample, consisting of 234 participants, which included both African American and Caucasian men, studied knowledge of prostate cancer, perceived threats, benefits, barriers, and self-efficacy related to prostate cancer screening behaviours of male beneficiaries in the National Capital Area. This study also evaluated and described differences in prostate cancer screening practices that existed between racial groups in the study populations. The findings affirmed that the participants in the study, had higher levels of self-efficacy, and perceived benefits to DRE and PSA screening. They also felt susceptible to the disease, but identified few perceived barriers to testing or screening.

A significant difference in prostate cancer screening practices between the African American and Caucasian men were found with African American men screening more frequently. In 2004, Weinrich, Reynolds, Tingen, and Starr identified similar findings,

which included: embarrassment, mistrust, concern about insufficient disease knowledge and abnormal test results, fear of post-operative sexual difficulty, frustrations regarding not having a regular doctor, and concern over financial limitations for adequate screening. Furthermore, other hindrances to prostate cancer screening were identified as lack of cultural sensitivity and fatalism. Purposive sampling was used to recruit 1,432 men for the study from churches, meal sites, work sites, barbers' shops, car dealerships, civic organizations and housing projects in central South Carolina. Woods et al (2004) used a mixed methods longitudinal cohort study (baseline and 6-month follow-up) to explore health behaviours concerning prostate cancer. Phase I consisted of formative qualitative data collection centered on beliefs about prostate cancer prevention issues. Interviews were conducted with "key informants" who consisted of 15 African American men, seven physicians, and two nurses. Two focus groups (n = 22) from the target community were assembled to validate the findings from the key informants. Phase II consisted of 277 participants who completed the questionnaire. The mean age of the sample was 53 years. Five themes were discovered on how culture influences attitudes, beliefs and practices regarding decision making about prostate cancer prevention. The themes are lack of knowledge, ineffective communication, inadequate support and quality of care and sexuality issues.

Results from these studies suggest that barriers to screening may be deeply embedded in the beliefs, experiences and customs of African American men. Jernigan, Trauth, Neal-Ferguson and Carter-Ulrich (2011) conducted focus groups with older African American men and women to examine the psycho-social factors that influence screening behaviours. A total of 26 males and 19 females took part in the focus groups. Findings indicated that participant perceptions of cancer screening were positive. Participants identified getting older as a motivating factor for receiving cancer screening tests. Men tended to express distrust of the medical system, perceived cancer as a death sentence and reported that presence of symptoms was often the initial reason for receiving a test for cancer. Men were less likely to initiate tests for cancer on their own and relied on close females for encouragement.

Research findings support the influence of beliefs and customs on decision-making of African American men. In a qualitative study with nine rural African American men between the ages of 43 and 72 years, Oliver and Grindel (2006) reported similar findings. Results of the research suggested that the following factors have an impact on

participation in prostate cancer screening: fear, mistrust in the healthcare system, threat to manhood, traditional practices and lack of perceived value for preventive care, feelings of disparity and knowledge deficits.

Guerra, Jacobs, Holmes and Shea (2007) identified both patient and physician barriers to prostate cancer screening in their study involving 18 purposively sampled primary care physicians. Utilizing the physician interviews and the patient's charts, major patients barriers identified were co-morbidities (moving the visit from preventive to acute issues) and limited education/health literacy. However, forgetfulness and negative attitude concerning prostate cancer screening were identified as physician barriers. In conclusion, potential barriers to prostate cancer screening have been delineated in the literature. Barriers included: client perception of physician insensitivity, embarrassment, fear, pain, cost, knowledge deficit and sexuality concerns. Additional barriers were having no regular doctor and a decreased appreciation for the value of preventive care, secondary to tradition and culture (Jernigan et al, 2011; Oliver and Grindel, 2006; Woods et al, 2004). Recently documented in the literature are patient co-morbidities and limited education/health literacy.

Furthermore, patient problems are complicated by the fact that physician barriers related to negative attitudes and forgetfulness affect screening for prostate cancer. According to ACS (2008) recommendations, the PSA and the DRE should be offered annually beginning at age 50 for men who have a life expectancy of at least 10 years. Men at high risk, such as African-American men and men with a strong family history of one or more first-degree relatives diagnosed with prostate cancer, should be provided with information concerning testing by age 45 (ACS). There is limited documentation in the literature that describes high-risk African American men and their participation in prostate cancer screening. Some authors have suggested that as few as two to ten percent of African American men in the United States took part in prostate cancer screening (Gwede and McDermott, 2006; Brawley, 2012; Mofolo, Betshu, Kenna, Koroma, Lebeko, Claassen, et al. 2015)

2.18.3 The Prostate Cancer Screening Controversy

The incidence of prostate cancer has increased dramatically within the past decade,

primarily due to the use of the serum prostate-specific antigen (PSA) as a screening test (Potosky, Miller, Albertsen and Kramer, 2005). An estimated 1.1 million men worldwide were diagnosed with prostate cancer in 2012 which accounted for 15% of the cancers diagnosed in men and the fifth cause of mortality among men. In addition to the existing burden, cases and mortality are projected to increase rapidly in line with population growth and adoption of behaviours that are likely to increase the risk of cancer mostly in middle and low income countries (IARC GLOBOCAN, 2012, WHO, 2015). Hence, there is no consumerate report to show that early diagnosis of prostate cancer has decrease the mortality rate of the disease to prove the veracity of some claims on early detection, screening and death rate. Some researchers argue that the shift to earlier stage diagnosis is evidence that screening is effective.

However, several factors have been associated with uptake of prostate cancer screening with low level of knowledge, low perception of self-vulnerability, low socio-economic status and fatalistic beliefs being the most cited factors. Studies done across countries have shown low levels of knowledge and uptake of screening despite high levels of awareness of prostate cancer. Studies done in Nigeria showed that men had relatively low levels of knowledge, low perception of self -vulnerability and low rates of uptake of screening (Ajape, Babata, and Abiola 2009; Oladimeji, Bidemi, Olufisayo, and Sola, 2010). Due to these problems, recommendations for prostate cancer screening by professional and governmental organizations vary considerably. The National Cancer Institute does not recommend prostate cancer screening, while the American Cancer Society recommends annual screening starting at age 50 for all men and at age 45 for African American men, although it emphasizes that information about the benefits and limitations of testing should be provided (Smith, Wender, Levine and Byers, 2001) Increased publicity has magnified public concern about prostate cancer as a disease that causes death in a substantial number of men each year.

However, increased awareness has not led to a corresponding increase in knowledge (Taylor, Shelby, Kerner, Redd and Lynch, 2002) and men are deciding to attend free screening programmes on their own, without a physician's recommendation. This situation is due partly to the uncertainty in the medical community about exactly what should be communicated to the public. In uncertain medical decisions, patients' knowledge and preferences become central to the decision making process and to inform consent (Ghan, Sulmasy, 2006). To play a meaningful role in the screening decision,

patients must have access to relevant information. Providing such information about prostate cancer screening may enable men to make informed decisions based on their own values and preferences. An individual should not wait for the appearance of symptoms before getting screened for prostate cancer.

2.18.4 Screening of disease in men in Nigeria

Urologyhealth.org, (2018) defined prostate cancer screening as means of testing for a prostate disease even if one has no symptoms. The prostate specific antigen (PSA) blood test and digital rectal examination (DRE) are two tests that are used to screen for prostate cancer. Both are used to detect cancer early. However, these tests are not perfect. Abnormal results with either test may be due to benign prostatic enlargement (BPH) or infection, rather than cancer. In the whole Nigeria as a nation, they have only ten CT scan machines (Enumah, 2013). There is none yet any national cancer screening programme in Nigeria and annual prostate specific antigens are not routinely practised (Akinremi, Ogo and Olatunde, 2011).

To corroborate the submissions above, Ogundele and Ikuerowo (2005) did a descriptive cross-sectional study survey of the awareness of prostate cancer and its screening among men attending the outpatient clinics of a tertiary health center in Lagos, Nigeria bearing in mind that prostate cancer is the most common cancer among Nigerian men and the second most common cause of death from cancer in men worldwide. The findings shows that one hundred and forty-six respondents with an age range of 40–80 years participated in the study. Sixty-nine (47.3%) respondents were aware of prostate cancer while 77 (52.7%) have never heard of the disease. Twenty (13.7%) participants were aware of the availability of a screening test for the disease and only 12 (8.2%) have had any form of screening for prostate cancer. It as concluded that there is low level of awareness of prostate cancer among patients seen at center and also level of voluntary screening for the disease is low.

Malignant neoplasms most common in Benin-City is adenocarcinomas out of which 64% were well differentiated, 27% moderately and 9% poorly-differentiated while 61% of the adenocarcinomas were classified as cases of incidental carcinoma of the prostate (Akang, Aligbe and Olisa, 1996). Prostate cancer research is growing, having many aspects and problems to be addressed (Akinremi, Ogo and Olutunde, 2011). In Nigerians, the clinical prostate cancer rate may be much higher compared to African Americans. According to

World Health Organization, (2004) as cited in Nnodimele et al (2010), in Africa, Nigeria was rated first out of the nine countries with highest incidence of prostate cancer in 2004.

According to World Health Organization, (2004) as cited in Nnodimele (2010), it was revealed that among the top ten countries in the world with the prostate cancer, Nigeria was rated third in death rate from prostate cancer globally and 11th position from breast cancer death in the year 2004. The total death from this disease was 13,700 after India with a total of figure 18,200 and United State with 35,300 deaths (Nnodimele et.al, 2010). Environmental and genetic factors have also been identified as the major reason for the geographic differences in incidence. Age above 40 years, positive family history, high fat diet and high serum androgens levels are also attributed to the high incidence of prostate cancer (Abdulkareem, 2009).

In Nigeria, like other developing countries in Sub-Sahara Africa, there is no national cancer mortality database or active screening programme and this has posed difficulties in determining the true burden of prostate cancer (Albertsen, 2010). Prostate cancer in Nigeria had a 45.3 fold increase reported in individuals between the age groups of 30 - 44 and 45-50 for age-specific deaths for 2005 (Mathers, Lopex and Murray, 2006).Various Series of studies done in Nigeria revealed that with high level of prostate cancer, most cases are diagnosed late, patients are less likely to receive curative treatment and most common treatment are androgen deprivation (Nwofor and Oranusi, 2004).

2.18.5 Screening and recognition of prostate disease

Prostate cancer screening remains a controversial issue (American Urological Association, 2012). It is the only method known to control prostate cancer disease through early detection. Lots of evidence have shown that prostate specific antigen (PSA) screening can detect early stage prostate cancer (American Urological Association, 2012). Screening based on the serum marker PSA is the most cost-effective method for the detection of early disease (American Cancer Society, 2004).

American Cancer Society, (2004), recommended that men at high risk, based on race and family history, should commence early screening with PSA blood test and digital rectal exam (DRE) at age 45 years. While American Urology Association, (2013), states that screening will be of great benefit in quality of life improvement and PSA screening

should not be done for men below 40 years; routine screening for men between 40-54 years and men over 70 years or those with less than 10-15 years life expectancy, are also not recommended. But for men between 55-64 years, the decision should be personalized and based on weighing the benefits and potential harm of prostate cancer screening. These guidelines were approved base on the findings that screening pose lots of complications such as painful biopsies, bleeding from site of biopsy, infection, hematuria (blood in urine), dysuria, bone pain, and hematospermia (blood in sperm) which occur in 10-70% of patients (Journal of Urology, 2011). It was also discovered as the cause of hospitalization in 6.9% of patients (American Urology Association, 2013). Despite the controversies surrounding screening, it is being identified that the reduced mortality rate is attributed to screening, which will result in early detection and prompt treatment (Jemal, Murray, Ward, et al, 2005 and Kenerson, 2010).

A recent prospective randomize trial from Canada suggests that prostate cancer mortality can be reduced widely through prostate specific antigen screening (American Cancer Society, 2012). Prostate cancer screening may reveal results that may lead to recommendations for biopsy and other tests that can also help if biopsy is considered (American Cancer Society, 2010).

The main reason for screening is to reduce possibility of developing the disease at asymptomatic stage as a method of early detection because of their various negative attitudes, poor knowledge and beliefs (Kenerson, 2010). The major problem with early detection of prostate cancer prevention is lack of knowledge about screening and poor detection guidelines among medical professional groups (Woods et al, 2004).

According to Clarke-Tasker and Wade (2002) and Woods et al (2004), it was discovered by researchers that sexual dysfunction is a sensitive issue for black men. This therefore discourages them from participation in prostate cancer screening and early detection strategies. Direct rectal examination (DRE) was identified as a major problem as it threatens men's sexuality (Woods et al, 2004). Majority of their participants indicated fear of weak erection, impotence and insufficient strength for vaginal penetration as a major concern why men do not go for prostate cancer screening (Woods et al, 2004). A goal of healthy people 2020 is to eliminate racial health disparities and reduce prostate cancer death rate to 21.2 per 100,000 males.

To achieve these goals, innovative measures must be applied to overcome the perceived

barriers that hinder early screening practices for prostate cancer, create mechanisms to partake, support and rein enforce men to make healthy choices (Healthy People, 2010). Screening is a very big issue especially in black men as compared to women (Woods et al (2004). Black men are less likely to seek health care and participate in preventive health-related activities such as screening/detection (Woods et al, 2004). Many research works done have revealed economic limitation, low level of education, poor access to health care facilities, physicians attitude, lack of knowledge about studies, past negative experience, cultural and religious beliefs/attitude as various negative factors preventing individual participation in prostate cancer (Steele, Miller, Mayham et al (2000). Lack of knowledge about screening is being identified as a negative influence (Nnodimele et al, 2010) and only 46.5% of their study participants affirmed that they have heard about prostate cancer screening and 68.8% showed interest in screening.

In Abdulwahab et al (2011) investigation, only 5.8% of the respondents were aware of prostate cancer screening; none of them had ever been screened for prostate specific antigen and they had never contemplated going for screening, all the respondents as a result of participating in the study agreed to be screened for prostate cancer but 15.4% indicated that they will screen if it's free. According to Odedina, Yu, Akinremi, Reams, Freedman and Kumar, (2009), it was revealed that emigration of Nigerian men from Nigeria to the United States has a significant impact on prostate cancer knowledge and beliefs. In addition to lack of understanding, knowledge, access and financial constraints as the frequently given reason why screening is not done, fear, religious and cultural beliefs were the most common reasons for non-participation in prostate cancer screening in West Africa (Rebbeck, Zeigler-Johnson, Heyns and Gueye, 2011).

According to Olasoji, Babagana, Tligali and Yahaya (2008), cancer is believed to be as result of curses from wicked people, ancestors' punishment as a result of related family members' wrong doing. In Nigeria, lots of men believe that not being aware of prostate cancer can prevent them from having prostate cancer. They also believe that prostate cancer has no cure and it does not kill. Therefore, screening is not necessary and only 46.5% of their respondents indicated some level of awareness about prostate cancer screening (Nnodimele et al, 2010).

Many patients believe cancer diagnosis is a death sentence; therefore, see no reason in screening (Guz, Gursel and Ozbek, 2010). It has also been discovered that patients in

Sub-Sahara region of Africa present with locally advanced or metastatic disease due to limited screening programme, inadequate diagnostic facilities, limited skilled oncology personnel, poor access to health care facilities, lack of health education, past negative experience, physicians attitudes, cultural and religious beliefs and ignorance (Woods et al, 2004).

There is a remarkable lack of knowledge about cancer screening among the native African population in Nigeria (Ajape, Babata and Abiola, 2010). According to Oghenetejiri, (2007) there is also lack of awareness among men in Benin-City, Nigeria towards prostate cancer screening. Knowledge and perception of prostate cancer screening is very low in Nigeria and 81.5% of their research participants were eager to be screened for prostate cancer (Akinremi, Ogo and Olutunde, 2011). In most developing countries e.g. Benin Republic, Gambia, Senegal, Ghana and Nigeria, access to health care and prostate cancer screening methods for early detection is limited (Odedina, 2009). High rate of mortality has been revealed to be due to late detection (Woods et al, 2004). Since there are no recognizable symptoms for early detection of prostate cancer, early detection through screening should be encouraged among men at risk (Odedina, Nilsen, Johnson and Vatten, 2000).

With all the above mentioned problems preventing non-participation in prostate cancer screening, there is need to carry out this research study in Nigerian men as they are identified to be on a very high risk as a consequence of their ethnicity and beliefs. According to WHO (2004), as cited in Nnodimele et al, (2010) large number of interventions are available for prostate cancer treatments and it starts from primary and secondary prevention intervention.

Primary prevention strategies are screening done at the asymptomatic stage of the disease such as physical examination, digital rectal examinations, Prostate specific antigen (PSA) tests which are usually conducted annually for men over 50 and to men who have at least 10-year life expectancy and for younger ones who are at risk (Nnodimele et al, 2010). An abnormal PSA ranges from 20ng/ml 40ng/ml higher.

According to Mayo Clinic (2012), transrectal ultrasound (TRUS) is a test done by using sound wave echoes to create an image of the prostate gland to visually inspect for abnormal conditions such as gland enlargement, nodules, penetration of tumor through capsule of the gland and or invasion of seminal vesicles. TRUS may also be used for

guidance during needle biopsies of the prostate gland or guiding the nitrogen probes in cryosurgery (American Cancer Society, 2004). TRUS with biopsy is recommended when the PSA level is elevated or an abnormality is detected on DRE. Usually, extent biopsies (both bases, mid glands and apex) are taken but in high risk patients, the seminal vesicles may also be sampled (American Cancer Society, 2010).

According to Mayo Foundation for Medical Education and Research (2012), a computed tomography scan (CT scan) is a diagnostic imaging procedure that uses a combination of X-rays and computer technology to produce cross-sectional images of the body in order to evaluate the nodes, tissues, and prostate organ. It is done to estimate prostate size by showing the detailed images of any part (Mayo Foundation for Medical Education and Research, 2012).

Magnetic Resonance Imaging (MRI) is a diagnostic imaging process that uses a combination of large magnets, radiofrequencies, and a computer to produce detailed images of organs and structures within the body to evaluate extra capsular penetrations beyond the gland itself (American Cancer Society, 2004). It also evaluates lymph node and seminal vesicle for cancer spread.

Radio nucleotide scan is a nuclear imaging for detecting and confirming metastasis to bone which involves an injection of radioactive material in order to locate diseased bone cells throughout the entire body (American Cancer Society, 2004). A bone scan is recommended with PSA levels of 20ng/ml or greater to rule out bony metastasis (Mayo Clinic, 2012).

Other screening methods are Lymph node and/or prostate biopsy, intravenous pyelogram and the use of Gleason score system to measure the level of aggressiveness of cancer (Mayo Foundation for Medical Education and Research, 2012). The Stage of the cancer tells if the cancer is likely to be localized or confined to the prostate. Locally advanced means spread outside of the prostate in the area of the prostate, while metastatic means spread outside of the prostate to the lymph nodes, bone or other areas of the body (Calabrese and Mueller, 2006).

According to Calabrese and Mueller (2005), presently, there is no documented way to prevent prostate cancer, but there are on-going clinical trials investigating this important topic. According to American Cancer Society (2013), the exact cause of prostate cancer

is not known, therefore, it is not possible to prevent most of these diseases, but certain measures that can be taken to lower the risks as listed in risk factors which are more of life style modifications. The American Cancer Society and the American Urologic Association recommends that most men start prostate cancer screening at the age of 50. While men with a family history of prostate cancer should start screening from the age of 40. Examples of these life style modifications that contribute to lowering the risk of prostate cancer are: monitoring of body weight, physical activity, diet, use of certain vitamins like vitamin E, mineral selenium and other supplements.

Certain drugs (5-alpha reductase inhibitors groups) such as Finasteride (Proscar) and Dutasteride (Avodart) have also been proven as a prevention of prostate cancer (American Cancer Society, 2013). The American Cancer Society recommends that men should be allowed to make an informed decision with their health care provider about whether to be screened for prostate cancer or not. They should first receive information about what is known and what is not known about the risks and possible benefits of prostate cancer screening. Men should not be screened unless they have received this information (American Cancer Society, 2013).

2.19 Prostate-Specific Antigen (PSA)

Blood Test Prostate-specific antigen (PSA) is a substance made by cells in prostate gland (it is made by both normal cells and cancer cells). Although PSA is mostly found in semen, a small amount is also found in the blood. Most healthy men have levels under four nanograms per milliliter (ng/ml) of blood. When prostate cancer develops, the PSA level usually goes above four nanograms per milliliter (ng/ml). Still, a level below four does not mean that cancer is not present; about 15% of men with a PSA below four will have prostate cancer on biopsy. Men with a PSA level in the borderline range between four and ten have about 1 in 4 chances of having prostate cancer. If the PSA is more than 10, the chance of having prostate cancer is over 50%. The PSA level can also be increased by a number of factors other than prostate cancer, such as:

i. An enlarged prostate, such as with benign prostatic hyperplasia (BPH), a non-cancerous enlargement of the prostate that many men get as they grow older.
ii. Age: PSA levels will also normally go up slowly as one get older, even if one has no prostate abnormality.
iii. Infection or inflammation of the prostate gland (prostatitis)

iv. Ejaculation can cause the PSA to go up for a short time, and then go down again.

This is why some doctors will suggest that men abstain from ejaculation for two days before testing.

Some herbal mixtures that are sold as dietary supplements "for prostate health" may also mask a high PSA level. Saw palmetto (a herb used by some men to treat BPH) does not seem to interfere with the measurement of PSA while some steroids may change PSA levels

Obesity: Obese men tend to have lower PSA levels

Aspirin: Men taking aspirin regularly tend to have lower PSA levels. This effect is most pronounced in non-smokers.

2.20.1 Percent-free PSA

PSA occurs in two major forms in the blood. One form is attached to blood proteins while the other circulates free (unattached). The percent-free PSA (f PSA) is the ratio of how much PSA circulates free compared to the total PSA level. The percentage of free PSA is lower in men who have prostate cancer than in men who do not. This test is sometimes used to help decide if one should have a prostate biopsy if his PSA results are in the borderline range (between 4 and 10). A lower percent-free PSA means that one's likelihood of having prostate cancer is higher and the individual should probably have a biopsy. Many doctors recommend biopsies for men whose percent-free PSA is 10% or less, and advise that men consider a biopsy if it is between 10% and 25%. Using these cut-offs detect most cancers while helping some men to avoid unnecessary prostate biopsies. This test is widely used, but not all doctors agree that 25% is the best "cut-off point" to decide on a biopsy.

Some doctors use a different cut-off for different PSA levels. A newer test, known as complexed PSA, directly measures the amount of PSA that is attached to other proteins (the portion of PSA that is not "free"). This test is carried out instead of checking the total and free PSA, and it could give the same amount of information as the other two done separately. Studies are now under way to see if this test provides the same level of accuracy.

2.20.2 PSA velocity.

The PSA velocity is not a separate test. It is a measure of how fast the PSA rises over time. Normally, PSA levels go up slowly with age. Experts noticed that these levels can go up faster when cancer is present. When this issue was looked at further, studies showed that +the PSA velocity was not more helpful than the PSA itself in finding prostate cancer (Smith, Wender, Levine, Byers, 2009). For this reason, the most recent ACS guidelines (2008) on early detection of prostate cancer do not recommend using the PSA velocity.

2.20.3 PSA Density

PSA levels are higher in men with larger prostate glands. The PSA density (PSAD) tries to adjust for this. It is sometimes used for men with large prostate glands. The doctor usually measures the volume (size) of the prostate gland with transrectal ultrasound (discussed below) and divides the PSA number by the prostate volume. A higher PSA density (PSAD) indicates greater likelihood of cancer. PSA density has not been shown to be that useful.

The percent-free PSA test has so far been shown to be more helpful.

2.20.4 Age-specific PSA Antigens

PSA levels are normally higher in older men than in younger men, even when there is no cancer. A PSA result within the borderline range might be very worrisome in a 50-year old man but cause less concern in an 80-year-old man. For this reason, some doctors have suggested comparing PSA results with results from other men of the same age. As a result of the usefulness of age-specific, PSA ranges is not well proven, most doctors and professional organizations (as well as the makers of the PSA tests) do not recommend their use at this time.

2.21 Empirical Review

Ajape, Babata and Abiola, (2009) conducted a study on “Knowledge of prostate cancer screening among native African urban population in Nigeria” which says that cancer of the prostate is a worldwide public health concern”. It is the most commonly diagnosed cancer in men and ranked second as the cause of cancer-related deaths, to assess the awareness and attitude of the populace to screening for cancer of the prostate. It was a

cross-sectional study involving 156 respondents. A structured questionnaire detailing the bio data, the knowledge of cancer of prostate, the practice of screening by prostate specific antigen (PSA) test estimation and the readiness to undergo screening by the respondents was used to obtain the projected objectives. A total of 156 respondents assessed the questionnaire and forms the basis of further analysis. The mean age of the respondents was 44.15 (+/- 11.9) years. Most of the respondents were civil servants (51.9%) followed closely by politicians.

About 23.1% of them have no formal education while 53.8% have acquired tertiary education. The result reveals that 78.8% have never heard any information on cancer of the prostate and only 5.8% have heard about PSA. None of the respondents had ever had PSA test done, even once. Majority 84% of the respondents were ready to pay for prostate cancer screening test by PSA blood assay. They concluded that there was a remarkable lack of awareness of prostate cancer among the Nigerian native African urban populace as prostate cancer screening and serum PSA test for screening is globally unknown among them. The investigation conducted by Wilkinson, List, Sinner, Dai and Chodak (2003) and Weinrich, Yoon and Weinrich (2008) suggested that both limited awareness and knowledge of prostate cancer impact male participation in prostate cancer screening. The researchers further concluded that failure to participate in early detection and screening may be due to confusing messages in the media regarding the benefits of such screening.

Weinrich, Seger, Miller, Davis, Kim, and Wheeler et al (2008) examined the knowledge level of 81 low-income men between the ages of 40 and 70 years. The mean income of the sample population ranged from $17,668 to $33,333. Findings of the research indicated that total knowledge scores did correlate with income and that men with lower income levels had significantly lower scores than those with higher incomes. Similar findings were reported by Wilkinson et al (2003) who surveyed 900 African American men in the determination concerning whether an educational programme on prostate cancer could improve awareness and knowledge. Lower scores consistently correlated with participants who had limited education and lower income levels. A significant correlation was found between education, income and participation in prostate cancer screening; the higher the level of education or income of participants, the more likely prior screening had occurred.

Steele, Miller, Maylahn, Uhler, and Baker (2009) assessed the knowledge levels, attitudes, and screening practices of older African American men (50 years) regarding prostate cancer. The following items were measured: self- perceived risk of developing prostate cancer, knowledge of existing screening test for prostate cancer, whether participants had received a physician's recommendation to be screened, and current screening practices of the men. The survey consisted of a random-digit-dialed interview using a multistage cluster design. A total of 721 men completed the telephone interview. Two findings from the study were significant. First, 43% of the African American men identified themselves as having a "medium to low" risk, 16% as having "no" risk and 34% of the men answered "don't know or not sure". Secondly, those men who specified that they were "medium to low" risk reported having knowledge of the PSA test. These findings suggest that more work needs to be carried out to ensure that African American males, specifically those with lower incomes, are better aware of their risk and the need for prostate cancer screening.

Malmi, Ruutu, Määttänen, Stenman, Juusela, Tammela, and Auvinen (2010), examine "Why do men opt out of prostate-cancer screening? Attitudes and perception among participants and non-participants of a screening trial". A self-administered questionnaires were sent to 500 men randomized into the screening arm in 1996–99 within the Finnish component of the European randomized study on Screening for Prostate Cancer. A similar survey was conducted among 500 non-participants. The research result shows response proportions among the screening participants and non-participants were 59% and 28%, respectively. Current smoking was less frequent ($P < 0.05$) among the participants. In terms of attitude, the participants regarded the prostate cancer study as more important and the invitation letter as more informative than the non-participants ($P < 0.001$). There was no clear difference in worry about treatment consequences. The most commonly given reasons for not participating included previous PSA testing (41%), forgetting the invitation (51%), or not wanting to think of prostate cancer (39%) and regarding possible further diagnostic examinations as unpleasant (28%). The non-participants had a lower mental health score ($P < 0.001$) than the participants in the RAND-36 Survey.

Guttman (2010) conducted a study of urban black males utilizing a random-digit dial community series of 310 men from a sample of 404 men who attended various private

and public medical and urological clinics. Men who attended the clinic (42%) and men within the community (59%) responded correctly to three of the four questions that related to knowledge of prostate cancer risk. Although 42% of the participants admitted awareness, only 11% reported receiving PSA testing. These findings are significant, as men who are aware of the PSA test, and aware of the risk for developing prostate cancer, may still be less likely to participate in prostate cancer screening. The impact of prostate cancer knowledge on cancer screening was the focus of research by Weinrich, Boyd and Atkinson (2008). A correlational design was used for the study; 319 men without a history of previous prostate cancer screening between the ages of 40-70 years were included in the analysis. Degree of knowledge of prostate cancer was measured with a Prostate Cancer Knowledge Questionnaire prior to a community-based educational programme. Men were referred to personal physicians for free prostate cancer screening. Men with more knowledge about prostate cancer were more likely to go for free prostate cancer screening than were men with less knowledge. Even with the offer of free screening, predictors of participation were ethnicity, education, income, urinary symptoms and educational intervention. In a study that included 207 African American men and 348 Caucasian men who were recently diagnosed with prostate cancer, African American men identified obstacles such as personal failures that delayed diagnosis, greater physician mistrust, less continuity of care due to lack of access and worse socio-economic position than the Caucasian participants (Talcott, Spain, Clark, Carpenter, Kyung, et al 2007). The investigation concluded that African had knowledge about prostate cancer, particularly among African-American men (Price, Calvin and Smith, 1993; Wilkinson, List, Sinner et al, 2003).

In a study carried out by Wahnefried (2005) on knowledge, beliefs and prior screening behaviour among blacks and whites reporting for prostate screening, Whites were significantly ($P < 0.001$) more apt to report that they knew of someone with prostate cancer than blacks (51% compared with 38%, respectively). There also was a trend, although insignificant, for most factors regarding the perception of acquaintances' disease among blacks and whites. The leading perception of disease for both races was that the men they know with prostate cancer “lead full and active lives” (43% of blacks and 53% of whites, $P = 0.18$). Thirty-eight percent of blacks and 27% of whites ($P = 0.08$) reported their acquaintances “dying of prostate cancer”. There was a significant difference in reported impotency among prostate cancer acquaintances in blacks (18%)

versus whites (10%) (P = 0.03). Reports of other experiences in acquaintances were similar between the two groups, such as urinary incontinence and prostate cancer related illness. Blacks were significantly more likely to realize that the black race is a risk factor for prostate cancer (P < 0.001); however, the whites were more able to identify the role of heredity (P < 0.001). Most of the men in both groups were able to define correctly the ACS, NCI and AUA procedure for having an annual DRE to detect prostate cancer (64% of whites and 65% of blacks). Differences between the black and whites were noted in the perception that symptoms usually accompany prostate cancer onset. Fifty-four percent of the black agreed with the statement that a man can have prostate cancer without symptoms compared with 71% of whites (P < 0.001). Although less than 3% of all men agreed with the statement, "it's better to leave well enough alone; if I have prostate cancer, it's better not to know", there were clear differences in the groups' perceptions regarding the ability of a man with prostate cancer to live a normal life and the curability of prostate cancer. Blacks were significantly less likely than whites to agree that men with prostate cancer can live normal lives (P < 0.001). Furthermore, 91% of black men agreed to the statement, "Prostate cancer can be cured if found early", compared with 95% of whites (P = 0.02). Ninety-five percent of men in both racial groups disagreed with the statement. "For prostate cancer, the cure is worse than the disease". Only 8% to 9% of men who reported to the screenings rated their chance of developing prostate cancer as "more than the average man". Sixty-eight percent of men reported their risk as "the same as the average man." There were no differences between blacks and whites with regards to these responses.

Drake, Shelton, Gilligan and Allen (2011) developed and pilot tested an intervention to increase knowledge about prostate cancer screening and promote self-efficacy to participate in the informed decision-making process in United States of America. The study employed quasi-experimental design using black men as priority audience for prostate cancer screening interventions to promote informed decision making in black men using churches that are effective venue to reach this population. A total of 73 participants were recruited and the intervention was administered by a black health educator. The results show that prostate cancer knowledge ($p<0.0001$) and self-efficacy ($p=0.025$) significantly increased. They stated that a church-based intervention delivered by a black health educator is a promising strategy for promoting informed decision making among black men.

Baqar, Husaini, Michelle, Reece, Emerson, Hull, Scales and Robert (2008) carried out an investigation to examine the effect of a church based intervention to increase informed decision making about prostate cancer screening among black men as a strategy to reduce prostate cancer disparities in Tennessee America. A community-based intervention using a quasi-experimental delayed control (crossover) design with randomization at the church level consisting of black men was randomly assigned to two study groups: early intervention and delayed intervention. A convenience sample of 430 African American male volunteers (ages 40-70) was enrolled through the churches and 350 men remained in the study through wave 3.Utilizing a culturally tailored group educational programme which included a video and a question-and-answer session with a black man's physician.

The study finds out that within each group that knowledge and screening increased significantly. However, the magnitude of increases was similar, so the groups did not differ significantly. Knowledge was attributed to greater odds of having a digital rectal exam by wave 3 only for the early-intervention group. The early-intervention group was two times more likely to have discussed with a physician about prostate cancer screening by wave 3. The findings suggest that the delayed-intervention group did not function as a pure control and may have unintentionally received a partial intervention. This finding demonstrated that a low-cost prostate cancer awareness campaign within a church may be enough to affect prostate cancer knowledge, attitudes and behaviors among black men.

A study conducted in United Kingdom (Simms, 2012) implemented and evaluated the effectiveness of a faith-based prostate cancer education intervention that was designed for black men to promote informed decision making for prostate cancer. The study used a mixed method approach with a non-experimental design comprising one small focus group to ascertain sufficient information to aid in the communication material for the education intervention. The 90 minute education intervention activities included a video, small interactive group discussions and prostate cancer testimonies. The data collected at the education intervention included pre/post-test and end-of-session questionnaires and a follow-up survey. The results of the education improved prostate cancer knowledge among black men, increased awareness of risk factors for prostate cancer, improved confidence in black men discussing prostate cancer with their physicians and spouses, and motivated them to learn more about prostate cancer.

Makado, Makado and Rusere (2015) conducted a study to assess the knowledge of prostate cancer and screening practices among males aged 40 to 60 years in Chitungwiza Central hospital in Harare Zimbabwe. The investigation employed descriptive survey design. A simple random sampling technique was used and a sample of 200 adult males aged 40-60 when were interviewed using a structured questionnaire. The finding from the investigation shows that men have no adequate knowledge regarding prostate cancer screening. Despite the fact that 68% of the respondents had heard about prostate cancer screening 72% of the participants did not know about the screening methods and 68% were unaware of where to go for screening. A total of 52% of the participants got the information from family, friends and the newspapers. Newspapers do not have detailed information; and family as well as friends may report inaccurate information.

This resulted in men not having adequate knowledge on screening procedure it was recommended that institutions should have Well Men Clinics, where men can go and get counseling on health matters and be enlightened about the benefits of prostate cancer screening. Men usually do not frequent health institutes like hospitals and clinics; it is difficult to come into contact with health providers at these institutes, so promotion of prostate cancer screening can be done through the media. Using churches as well as social networks health personnel education should be engineered more towards educating the cadres on the benefits of primary prevention of diseases such as prostate cancer. Nurses should be able to initiate programmes to promote early detection of diseases. Screening for prostate cancer results in early detection of the disease hence early treatment resulting in reduction of complications and deaths. In Jordan, an investigation was carried out to assess the effectiveness of different health education intervention aimed at enhancing knowledge, beliefs and intention to screen for prostate cancer. The result indicated that most of the men had low levels of knowledge about prostate cancer and mild to moderate beliefs with good intention to screen for prostate cancer. The finding shows that men's knowledge levels about prostate cancer were poor and they had mild to moderate beliefs and intentions to screen for prostate cancer.

A well planned educational programme can be of help to identify the needs and priorities of the target population (Saleh, Fooladi, Petro-Nustas, Dweik and Abuadas, 2012). An investigation was carried out to measure the level of awareness, specific knowledge, perception and screening behavior of prostate cancer among males in a village in Ikenne south-western Nigeria. The study adopted across-sectional design utilizing a systematic

random sampling of 398 participants. The results showed that the mean age of participants was 44.24 years. Knowledge about prostate cancer as an important disease in men measured on a 12-point scale recorded a mean score of 4.97 and perception of prostate cancer considered in three sub-domains of susceptibility, seriousness and benefit, measured on a 30-point scale, similarly recorded a mean score of 17.65 while screening behavior, measured on a 11-point scale, showed that participants in the study recorded a mean scored of 2.40.

Furthermore, 156 (39.2%) of the respondents reported that they had heard about prostate cancer while 377 (94.7%) had heard of breast cancer as a condition affecting women. The findings suggest that the level of awareness about prostate cancer among men in this investigation was low while their level of perception was just above average and screening behaviour was very low. Again, perception variables positively and significantly correlated with screening behaviour among the participants. It is therefore concluded that in order to stimulate regular screening among men, there should be an aggressive health promotion intervention designed to increase awareness and to correct impressions about prostate cancer in the community (Atulomah, Olanrewaju, Amosu and Adedeji, 2010).

Egbera (2015) carried out an investigation to assess the knowledge, beliefs and attitudes of male University students towards screening for Prostate cancer in Benson Idahosa University Benin-City, Nigeria utilizing a cross-sectional qualitative design including registered male students in the Faculty of Social and Management Science with age range of 18-35. Interviews and questionnaires were used as tool for data collection. The result of the investigation shows that those students had never received information from their medical personnel about prostate cancer and very few were able to identify the possible symptoms of prostate cancer. There is low level of knowledge about prostate cancer screening and they do not know what abnormal prostate specific antigen (PSA) is. Most of the participants acquired informed knowledge about prostate cancer screening for the first time and that students have a pronounced negative attitude towards prostate cancer screening.

Lack of knowledge about cancer screening programme is also identified as a major barrier why many Nigerian men do not go for screening. The level of education has a positive influence to prostate cancer and screening. The findings of this investigation

revealed that there is low level of knowledge about prostate cancer among male university students. The study further recommended the initiation of cancer teachings in schools, churches and traditional gathering and demonstrations with the use posters in public places about prostate cancer menace and screening policy should be implemented so that every male student from age 30 is involved in health education and promotion programmes for prostate cancer.

A study conducted to test the awareness and attitude of the populace towards screening practice for prostate cancer in University of llorin teaching hospital in Nigeria, the study employed a cross-sectional design with a total population of 156 respondents. A structured questionnaire was employed for data collection containing information on bio-data, knowledge and screening practice. The result reveals that a total of 156 respondents completed the questionnaire. The mean age of the respondent was 44.5± 11.9 years. Most of the respondents were civil servants (51.9%) followed closely by politicians. About 23.1% of them have no formal education while 53.8% of them have acquired tertiary education. The result reveals that 78.8% of respondents have never heard any information about prostate cancer and only 5.8% have heard about PSA test. None of the respondents had ever had PSA done even once. Majority (84%) of the respondents were willing to pay to have prostate cancer screening done. They concluded that there is remarkable lack of knowledge about prostate cancer and poor utilization practice among Nigerian populace (Ajape, Babata and Abiola.2010).

Gash and Mcintosh (2012) conducted a study to determine cultural influences that affect black men's decisions to participate in prostate cancer screening, and secondly, the health beliefs of black women and white women regarding prostate cancer risks for the men in their family in Detroit, United States. A total of 83 African and European American men and women with a mean age of 56.5 years were recruited at two community health fairs in the Detroit area. Data were collected using an adaptation of the health belief scale developed for use in prostate cancer screening. All the decisions made about the statistical significance of the findings were made using a criterion alpha level of 0.05.The results showed that negative health beliefs differed between men and women regardless of ethnicity ($F(1,112) = 18.31$, $P < 0.001$). Women ($\times = 2.91 \pm SD = 1.04$) had higher scores than men ($\times = 1.97 \pm SD = 0.97$), indicating that they were more likely to perceive that negative health beliefs were one of the reasons why men in their families did not seek prostate cancer screening. The reasons put forward in the literature about the

reluctance of black men to participate in prostate cancer screening were not fully agreed with by the findings of this investigation. The results show that prostate cancer screening may be subject to problems of access to healthcare and health education, as opposed to cultural influences.

2.22 Summary of Literature Review

Literature has been reviewed in various aspects of prostate such as causes, risk factors, signs and symptoms, screening and knowledge and attitude of men towards early detection of prostate cancer. Epidemiologic studies have put forward several factors that may be involved in prostate cancer. In most instances, the evidence is fragmentary or inconsistent (e.g., certain occupational exposures, androgenic hormones, weight or obesity, cigarette smoking, sexually transmitted infectious agents, sexual activity level, history of benign prostatic hyperplasia, vasectomy, alcohol consumption, and vitamin D, vitamin E, and selenium intake).

The evidence for dietary fat and red meat intake is somewhat stronger and more consistent, but as yet is inconclusive. Age, race, and a family history of prostate cancer are the only reliable risk factors for prostate cancer. The widespread use of PSA screening as early detection programmes are thought to explain most of the changing patterns in prostate cancer incidence, although the benefit of screening on the mortality from this disease remains undetermined.

The literature revealed paucity of interventional studies and none was available in the study setting to provide the recommended education concerning prostate cancer risk, screening risk and benefits. The literature showed a trend in poor knowledge of prostate cancer among the populace and late presentation of patients for the detection of the disease condition for over a decade in Nigeria. There is also under utilization of uptake of prostate specific antigen testing and digital rectal examination as early detection measures for early detection of prostate cancer. There was controversy on effectiveness of PSE and DRE as early detection measures for prostate cancer. However, the literature generally supports the continuous practice of digital rectal examination and prostate specific antigen testing.

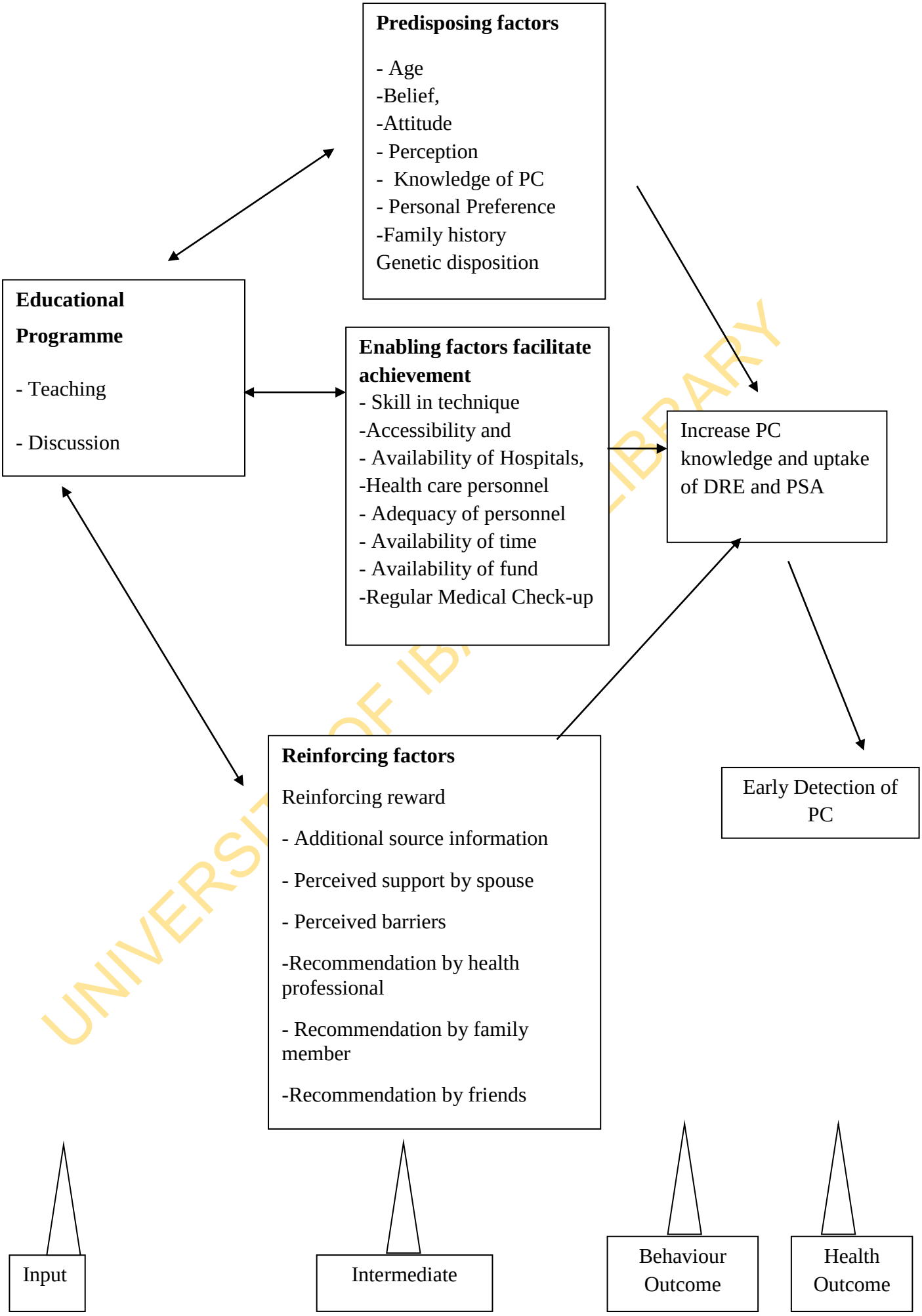
Health care professionals such as nurses, educators and other health care providers are vital links in supplying information to individuals concerning prostate cancer screening. This education will assist individuals in making informed decision concerning prostate

cancer, health promotion and decision making. As nurses, there is a need to develop strategies to increase the participation in health promotion behaviours and cancer screening activities among all men, but particularly for those in the high-risk group. These educational programmes could increase early detection, and may have an impact on prostate cancer patient's survival and quality of life. Therefore, there are knowledge gaps in understanding the effect of nursing educational programmes on awareness and early detection signs of PC in the area under consideration, hence the title of this research report.

2.23.1 Conceptual Framework

For the purpose of this study, the Precede-Proceed model or framework by Green was used. The Precede framework was first developed and introduced in the 1970s by Green and his colleagues (Green, 1974). Precede is based on the premise that, just as a medical diagnosis precedes a treatment plan, an educational diagnosis of the problem is very essential before developing and implementing the intervention plan (Glelen, Macdonald, Gary and Bone, 2008). Predisposing factors include knowledge, attitudes, beliefs, personal preferences, existing skills and self-efficacy towards the desired behaviour change. Reinforcing factors include factors that reward or reinforce the desired behaviour change, including social support, economic rewards and changing social norms. Enabling factors are skills or physical factors such as availability and accessibility of resources or services that facilitate achievement of motivation to change behaviour (Glanz and Rimer, 2005).

The Precede model is a participatory model for creating successful community health promotion and other public health interventions. It is based on the premise that behaviour change is by and large voluntary; health programmes are more likely to be effective if they are planned and evaluated with the active participation of people who will have to implement them and others who would be affected by them. Thus, health and other issues must be looked at in the context of the community. Interventions designed for behaviour change to help prevent injuries and violence and improve healthy behaviours.



2.23.2 Conceptual Model

The study adapted the Precede-Proceed model. This is a model for health educational planning. The model focused attention on relationship among factors that affect the knowledge and uptake of screening for early detection measures of prostate cancer. This research evaluated the consequence of a tailored prostate cancer educational plan on the enabling, reinforcing and predisposing factors that influence knowledge and screening uptake among men in in Cross River State, Nigeria.

There are three different grouping of factors – the predisposing factors, enabling factors and reinforcing factors, referred to as intermediate variables. The intervention which is the prostate cancer educational programme is the input and the intermediate variables will guide the preparation of the intervention, that is, the output. The input influences the intermediate variable resulting in behaviour outcome which is early detection measures (EDM) that in this case is uptake of annual DRE as well as the yearly testing of PSA level of individuals.

The intermediate variables: The predisposing factors, the enabling factors and the reinforcing factors, serve as the process by which the health promotion interventional package would influence the health outcome, that is, creation of awareness and PC uptake for early detection measures of prostate cancer.

The predisposing factors exist prior to uptake of screening practices for early detection measures of prostate cancer and include the following variables: age, belief, attitude, personal preference, values, genetic disposition of an individual, family history of prostate cancer, diet, obesity, high alcohol intake and infection of the prostate. The predisposing factors provide the rationale to contribute to the motivation for the behaviour.

Enabling factors include accessibility and availability of hospitals, availability and adequacy of health care personnel, availability of time, availability of fund and regular medical check-up, habit of an individual and the skills of medical personnel.

While the reinforcing factors include additional source of information, perceived support by spouse, perceived barriers, recommendations by health professionals, recommendation by family members, recommendation by friends, social support, family support and financial support received by an individual. The reinforcing factors are

factors subsequent to health behaviour that provide the continuing reward or incentive for the behavioural outcome.

The prostate cancer educational programme is expected to influence uptake of screening for early detective measures through the predisposing, enabling and reinforcing factors. The reversible arrows between cancer awareness programme and predisposing, enabling and reinforcing factors show that these factors could influence the Prostate cancer awareness programme. For example, the level of education and health belief of the people being studied will determine the nature of the awareness programme. It is expected that the predisposing, enabling as well as reinforcing factors will have a collective influence on the desired behavioural outcome, in this case uptake of screening practices for early detection measures (EDM).

2.24 Hypotheses

1. There is no significant association between the knowledge of adult males regarding prostate cancer with selected demographic variables such as age, education, marital status, socio economic status, source of information, occupation etc.

2. There is no significant association in the level of knowledge of prostate cancer and its risk factors among the participants pre and post intervention.

3. There is no significant association in the attitude of men towards early detection measures of prostate cancer pre and post intervention.

4. There is no significant association in uptake of screening practices (such as prostate specific antigen test and digital rectal examination) among participants pre and post intervention.

CHAPTER THREE

RESEARCH METHOD

3.0 Introduction

This chapter describes the Research method employed in the research study. It contains the study design, study setting, study population, research instrument, sampling and data collection procedures, validity and reliability of research instrument as well as the ethical consideration and data analysis of this study.

3.1 Study Design

The study utilized a mixed method approach. Mixed method research is a type of research in which both qualitative and quantitative approaches are used. According to De Vos et al, (2011), mixed method research is a procedure for collecting, analyzing and mixing both quantitative and qualitative data at some stage of the research process within a single study to understand a research problem more completely. Focus Group Discussion (FGD) was used to collect data at the pre-intervention stage. Results from the FGD helped in identification of areas of needs among the participants. These findings were used as guides in the development of a comprehensive prostate cancer educational intervention package aimed at meeting the informational needs and screening uptake of men for early detection of prostate cancer.

For the quantitative approach, this interventional study utilized a quasi-experimental pretest-posttest research design. Participants comprised two groups: intervention and control groups as shown in Table 3.1 below:

Table 3.1: Research Design for the Study

Groups	**Pre-test**	**Intervention**	**Post-Intervention Test 1 Immediate**	**Post-Intervention test 2 3 months**	**Post-Intervention test 3 6 months**
Intervention Group	T_I	X	T_2	T_3	T_4
Control Group	T_I	-	T_2	T_3	T_4

Table 3.1 shows that the pre-test (T_I) was administered to both intervention and control groups. The educational programme on PC knowledge and screening uptake [intervention package (X)] was administered to only the intervention group. All the groups were tested on post intervention test one (T_2) immediately after the educational programme, while post intervention test two (T_3) was administered three months after the intervention and post intervention test three (T_4) was conducted at six months.

3.2.1 Study Area

The study was carried out in government hospitals in Cross River State. The present Cross River State emerged on September 23, 1987 with the carving out of Akwa Ibom State, leaving parts of old Calabar and Ogoja provinces to constitute the state with a population of 2.89 million people according to 2006 National Population Commission census. Cross River covers a total of 20,156 sqkm land area and is one of the states in the south- south geopolitical zone of Nigeria that shares a common boundary with the Republic of Cameroun in the east, Benue State in the north, Ebonyi and Abia States in the west and Akwa Ibom State and Atlantic Ocean in the south. The state has 18 local government areas namely Abi, Akamkpa, Akpabuyo, Bekwarra, Biase, Boki, Calabar Municipality, Calabar South, Etung, Ikom, Obanlikwu, Obubra, Obudu, Odukpani, Ogoja, Yakurr and Yala. The major occupations of the people include farming, fishing, hunting and trading. The state has 11 general/cottage hospitals, one teaching hospital- the University of Calabar Teaching Hospital (UCTH) and Neuro- Psychiatric hospital to provide health care services to the citizens. In addition, there are several missions and private hospitals situated across the various towns in the state.

3.2.2 Study setting

The study was carried out in four selected secondary health care facilities. These are General Hospital Ogoja in the northern senatorial district, General Hospital, Ugep, in the central senatorial district, General Hospital, Akamkpa and General Hospital, Calabar, both in southern senatorial district. This selection was to ensure uniformity and equal status of health facilities selected.

General Hospital Ogoja:

General hospital Ogoja was established in 1915 to provide health care services to people of the northern senatorial district of the present day Cross River State. It is situated at

ogoja town, the headquarters of Ogoja local government area of the state. It serves as a referral centre for other cottage hospitals in the northern senatorial district. It provides services in the areas of general medicine, surgery, obstetrics and gynaecology, paediatrics, dentistry and ophthalmology. Other areas of care include: laboratory services, medical records and vesico-vaginal fistula (VVF) services.

A medical superintendent heads the hospital with six other doctors, a dentist and a visiting ophthalmologist who performs eye surgery once in a month but screens patients weekly. The nursing department has the director of nursing services as head with 118 other nurses working in the Accident and Emergency/Casualty, Male medical, Male surgical, Female mixed and Paediatrics wards, Theatre/CSSD, Ante Natal Clinic/ Vesico Vagina Fistula Centre and Eye clinics. It is 120 bedded hospital and a teaching centre for the training of nurses.

General Hospital, Calabar

General hospital Calabar was established in 1991 to provide health care services to people of the southern senatorial district of the present day Cross River State. The hospital has operated as a specialist hospital for disease control before 1991. It is situated along Mary Slessor Street, at Calabar town, the headquarters of the southern senatorial district of the state and also, the state capital. It serves as a referral centre for other cottage/general hospitals in the zone and state generally. It provides services in the areas of general ne, surgery, obstetrics and gynecology, paediatrics, dentistry and ophthalmology. Other areas of care include: laboratory services, medical records and vesico-vaginal fistula (VVF) services. It is a 140 bedded hospital with patient turn out of over 500 per month. It is a training centre for nurses, doctors and other health workers. A medical superintendent heads the hospital with twenty three (23) other doctors. The nursing department has the director of nursing services as head with 186 nurses working in the Accident and Emergency/Casualty, Male medical, Male surgical, Female mixed and Paediatrics wards, Theatre/CSSD, Ante Natal Clinic/ Vesico Vagina Fistula Centre and Eye clinics.

General Hospital, Ugep

This facility is located in Ugep, the most populous community in Cross River state, situated in Yakurr local government area and the headquarters of the central senatorial

district of the state. The health facility was established by the community in 1986 and was later handed over to the Cross River State government in 1991.It is a secondary health care facility and serves as referral centre to other cottage /general hospitals within the central senatorial district of the state. It provides services in the areas of internal medicine, surgery, obstetrics and gynaecology, paediatrics, dentistry and ophthalmology. It has seven doctors and 60 nurses working in the Accident and Emergency/Casualty, Male medical, Male surgical, Female mixed and Paediatrics wards, Tuberculosis unit, ART, Theatre/CSSD. It is a 80 bedded hospital with over 1500 patient turn out per month.

General Hospital, Akamkpa

General hospital Akamkpa was established in 1981 as a comprehensive health centre, a federal government pilot project to provide health care services to people. It was upgraded to general hospital in 1990 by the Cross River State government to provide health care services to the people of southern senatorial district of the present day Cross River State. This is a secondary health care facility that provides services in the areas of general medicine, surgery, obstetrics and gynaecology, paediatrics. It is a 70 bedded hospital with 5 doctors and 60 nurses. Patients' inflow to the hospital is overwhelming with weekly turn out of over 400 patients.

Figure 2: Map of Cross River State showing the three senatorial districts

3.3 Population of the Study

The population of study consists of men aged 40-70 years, who had no previous personal history of prostate cancer and attend outpatient clinics such as the ENT/Ophthalmic, Dental Clinic and General Out Patient Departments of the selected hospitals.

The study population consists of men utilizing the services of the four selected hospitals across Cross River State. Weekly attendance of men in the above hospitals is not

consistent but ranges between 30 and 50 in each setting. The population of men attending various clinics in the research settings for the period of four months is as follows:

General Hospital, Ogoja 230

General Hospital, Ugep 200

General Hospital, Akamkpa 235

General Hospital, Calabar 315

3.4.1 Sample and Sampling Technique

The sample size comprised 220 men for each of the intervention and control groups. The sample size was determined using the statistical formula for two proportions sampling as shown below:

$$n = \frac{\left(Z(1-\alpha/2\sqrt{2P(1-P)} + z_{(1-\beta)}\sqrt{P1(1-P1)P2(1-P2)}\right)}{(P1-P2)^2}$$

Where:

n = the minimum sample size required

α = type 1 error

β = type 11 error

P_1 = is the proportion in intervention group

P_2 = is the proportion in the comparison group

if α 0.05, β = 0.1, P_2 = 0.43, P_1 = 0.55, $z_{(1-\alpha/2)}$ = 1.96, $z_{(1-\beta)}$ = 1.28

Therefore, the minimum sample size required is 200 men per group. This was increased by 10% to 220 per group to cater for attrition.

3.4.2 Sampling Technique

The sampling was conducted at three (3) levels which include at the state, institutions and participants.

3.4.2.1 At State level

The state was stratified based on the three senatorial districts of Northern, Central and Southern senatorial districts of Cross River State. There are twelve governments owned cottage/general hospitals located in the three senatorial districts in Cross River State at the time of the study. The hospitals were stratified based on the three senatorial districts of Northern, Central and Southern senatorial districts of the state.

3.4.2.2 Institutional level

The health care institutions/facilities in each of the senatorial districts were listed. In the northern senatorial district, there are four General hospitals namely: Yahe, Okpoma, Ogoja and Obanlikwu. A simple random sampling technique through balloting was used to select General Hospital Ogoja from the zone. In the central senatorial district of the state, three general hospitals of Ugep, Itigidi and Akpet Central are in existence. The same procedure was used to select general hospital Ugep from the zone. The southern senatorial district has five general hospitals of (Akamkpa, Ikot Ini, Odukpani, Calabar and Michael Henshaw memorial hospital, Calabar). A simple random sampling technique through use of ballot paper was used to select General hospitals Calabar and Akamkpa for the study.

After selecting the four secondary health care facilities, simple random sampling technique, through balloting was used to select the intervention hospitals (General hospital, Ogoja and Ugep) and the control hospitals (General Hospital, Akamkpa and Calabar) .

3.4.2.3 Participants

The number of participants for each group in the selected hospitals were determined using proportionate allocation. The breakdown of the number of participants selected shows that General Hospital, Ogoja had 118, General Hospital Ugep 102, General Hospital, Akamkpa 94 and General Hospital, Calabar, 126. Lastly, participants who met the inclusion criteria were purposively assigned to each group on a consecutive recruiting basis as they present to the outpatient departments of the various selected hospitals until the required sample size was attained.

Inclusion Criteria

- Willingness to participate in the study throughout the period
- Be 40-70 years old at the time of study
- Willingness to attend the nurse-led educational programme
- Be fully conscious, in clinically stable condition and could participate in the study
- Must be adult males who can actively communicate
- Not having previous history of prostate cancer

- Reside within the urban area of the study setting at the period either permanently or for at least eight weeks

Exclusion Criteria

- Unwillingness to participate
- Have been diagnosed with Prostate cancer
- Be a Medical doctor or a nurse by profession

3.5 Instrument Development

3.5.1 Focus Group discussion (FGD)

For the qualitative approach, at the preliminary stage of the study, FGD was used in order to evaluate the knowledge of prostate cancer and screening uptake of the participants and to enable the researcher develop the prostate cancer intervention programme, based on the elicited needs of the clients. The participants involved in this part of the study, were not part of the main study, in order to avoid contamination. Four sessions were held within a period of two weeks.

3.5.1.1 Sample for FGD

A non-probability purposive sampling technique was used in recruiting clients with no history of prostate cancer that participated in the sessions. Twenty participants were recruited. The sample consisted of five participants in each of the four groups in private hospitals, two within Calabar and one each in the central and northern senatorial district of Cross River State respectively.

The questions guide consists of 12 open–ended questions formulated to guide the moderator in directing group discussion towards attainment of the study objectives and 8 items soliciting demographic data of participants. The interview guide explores knowledge and screening uptake of prostate cancer. The ultimate goal was to generate information to develop an intervention package for phase II study (quasi- experiment).

3.5.1.2 Method for FGD

A moderator (investigator), an observer and a note taker were present at all the sessions. Three research assistants were trained with clear explanation of the objectives of the study and the method for carrying out FGD in order to ensure adequate participation of

the subjects. This was to prevent the domination of the discussion by any of the participants, thereby giving a fair opportunity for each of them to contribute meaningfully to the discussion.

Training emphasized the skills and techniques for FGD. In order to ensure a good understanding of the whole process, the team engaged in rehearsal of the FGD techniques before going to the field. All misconceptions were cleared and a uniform format was unanimously adopted. The moderator introduced the topic and guided the participants; the note taker recorded all transactions while the observer watched the participants carefully in order to elicit verbal and non-verbal cues.

Each session lasted for 60 minutes. The session was tape recorded with due permission from participants .After each session, a brief meeting was held between the moderator, recorder and the observer to ensure adequate recording of events.

3.5.1.3 Analysis of FGD

The recording was transcribed verbatim and analyzed by the following themes:

- Quest for knowledge
- Screening uptake of prostate cancer
- Early detection strategies of prostate cancer

Analysis of this data was done in two groups by pulling the participants for each week together. Data were analyzed by a combination of simple verbatim report or content analysis. Results from the data helped in identification of areas of needs among the participants. These findings were used as guides in the development of a comprehensive nursing intervention aimed at meeting the informational needs and screening uptake of men for early detection of prostate cancer.

3.6 Data Collection Instrument

The instrument used for data collection was validated structured questionnaire titled Knowledge of Prostate Cancer Screening (KPCS) Scale Questionnaire. KPCS is a standardized and structured questionnaire which provides information on the participant's demographic/medical background was adapted for the study. The questionnaire constitutes the major instrument for data collection. Questions were framed to meet the objectives of the study and to answer the research questions. The research instrument was utilized for data collection before and after the intervention package. The questionnaire was constructed in English language and consists of five sections:

Sections A consist of the socio-demographic variables of participants and consist of 8 questions.

Section B elicits questions on knowledge of PC and has 24 questions.

Section C elicits questions on the attitude towards prostate cancer screening uptake among the intervention and the control groups before and after the intervention programme.
and has 21 questions while

Section D contains questions on uptake of PC screening uptake and has 12 questions.

Section E generates questions on the perceived reasons that influence screening uptake for prostate cancer among the intervention and control groups before and after prostate cancer educational intervention.

The questionnaire was administered on both the intervention and control groups. The questionnaire was translated into two major languages spoken in Cross River State: Efik in the Southern senatorial district, Lokkur in central senatorial district. The instrument was translated into English language by different translators word for word to ensure that accuracy of the instrument was retained in the process of translation. Translation of the instrument was done to ensure that participants were in no doubts, whatsoever, about what they were asked during the interview.

3.6 Validity of the Instrument

In view of the fact that the instrument was administered to a heterogeneous group of illiterates, they were translated into Efik and Lokurr which are the main vernaculars spoken by the people in this area of study. The translation was done by two independent persons grounded in Efik and Lokurr languages and translated into English by another set of people.

After reconciling areas of differences, the three versions (English, Efik and Lokurr) of each instrument were pretested with a group of men aged 40-70 years for clarity of instrument and ease of administration which was found to be good.

The questionnaire guide for focus group discussion (QGFGD) and knowledge of prostate cancer questionnaire were face validated by the project supervisor and content validated by experts in oncology, urology and nutrition. Specialists were asked to rate the

instrument utilizing a 4 point scale as: very relevant, relevant, relevant with item revision and irrelevant. Items recognized as insignificant were dropped and those proposed for modification were adjusted and re-examined before incorporation.

3.7 Reliability of the instrument

Knowledge of Prostate Cancer Screening Scale: This scale contains 24 items, and is written on a sixth grade reading level. The content measured includes knowledge of symptoms, risk factors, side-effects from treatment, and guidelines for screening uptake of prostate cancer. Responses are scored as "true (Yes)", "false (No)", and "don't know". The "don't know" responses are coded as incorrect. True is the correct response for sixteen of the questions. The correct answer for the other eight questions is false (No).

According to Weinrich et al (2004) the Knowledge of PCS Scale has a Cronbach alpha of 0.76. Although the knowledge of prostate cancer screening scale has established reliability internationally, the instrument has not been tested in this environment, thus the revalidation of the instrument was done. The questionnaire was pre tested by employing the use of test–retest method based on 10% of the calculated sample size at Dr. Lawrence Henshaw Memorial Hospital, Calabar and Holy Family Catholic Hospital, Ikom, both secondary health facilities (not part of the sample). A group of men ranging from 40-70 years were asked to complete the questionnaires. Data from the pilot study was analysed for reliability co-efficient using Cronbach's alpha. The Cronbach's alpha reliability co-efficient for the overall instrument was ascertained to be 0.86, signifying that the questionnaire had a high proportion of internal consistency.

3.8.0 Procedure for data collection

Six Research Assistants (RAs) who are nurses/ health educators at the continuing education unit of the selected hospitals were employed in collecting data. The RAs were trained for a period of two days on how to recruit and administer the research instruments in an ethically accepted manner. During the training, the research assistants role-play the administration of the research instruments to enable them become familiar with the instrument. The questionnaire was interviewed-administered by Research assistants especially to the illiterate participants.

3.8.1 Pre Intervention

Recruitment of participants lasted for a period of four weeks utilizing the basic outpatient clinic days Mondays, Wednesdays and Fridays. The names of men who meet the inclusion criteria and recruited were carefully compiled and assigned a numerical identity. This was to ensure that the participants attend the intervention as well as complete the post-intervention data.

The pre-intervention data were collected at the conference room under the close observation of the investigator and RAs to prevent participants from exchanging ideas. This was done at the four study centres consecutively for a period of four weeks. Retrieval of the completed questionnaire was done immediately. During the recruitment of participants for the study, the intervention group was informed about the prostate cancer educational intervention and post intervention tests that was conducted at a later date. The control group were informed of another round of data collection at a future dates. However, nurses working in the health care settings continue to give general health information to participants in the control group on a wide range of health promotion and disease prevention activities during their visit without particular emphasis on PC awareness creation and screening uptake for early detection measures. Thereafter, the control group were exposed to the PC awareness and screening uptake intervention package after post- test 2 were administered.

After the administration of the pre-test to the participants, each study participant in the intervention group was given the most recent educational materials designed by the researcher in the form of handbills derived from the National Institutes of Health concerning prostate cancer and screening uptake.

Baseline data was collected between July to August, 2014, intervention period was September to October, 2014 while immediate post intervention data was collected in November 2014, post-test 2 at three monthly interval were collected in February to March, 2015 and post intervention test 3 at sixth month post intervention was collected in May to June, 2015.

3.8.2 The Intervention

The prostate cancer educational intervention consisted of four modules and four sessions in each of the intervention hospitals. Each participant was exposed to four educational sessions of 60 minutes each consisting of lecture-discussion, demonstrations, role play, information pamphlet and handbill designed by the researcher. In developing the details of the modules, the education and training manual developed by American Cancer Society was adapted to serve as guides (ACS, 2012). The prostate cancer educational intervention was specifically prepared for the men in the intervention groups and was carried out at the conference rooms of the various hospitals. One week before the scheduled intervention, all potential participants were sent a reminder inviting them to attend the one hour lecture on prostate cancer educational awareness intervention and screening uptake.

3.8.3 The Intervention Package

The prostate cancer educational intervention package consisted of four modules with four teaching sessions with demonstration using a model of pelvic region and instructions leaflet on the practice of digital rectal examination and prostate specific antigen testing. The aim of educational intervention package was to provide correct and adequate information about prostate cancer and screening practices to aid informed decision and motivate men to utilize screening uptake of prostate cancer.

3.8.4 Prostate cancer educational intervention package content

The first module focused on:

Overview Anatomy and physiology of the prostate

Definition of cancer

Incidence of prostate cancer

Aetiology of prostate cancer and risk factors

Second module focused on:

Review of first lesson

Early signs and symptoms of prostate cancer

Prevention of prostate cancer

-Diet

- Exercise

Third module focused on:

Review of first and second modules

Screening uptake of prostate cancer, that is,

i. Demonstrate digital rectal examination

ii .Prostate specific antigen level test

iii .Diagnosis of prostate cancer

iv. Tumour grade test

The fourth module focused on:

Revision of first-third modules

Follow up

Sources of support

Questions and answer forum was made available at every session

Administration of post- test one

3.8.5 Ethical Considerations

Preceding the study, a formal application was made to obtain permission from the Cross River State Ministry of Health Institutional Review Board and also from the University of Calabar Teaching Hospital Ethical Review committee. Also, permission was obtained from the administrative heads of the selected hospitals and various Outpatient Clinics of the selected hospitals before the study was conducted. Importantly, permission was sought from the participants before the commencement of the study.

3.8.6 Voluntariness

Respect for persons which include rights to self -determination and right to have full disclosure of the study was upheld. Participants were informed that they have the right to decide voluntarily, whether to participate in the study or not without the risk of exposure to any penalty or detrimental treatment. They were allowed to ask questions, refuse to give information or to terminate their participation; they were not exposed to any form of coercion during the course of the study.

The researcher fully describes the nature of the study, the right to refuse participation, the researcher's responsibilities and the likely risks and benefits that would be sustained.

Thus eligibility to participate in the study was based on the participants' willingness to take part. Hence, an informed consent form was prepared by the researcher for participants to endorse before a witness prior to taking part in the study. Beneficence, which covers the maxim and above all, do no harm, has many sides, including freedom from harm, exploitation, evaluation of the risk benefit ratio. The researcher was not aware of any harm to participants who took part in this study. Debriefing sessions was also provided to allow participants to ask questions and air their complaints.

3.8.7 Confidentiality of data

All effort was made to keep the research instrument anonymous. Study participants were not required to write their names, signatures, addresses or telephone numbers on the survey instrument. Participants were assigned identification numbers that was formed from the questionnaire number, and a number was assigned to study centre. For example, instead of name, a participant was identified by a number such as GHC//04/001. This process was put in place to make it impossible for anybody to identify the person who gave the information once the data has been collected.

3.8.8 Beneficence to participants

The participants were informed that their participation was to generate information that was to improve awareness and screening uptake for early detection measures of PC with no direct and immediate benefits to them for participation in the study.

3.8.9 Non-malfeasance to participants

There were no physical risks associated with participation in the study. However, if in the course of the interview, participants who became emotionally uncomfortable with any of the questions, were advised not to answer such questions or the interview was discontinued and participants withdrawn from the study.

Control groups were exposed to the PC awareness and early detection training programme at a later date, after post-tests were administered. The results of the study and suggestions were made available to the Ministry of Health and authorities of the University of Calabar Teaching Hospital, Calabar, Cross River State.

3.9 Method of Data Analysis

Completed data from the questionnaire were checked for completion and for errors. Any corrections needed were effected before data entry into a computer. Data entry was done using the SPSS (Statistical Package for the Social Sciences) version IBM 20. Data were double-entered to minimize errors. Before analysis, the data were checked and cleaned. Descriptive and inferential statistics were employed using statistical package for social science (SPSS version 20). Results were presented in tables and figures. Chi square analysis was used for testing relationships between variables. Intervention effect on knowledge, attitude and utilization was analyzed using repeated measures ANOVA with a within-subject factor and a between-subject factor of group (intervention, control).

Paired-samples t-test was used to compare the knowledge scores at each point of contact/ visitation in the intervention and control group while Independent-samples t-test was used to test the significant differences in the knowledge, attitude, utilization and some socio demographic variables (Age, education, marital status, socio economic status, source of information, occupation).

Objective one: Assess the level of knowledge on prostate cancer among the intervention and the control groups before the intervention programme was analyzed using questions B1-B24 before the intervention at both baseline for the control and experimental groups. Chi square test and P-value at 0.05 significance level was used to assess the level of knowledge of prostate cancer. A coding guide was developed for items on knowledge. The most appropriate answer was coded 1 while the wrong answer was coded 0. From the 24 items in knowledge table, each was a score of 1, making a total score (maximum obtainable score) of 24. Knowledge score was converted to percentages by dividing individual score by total score of 24 and multiplying this by 100. The participants' knowledge was categorized into good (60% - 100%), fair (40% - 59%) and poor (0% - 39%) knowledge.

Objective Two: Assess the attitude towards prostate cancer screening uptake among the intervention and the control groups before and after the intervention programme. Items C1-C17 was used to assess the attitude towards prostate cancer screening uptake among the intervention and the control groups before and after the intervention programme. Chi-square test was utilized to evaluate the attitude towards prostate cancer screening uptake among the

experimental and the control groups before the intervention programme at 0.05 significance level. Also, a coding guide was developed for items on attitude. From the 17 items on attitude, each with a score of 5 makes total score (maximum obtainable score) of 17 X 5= 85. Attitude was converted to percentages by dividing individual score by total score of 85 and multiplying this by 100. The attitude was categorized into positive (50% - 100%) and negative (0% - 49%).

Objective three: Investigate the screening uptake of Digital Rectal Examination (DRE) and Prostate Specific Antigen (PSA) test among the participants before and after the intervention Items D1-D12 was used to investigate the utilization of digital rectal examination and prostate specific antigen test among the participants before and after the intervention programme. The most appropriate answer was coded 1 while the wrong answer was coded 0 giving a maximum score of 12. Utilization score was converted to percentages by dividing individual score by total score of 12 and multiplying this by 100. The respondents' utilization was categorized into poor (0 - 49%) and good (50 - 100%). Chi square and p-value at 0.05 significance level was used to investigate the utilization of advanced rectal examination and prostate particular antigen test among the participants before and after the intervention programme.

Objective four: Identify the perceived reasons that influence screening uptake for prostate cancer among the intervention and control groups before and after prostate cancer intervention programme. Items E1-E11 were used to identify the perceived reasons that influence the screening uptake for prostate cancer among the interventionl and control groups before and after intervention programme utilizing chi square and p-value at 0.05 significant level.

Hypothesis one: There is no significant difference between the knowledge of adult males regarding the early detection and prevention of prostate cancer with selected demographic variables such as age, education, marital status, socio economic status, source of information, occupation etc. Question A1-A7 and B1-B12 were used to determine the significant difference between the knowledge of adult males regarding the early detection and prevention of prostate cancer with selected demographic variables such as age, education, marital status, socio economic status, source of information,

occupation utilizing repeated measures of ANOVA with a within-subject factor of knowledge and a between-subject factor of group (Paired t-test and Independent t-test).

Hypothesis two: There is no significant difference in the level of knowledge of prostate cancer and its risk factors among the participants before and after educational programme. Questions B1-B24 were used to determine the significant difference in the level of knowledge of prostate cancer and risk factors of prostate among the participants before and after educational programme utilizing repeated measures of ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control, Paired t-test and Independent t-test.

Hypothesis three: There is no significant difference in attitude of men towards screening practices of prostate cancer before and after educational programme. Questions C1-C17 were used to assess the significant difference in attitude of men towards early detection measures of prostate cancer before and after educational programme utilizing repeated measures of ANOVA with a within-subject factor of knowledge and a between-subject factor of group and Mauchly's test, Paired t-test and Independent t-test.

Hypothesis four: There is no significant difference in practice (such as prostate specific antigen test and digital rectal examination) for early detection of prostate cancer among participants before and after nursing educational programme. Question D1-D12 was used to determine the significant difference in practice (such as prostate specific antigen test and digital rectal examination) for early detection of prostate cancer among participants before and after nursing educational programme utilizing Friedman's non-parametric test for repeated measures ANOVA with a within-subject factor of knowledge and a between-subject factor of group (Mann-Whitney U test, Paired t-test and Independent t-test and Wilcoxon test).

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1. Introduction

This section discusses the results from the study which was carried out to determine the Prostate Cancer educational intervention as a strategy for enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, South-South, Nigeria. A total of 440 participants were recruited for the study comprising 220 for intervention and control groups respectively. However, ten participants from each group were lost to attrition during data collection. Therefore, data were collected from 420 participants comprising 210 intervention and 210 control groups at pre-test, post-test 1, 2 and 3 for both groups for analysis. The results are hereby presented and discussed.

Table 4.1: Socio demographic information of participants

Variable	Options	Intervention Freq (%)	Control Freq (%)	X^2	P-value
Age	Mean	51.4	54.1		
	S.D	8.92	8.17		
	Minimum	40.00	40.00		
	Maximum	70.00	70.00		
	40-49 years	107(51.0%)	74(35.2%)		
	50-59 years	62(29.5%)	82(39.0%)		
	>=60 years	41(19.5%)	54(25.7%)	10.573	. 005
Marital status	Married	150(71.4%)	154(73.3%)		
	Never married	17(8.1%)	12(5.7%)		
	Separated	3(1.4)	8(3.8)		
	Widower	34(16.2)	30(14.3)		
	Divorced	6(2.9)	6(2.9)		
Occupation	Civil servant	94(44.8)	98(46.7)		
	Self employed	59(28.1)	60(28.6)		
	Employed in a paid job	26(12.4)	14(6.7)		
	Retiree/ student/ apprentice	31(14.8)	38(18.1)		
Ethnic group	Efik	94(44.8)	76(36.1)		
	Ekoi	53(25.2)	66(31.4)		
	Yakurr	60(28.5)	40(19.0)		
	Igbo	15(7.1)	10(4.8)		
	Yoruba	6(2.9)	9(4.2)		
	Hausa	4(1.9)	9(4.2)		
Educational qualification	No formal education	37(17.6)	42(20.0)		
	Primary/ adult education	62(29.5)	50(23.8)		
	Secondary education	45(21.4)	33(15.7)		
	Diploma/ first degree	66(31.4)	85(40.5)	5.839	.012
Income range	<=N20,000	83(39.5)	72(34.3)		
	N20,001-N50,000	69(32.9)	79(37.6)		
	>N50,000	58(27.6)	59(28.1)	1.465	.481
Religion	Christianity	205(97.6)	197(93.8)		
	Non-Christians	5(2.4)	13(6.2)		

Table 4.1 above summarizes participants' socio demographic variables. About half 107 (51%) and 74(35.2%) in the intervention group and control groups respectively were between 40-49 years old, 62(29.5%) intervention group and 82 (39.0%) control group were between 50-59 years, while 41 (19.5%) intervention group and 54 (25.7%) control participants were between 60-70 years. The mean age of the participants was 51.4 for the intervention group and 54.1 for the control group. Most research works revealed that prostate cancer (PC) has become the number one cancer in adult men aged between 50 years and above with increasing incidence and morbidity in men of black ancestry (Delongchamps, Singh and Hass, 2017). This is in line with a study conducted by Ohaeri and Ingwu (2015) who stated that there is need for creation of awareness of prostate cancer for those who are approaching this age range so that they can actively be screened for cancer of the prostate.

Most 97.6% intervention group and 93.8%control group practice Christianity as their religion. The result obtained in the study as regards religion is also in correspondence with Akhigbe (2012) whose findings revealed that Christianity dominates southern part of Nigeria and this has replaced traditional beliefs, the belief of people about life and their attitude towards health issues.

In terms of income, majority 39.5% in the intervention group and 34.3% control group had a monthly income of N20, 000 - N50, 000. This finding is in corroboration of a study by Puri, Ashat, Pandey, Goel, Singh, & Kaushal (2014) on socio-demographic characteristics of cancer patients, who observed that out of 684 patients, majority (33.5%) of participants were of low socioeconomic status.

Table 4.2: Belief about causation of prostate cancer

Variables	Pretest				χ^2	P-value	Posttest one				χ^2	P-value
	Intervention		Control				Intervention		Control			
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)			Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)		
Illness is from God and God's will shall prevail	170(81.0)	40(19.0)	150(71.4)	60(28.6)	5.250	.022	122(58.1)	88(41.9)	150(71.4)	60(28.6)	8.180	.004
Illness is as a result of one's sin or parental sin	151(71.9)	59(28.1)	160(76.2)	50(23.8)	97.331	.000	125(59.5)	85(40.5)	136(64.8)	74(35.2)	1.225	.268
Spiritual attack from the evil one	174(82.9)	36(17.1)	101(48.1)	109(51.9)	56.130	.000	128(61.0)	82(39.0)	106(50.4)	104(49.5)	4.671	.031
Microorganisms is cause of illness	178(84.8)	32(15.2)	179(85.2)	31(14.8)	.019	.891	187(89.0)	23(11.0)	178(84.8)	32(15.2)	1.695	.193

At baseline, majority 81% versus 71.4 % for intervention and control groups respectively believed that prostate cancer illness is from God and God's will/ shall prevail ($P < 0.05$). Significantly, both participants in the intervention group 71.9% and the control group 76.2% believed that prostate cancer illness was as a result of one's sin or parental sin while 84.8% intervention group and 85.2% control group attributed the cause of prostate cancer illness to microorganisms. At post intervention test one, there was a significant change in perception as more than half 58.1% of intervention group from 71.9% still believed that prostate cancer illness is from God and God will prevail ($P<0.05$). The control group remained the same at 71.4%. Similarly, a reduction in the proportion of those with the notion that prostate cancer is caused by sinfulness was observed both among the intervention ($P>0.05$). This finding is in line with Kahissay, Fenta, and Boon (2017) who agreed with the submission on belief about causation of illness. They perceived illness to be supernatural (e.g., almighty God/ Allah, nature spirits, and human agents of the supernatural), natural (e.g., environmental sanitation and personal hygiene, poverty, biological and psychological factors) and societal causes (e.g., social trust, experiences of family support and harmony; and violation of social taboos). Also, WHO (2001) gave credence to the fact that African people belief God/*Allah* should be held responsible, at least indirectly, for causing most illness

Table 4.3: Place participants attend for health care

Variables	Pretest				χ^2	P-value	Posttest 1				χ^2	P-value
	Intervention		Control				Intervention		Control			
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)			Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)		
Traditional medicine	38(18.1)	172(81.9)	31(14.8)	179(85.2)	.850	0.357	31(14.8)	179(85.2)	25(11.9)	185(88.1)	0.742	0.389
*Church medicine	25(11.9)	185(88.1)	39(18.6)	171(81.4)	3.613	0.057	26(12.4)	184(87.6)	34(16.2)	176(83.8)	1.24	0.265
**Prayer medicine	42(20.0)	168(80.0)	58(27.6)	152(72.4)	3.360	0.067	12(5.7)	198(94.3)	31(14.8)	179(85.2)	9.353	0.002
Hospital medicine	178(84.8)	32(15.2)	192(91.4)	18(8.6)	4.450	0.035	187(89.0)	23(11.0)	184(87.6)	26(12.4)	0.208	0.648

* Involve use of holy water, anointing oil, anointed handkerchiefs, etc.

**Involve only prayers physically with the person or through telephone calls

Majority 84.8% intervention and 91.4% control groups respectively received their treatment from hospital medicine (P < 0.05) at pretest and at post intervention test one, few participants 14.8% versus 11.9% intervention and control groups respectively attended traditional medicine (P> 0.05). Majority 187(84.8%) intervention and 184(87.6%) control groups have their treatment from hospital medicine (P > 0. 05). The findings from this study also correspond with Azubuike and Okwuokei (2013) whose results revealed that religious and spiritual beliefs are often used to cope with chronic diseases like cancer. They further stated that majority of Nigerians have a strong believe in God, therefore cannot be infected with diseases like cancer. The socio-demographic variables did not show significant differences between the intervention and control groups.

Results also revealed that majority of the respondents are Christians. This finding corresponds with Nakandi, et al (2013) where 63.1% of their study participants were Christians. The Christians do not believe in cultural or traditional norms but majority of the respondents in this study believe and attend hospital for their health care needs. This study result is comparable to Nnodimele, Motunrayo, Ademola and Omotoyosi (2010) whose findings reported that 63% of their participants were Christians. The result obtained in the study as regards religion is also in correspondence with Akhigbe (2012) whose findings revealed that Christianity dominates southern part of Nigeria and this has replaced traditional beliefs, the belief of people about life and their attitude towards health issues. The findings from this study also corresponds with Azubuike and Okwuokei (2013) whose results revealed that religious and spiritual beliefs are often used to cope with chronic diseases like cancer and also revealed that majority of Nigerians have a strong believe in God, therefore cannot be infected with diseases like cancer.

Table 4.4: Ever heard of prostate cancer

Test	Intervention		Control		χ^2	P-value
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)		
Pretest	55(26.2)	155(73.8)	48(22.9)	162(77.1)	23.63	0.027
Posttest 1	210(100)	0(0.0)	50(23.8)	160(76.2)	258.462	0.000
Posttest2	210(100.0)	0(0.0)	54(26.1)	153(73.9)	244.346	0.000
Posttest3	210(100.0)	0(0.0)	60(28.5)	150(71.5)	100.406	0.000

At baseline, majority155 (73.8%) of participants in the intervention group and 162 (77.1%) control group have not heard about prostate cancer; while at post intervention test one, all 210 (100%) intervention group and 50 (23.8%) control group have heard about prostate cancer (P<0.05). Also at post intervention test two, majority 210 (100%) intervention group and 54 (26.1%) control group agreed they heard about prostate cancer (P < 0.05). A similar findings showed at post intervention test three with 210 (100%) intervention and 57 (27.5) control group indicated they are not aware of PC respectively. The above findings is agreement with Ogundele and Ikuerowo (2015) who stated that participants are not aware of the disease. In their study, with one hundred and forty-six respondents with age range of 40–80 years. Sixty-nine (47.3%) respondents were aware of prostate cancer while 77 (52.7%) have never heard of the disease.

Also, Atulomah, Olanrewaju, Amosu, and Adedeji, (2010) submits that there is low level prostate cancer awareness. In their study, only 47% of respondents are aware of this disease. In a similar study, done in a rural community of Ogun State in South-Western Nigeria the level of awareness of prostate cancer among the participants was 39.2%**.** This is lower than the awareness rate in our study but the fact that this study took place in an urban setting and among hospital patients may account for the difference.

Table 4.5 Sources of information about Prostate Cancer (Pre intervention and post- test 1)

Variables	Pretest				χ^2	P-value	Posttest 1				χ^2	P-value
	Intervention		Control				Intervention		Control			
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)			Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)		
Television/Radio	25(11.9)	185(88.1)	20(9.5)	190(90.5)	0.622	0.430	30(14.3)	180(85.7)	22(10.5)	188(89.5)	1.405	0.236
Handbills	9(4.3)	201(95.7)	5(2.4)	205(97.6)	1.182	0..277	210(100)	0(0.0)	7(3.3)	203(96.7)	343.636	0.000
Video films	10(4.8)	200(95.2)	3(1.4)	207(98.6)	3.890	0.049	30(14.3)	180(85.7)	5(2.4)	205(97.6)	19.481	0.000
Intervention package	0(0.0)	210(100)	0(0.0)	210(100)	2.090	0.148	210(100)	0(0.0)	0(0.0)	210(100)	381.818	0.000
Friend/Relative	37(17.6)	173(82.4)	30(14.3)	180(85.7)	0.870	0.351	50(23.8)	160(76.2)	28(13.3)	182(86.7)	7.620	0.006
Health professional	2(1.0)	208(99.0)	1(0.5)	209(99.5)	0.219	0.640	210(100)	0(0.0)	1(0.5)	209(99.5)	230.923	0.000

At baseline, majority 185 (88.1%**)** intervention group and 190 (90.5%) control group did not derive their sources of information about prostate cancer from television/radio (P > 0. 05). Few 9 (4.3%) intervention group and 5 (2.4%) control group have their source of information from handbills (P>0.05). No participant from both the intervention and control groups indicated prostate cancer intervention package as source of information. The result obtained in this study corroborates Nnodimele et.al (2010) whose report shows that only five percent of their participants received information from their physicians/nurses regarding prostate cancer and only seven percent of these study participants' were able to list information received about prostate cancer from health care giver. This is comparable to Kenerson (2010) where only few of the respondents were able to list the information received about prostate cancer from their health care givers. This result also corresponds with Nnodimele, et.al (2010) whose findings reported that only 5.3% of their research participants were able to list information received from their health care givers. This finding is not surprising as prostate cancer in men has had a much lower profile in Cross River State. There are no handbills, posters or radio jingles to educate the men about the disease condition in the study settings. This is contrary to breast and cervical cancers in women where the results of the few published studies of public awareness of PC support the view that prostate cancer in men has had a much lower profile (Ajape, Babata and Abiola, 2010). This finding is not in agreement with several studies that health education campaigns in form of radio jingles and from health professionals in developing countries have dramatically increased awareness of breast and cervical cancers in women at risk, and have led to increased rates of early diagnosis and treatment (Ogundipe and Obinna, 2010). Mortality from breast cancer is now reducing partly due to awareness and early detection measures.

In view of the fact that the prostate cancer educational package was implemented among the intervention group, results were significantly greater than scores at baseline or pre intervention phase. Majority of participants in the control group had not heard about prostate cancer at the post intervention phases as compared to intervention group (P=0.027). At post intervention test one, all the participants in intervention group and only few participants in control group indicated that they had heard about prostate cancer (P=0.000). Thus, the prostate cancer interventional programme improved the participants' awareness and knowledge especially in the intervention group. There was a significant increase and differences in the sources of information of prostate cancer among the intervention group. All the participants in the intervention group mentioned the sources of their information to

include intervention package delivered by health professionals and handbills distributed by the researcher, while there was no much change in the sources of information by the control group. This shows that participants in the intervention group received information on prostate cancer and become knowledgeable than those in the control group. This finding agreed with the assertion of Modeste, Caleb-Drayton and Montgomey (2006) who stated that the primary reason for the escalating mortality of malignant diseases is lack of health promotion initiative by health care professionals and non-use of early detection strategy. Many educational materials have been developed specifically to help patients make result oriented decisions about prostate cancer screening. These materials include printed brochures, patient informed consent forms, and video tape (Flood, Wennberg, Nease and Ding, 2007).

Hypothesis one: There is no significant association between the knowledge of adult males regarding prostate cancer with selected demographic variables such as age, educational qualification, marital status, tribe, socio economic status and occupation.

Table 4.6: Showing significant association between the knowledge of adult males regarding prostate cancer and age of participants

Knowledge within the Age Groups

	Pre Intervention		**Post Intervention 1**		**Post Intervention 2**		**Post Intervention 3**	
	Control	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**
40-49 years	8.9 ± 5.1	10.4 ± 3.2	9.7 ± 3.9	19.6 ± 2.9	11.6 ± 2.1	16.6 ± 2.2	11.3 ± 2.2	17.0 ± 2.4
50-59 years	8.7 ± 4.1	10.0 ± 2.8	9.9 ± 3.8	19.4 ± 3.1	11.2 ± 2.0	16.8 ± 3.1	10.4 ± 2.2	17.5 ± 2.7
60-70 years	9.7 ± 5.3	9.8 ± 3.0	9.6 ± 2.9	19.1 ± 3.0	11.1 ± 2.1	16.3 ± 3.2	10.5 ± 2.4	16.6 ± 2.8

Effect over time	**Df**	**F value**	**Partial Eta**	**p-value**
Knowledge	2.42, 1022.13	224.8	0.352	0.000
Group	1, 414	986.0	0.250	0.000
Knowledge*Group	4.85, 1003.6	138.0	0.002	0 .765
Knowledge*Group*Age	4.85, 1003.6	1.1	0.005	0 .355

The intervention effect on knowledge was analyzed using repeated measures ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control) and age groups (40-49 years, 50-59 years and 60-70 years). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 177.8, $p< 0.05$), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.81$). Main effects of knowledge, F (2.42, 1022.13) = 224.8, $p < 0.05$, $\eta p^2 = 0.352$, and group, F (1, 414) = 986.0, $p< 0.05$, $\eta p^2 = 0.704$ and age, F (2, 414) = 0.87, $p> 0.05$, $\eta p^2 = 0.004$. These were qualified by interaction between knowledge and group, F (2.42, 1003.6) = 138.0, $p< 0.05$, $\eta p^2 = 0.250$, interaction between knowledge and age group, F (4.85, 1003.6) = 138.0, $p <0.05$, $\eta p^2 = 0.250$, and interaction between knowledge, group and age, F (4.85, 1003.6) = 1.1, $p=0$ .355, $\eta p^2 = 0.005$. Thus, there was no statistical significant difference in the knowledge of age groups between intervention and control groups overtime. This findings is in line with the study by Sullivan (2015) whose null hypothesis was rejected due to the non-relationship between the knowledge and age group of the respondents.

Table 4.7: Showing Significant association between the knowledge of adult males regarding prostate cancer and occupation of participants

Knowledge within the Occupation Groups

	Pre Intervention		Post Intervention 1		Post Intervention 2		Post Intervention 3	
	Control	Intervention	Control	Intervention	Control	Intervention	Control	Intervention
civil servant	9.8 ±4.8	10.0 ± 3.1	9.9 ± 4.0	19.6 ± 2.7	11.6 ± 2.0	16.7 ± 2.5	10.9 ± 2.3	17.2 ± 2.6
self employed	7.6± 3.6	10.2 ± 3.1	9.4 ± 3.5	19.6 ± 3.2	11.0 ± 1.9	16.7 ± 2.5	10.7 ± 2.3	17.1 ± 2.7
employed in a paid job	7.9 ±4.9	11.7± 3.4	9.0 ± 3.1	19.5 ± 2.5	11.4 ± 2.8	16.5 ± 3.2	11.3 ± 2.1	17.1± 1.9
retiree/ student/ apprentice	10.0 ± 5.7	8.9± 1.9	10.2± 2.8	18.6± 2.8	11.2 ± 2.1	16.2 ± 3.1	10.3± 2.4	16.5± 2.7

Effect over time	**Df**	**F value**	**Partial Eta**	**p-value**
Knowledge	2.44, 1027.78	173.2	0.296	0.000
Group	1, 412	758.6	0. 187	0.000
Knowledge*Group	7.31, 1004.2	94.6	0. 005	0. 668
Knowledge*Group* **Occupation**	7.31, 1004.2	2.1	0. 015	0. 039

The intervention effect on knowledge was analyzed using repeated measures of ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control) and occupational groups (civil servant, self-employed, employed in a paid job and retiree/ student/ apprentice). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 172.3, $p < 0.05$), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.81$). Main effects of knowledge, F (2.44, 1027.78) = 173.2, $p < 0.05$, ηp^2 = 0.296, and occupation group, F (1, 412) = 758.6, p = 0 .000, ηp^2 = 0. 658 and occupation, F (1, 412) = 2.06, p>0.05, ηp^2 = 0. 015. These were qualified by interaction between knowledge and occupation group, F (2.44, 1004.2) = 94.6, $p <$ 0.05, ηp^2 = 0. 187, interaction between knowledge and occupation group, F (7.31, 1004.2) = 94.6, p=0. 668, ηp^2 = 0. 187, and interaction between knowledge, group and occupation, F (7.31, 1004.2) = 2.1, $p < 0.05$, ηp^2 = 0. 015. Thus, there was no statistical significant association in the occupation of participants between the intervention group and the control group overtime. This findings is in line with a study by Sedgwick (2014) whose null hypothesis have to be rejected since the there is no significant association between the knowledge and occupation

Table 4.8: Showing significant association between the knowledge of adult males regarding prostate cancer and ethnic group of participants

Knowledge within the Ethnic Groups

	Pre Intervention		**Post Intervention 1**		**Post Intervention 2**		**Post Intervention 3**	
	Control	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**
Efik	8.3±3.7	9.9± 3.0	10.2± 4.3	20.1± 3.1	11.3 ± 2.0	16.6 ± 2.8	11.1± 2.0	17.2 ± 2.7
Yakurr	14.2± 6.1	10.7 ± 3.2	8.5± 2.6	19.0 ± 2.7	11.6 ± 2.1	16.6 ± 2.6	11.1± 2.5	17.0 ± 2.5
Other tribes	7.9±3.8	9.0± 1.7	9.9 ± 3.3	18.7± 2.9	11.3 ± 2.1	16.6 ± 2.7	10.3 ± 2.3	16.7± 2.5

Effect over time	**Df**	**F value**	**Partial Eta**	**p-value**
Knowledge	2.55, 1074.18	165.2	0. 285	0.000
Group	1, 414	758.6	0. 286	0.000
Knowledge*Group	5.09, 1054.3	18.6	0. 082	0.000
Knowledge*Group*Ethnic group	5.09, 1054.3	7.6	0. 035	0.000

The intervention effect on knowledge was analyzed using repeated measures of ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control) and ethnic group (Efik, Yakurr and other tribes). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 139.7, $p< 0.05$), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.85$). Main effects of knowledge, F (2.55, 1074.18) = 165.2, $p < 0.05$, $\eta p^2 = 0.285$, and group, F (1, 414) = 758.6, $p< 0.05$, $\eta p^2 = 0.647$ and ethnic, F (1, 414) = 8.53, $p< 0.05$, $\eta p^2 = 0.040$. These were qualified by interaction between knowledge and group, F (2.55, 1054.3) = 18.6, $p< 0.05$, $\eta p^2 = 0.286$, interaction between knowledge and ethnic group, F (5.09, 1054.3) = 138.0, $p> 0.05$, $\eta p^2 = 0.250$, and interaction between knowledge, ethnic group, F (5.09, 1054.3) = 7.6, $p< 0.05$, $\eta p^2 = 0.035$. Thus, there was no statistical significant difference in the knowledge of ethnic groups between the intervention group and the control group overtime. This findings is in line with Gash and Mackintosh (2012) whose findings showed that negative health belief differed between men and women regardless of ethnicity ($F(1,112) = 18.31$, $P<0.001$)

Table 4.9: Showing significant association between the knowledge of adult males regarding prostate cancer and educational qualification

	Pre Intervention		**Post Intervention 1**		**Post Intervention 2**		**Post Intervention 3**	
	Control	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**
No formal education	9.3 ±5.0	10.4 ± 3.5	10.7± 4.1	20.0 ± 3.2	11.8± 2.0	17.7± 1.8	11.5± 2.2	17.8 ± 2.5
primary/ adult education	9.7± 5.5	9.0± 2.0	9.7 ± 3.3	19.3± 3.1	11.0± 2.0	16.1 ± 3.1	10.5 ± 2.5	17.0 ± 2.7
secondary education	8.4±4.5	9.9± 2.8	9.5 ± 3.6	19.3± 2.5	11.6± 2.4	16.3 ± 2.9	10.9 ± 2.2	16.7± 2.5
diploma/ first degree	8.9± 4.2	11.2± 3.4	9.5± 2.8	19.4 ± 3.0	11.0 ± 1.8	16.6 ± 2.3	10.3± 2.2	17.0± 2.5

Knowledge within the Educational Group

Effect over time	**Df**	**F value**	**Partial Eta**	**p-value**
Knowledge	2.44, 1027.56	244.9	0. .373	0.000
Group	1, 414	758.6	0. 256	0.000
Knowledge*Group	7.31, 1004.0	141.5	0. 007	0. 491
Knowledge*Group*education	7.31, 1004.0	1.4	0. 010	0. 188

The intervention effect on knowledge was analyzed using repeated measures ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control) and educational groups (no formal education, primary/ adult education, secondary education and diploma/ first degree). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 173.3, $p< 0.05$), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.81$). Main effects of knowledge, F (2.44, 1004.0) = 244.9, $p < 0.05$, $\eta p^2 = 0.373$, and group, F (1, 414) = 758.6, $p < 0.05$, $\eta p^2 = 0.726$ and education, F (1, 414) = 4.36, $p = 0.005$, $\eta p^2 = 0.031$. These were qualified by interaction between knowledge education group, F (2.44, 1003.6) = 141.5, $p < 0.05$, $\eta p^2 = 758.6$, interaction between knowledge and education group, F (7.31, 1004.0) = 141.5, $p> 0.05$, $\eta p^2 = 758.6$, and interaction between knowledge, education group F (7.31, 1004.0) = 1.4, $p > 0.05$, $\eta p^2 = 0.010$.

Also, the result on the significant difference between the knowledge of adult males regarding prostate cancer and educational qualification revealed no statistical significant difference in the knowledge of educational groups between the intervention and the control groups overtime ($P = 0.491$). This finding disagreed with report by Wilkinson et al (2003) who surveyed 900 African American men in their determination concerning whether an educational programme on prostate cancer could improve awareness and knowledge. Lower scores consistently correlated with participants who had limited education and lower income levels. A significant correlation was found related to education, income and participation in prostate cancer screening, the higher the level of education or income of participants, the more likely prior screening had occurred.

Table 4.10: Showing significant association between the knowledge of adult males regarding prostate cancer and socio economic income of participants

	Pre Intervention		Post Intervention 1		Post Intervention 2		Post Intervention 3	
	Control	Intervention	Control	Intervention	Control	Intervention	Control	Intervention
<=N20,000	9.7±4.7	10.1± 3.0	9.3± 3.3	19.3± 3.1	10.9 ± 2.0	16.5 ± 2.9	11.2 ± 2.2	17.1 ± 2.6
N20,001-N50,000	8.9± 4.8	10.3 ± 3.2	9.3± 3.8	19.6 ± 3.0	11.5 ± 2.1	16.8 ± 2.6	10.5± 2.5	17.4 ± 2.6
>N50,000	8.5±4.8	10.1± 2.9	10.5± 3.6	19.4± 2.6	11.6 ± 2.0	16.5 ± 2.5	10.5 ± 2.0	16.6 ± 2.4

Knowledge within the Income group

Effect over time	Df	F value	Partial Eta	p-value
Knowledge	2.42, 1020.77	248.9	0. 375	0.000
Group	1, 414	1080.4	0. 257	0.000
Knowledge*Group	4.842, 1002.3	143.0	0. 008	0. 131
Knowledge*Group*income	4.842, 1002.3	1.1	0. 006	0. 334

The intervention effect on knowledge was analyzed using repeated measures ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control) and income group (<=N20,000, N20,001-N50,000 and >N50,000). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 181.4, $p < 0.05$), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.81$). Main effects of knowledge, F (2.42, 1020.77) = 248.9, $p < 0.05$, $\eta p^2 = 0.375$, and group, F (1, 414) = 1080.4, $p < 0.05$, $\eta p^2 = 0.723$ and income, F (1, 414) = 0.173, $p = 0.841$, $\eta p^2 = 0.001$. These were qualified by interaction between knowledge and group, F (2.42, 4.842, 1002.3) = 143.0, $p< 0.05$, $\eta p^2 = 0.257$, interaction between knowledge and income group, F (4.842, 1002.3) = 143.0, $p> 0.05$, $\eta p^2 = 0.257$, and interaction between knowledge, group and income, F (4.842, 1002.3) = 1.1, $p = 0.334$, $\eta p^2 = 0.006$. Thus, there was no statistical significant difference in the knowledge of participants and income between the intervention and the control groups overtime.

This finding is in line with the findings of Weinrich, Seger, Miller, Davis, Kim, and Wheeler et al (2004) who examined the knowledge level of 81 low-income men between the ages of 40 and 70 years with mean income of $17,668 to $33,333, their findings indicated that total knowledge scores do correlate with income and that men with lower income levels had significantly lower scores than those with higher incomes. This finding disagreed with report by Wilkinson et al (2003) who surveyed 900 African American men in their determination concerning whether an educational programme on prostate cancer could improve awareness and knowledge. Lower scores consistently correlated with participants who had limited education and lower income levels. A significant correlation was found related to education, income and participation in prostate cancer screening, the higher the level of education or income of participants, the more likely prior screening had occurred.

Table 4.11: Showing significant association between the knowledge of adult males regarding prostate cancer and marital status.

Knowledge within the marital status groups

	Pre Intervention		**Post Intervention 1**		**Post Intervention 2**		**Post Intervention 3**	
	Control	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**
Married	9.4 ±4.8	10.0 ± 3.1	10.1± 3.6	19.6 ± 3.0	11.4± 2.0	16.6 ± 2.8	10.7± 2.3	17.1 ± 2.6
never married	7.5± 3.5	9.0± 2.3	10.8± 3.1	19.8 ± 2.7	12.5 ± 2.6	16.8 ± 2.2	10.8 ± 2.2	16.9 ± 2.1
separated/ widowed/ divorced	8.1 ±4.8	11.1± 3.1	8.2 ± 3.3	18.8± 2.8	10.8 ± 1.8	16.6 ± 2.6	11.0 ± 2.2	17.1 ± 2.5

Effect over time	**Df**	**F value**	**Partial Eta**	**p-value**
Knowledge	2.43, 1023.26	128.5	0. 237	0.000
Group	1, 414	492.6	0. 119	0.000
Knowledge*Group	4.854, 1004.7	55.7	0. 016	0.007
Knowledge*Group*marital status	4.854, 1004.7	1.4	0. 007	0. 209

The intervention effect on knowledge was analyzed using repeated measures ANOVA with a within-subject factor of knowledge and a between-subject factor of groups (intervention, control) and marital status groups (Married, never married and separated/ widowed/ divorced). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 176.5, $p< 0.05$), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.81$). Main effects of knowledge, F (2.43, 1023.26) = 128.5, $p < 0.05$, ηp^2 = 0. 237, and group, F (1, 414) = 492.6, $p < 0.05$, ηp^2 = 0. 543 and marital status, F (1, 414) = 1.61, $p > 0.05$, ηp^2 = 0.008. These were qualified by interaction between knowledge and group, F (2.43, 1004.7) = 55.7, $p< 0.05$, ηp^2 = 0. 119, interaction between knowledge and marital status group, F (4.854, 1004.7) = 138.0, $p > 0.05$, ηp^2 = 0.250, and interaction between knowledge, group and marital status, F (4.854, 1004.7) = 1.4, $p > 0.05$, ηp^2 = 0. 007. Thus, there was no statistical significant difference in the knowledge of marital status groups between the intervention and the control groups' overtime. There is paucity of literature to link up with this findings.

Table 4.12: Showing significant association between the knowledge of adult males regarding prostate cancer and religion of participants

Knowledge within the Religion Groups

	Pre Intervention		Post Intervention 1		Post Intervention 2		Post Intervention 3	
	Control	Intervention	Control	Intervention	Control	Intervention	Control	Intervention
Christianity	9.1±4.9	10.1 ± 3.0	9.6 ± 3.6	19.4± 2.9	11.3 ± 2.1	16.6 ± 2.7	10.6± 2.3	17.1 ± 2.6
Non-Christians	7.9± 2.6	11.2 ± 3.6	12.1± 3.7	19.6 ± 3.9	11.7 ± 1.6	15.6 ±4.6	12.1± 2.1	16.0 ± 1.7

Effect over time	Df	F value	Partial Eta	p-value
Knowledge	2.43, 1024.7	37.6	0. 083	0.000
Group	1, 414	124.9	0. 026	0.000
Knowledge*Group	2.430, 1011.0	11.3	0. 002	0. 443
Knowledge*Group*religion	2.430, 1011.0	1.1	0. 005	0. 126

The intervention effect on knowledge was analyzed using repeated measures ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control) and religion group (Christianity and Non-Christians). Mauchly's test demonstrated that the presumption of sphericity had been disregarded ($\chi 2$ (5) = 177.2, p< 0.05), in this manner, degrees of flexibility were amended utilizing Greenhouse-Geisser assessments of sphericity ($\varepsilon = 0.81$). Main effects of knowledge, F (2.43, 1024.7) = 37.6, $p < 0.05$, $\eta p^2 = 0.083$, and group, F (1, 414) = 124.9, $p < 0.05$, $\eta p^2 = 0.231$ and religion, F (1, 414) = 0. 384, $p > 0.05$, $\eta p^2 = 0. .001$. These were qualified by interaction between knowledge and group, F (2.43, 1011.0) = 11.3, $p < 0.05$, $\eta p^2 = 0.026$, interaction between knowledge and religious groups, F (2.430, 1011.0) = 11.3, $p = 0 .765$, $\eta p^2 = 0.026$, and interaction between knowledge, group and religion, F (2.430, 1011.0) = 1.1, $p = 0.126$, $\eta p^2 = 0.005$. Thus, there was no statistical significant difference in the knowledge of religious groups between the intervention group and the control group overtime. There is paucity of information in the literature to buttress this findings.

Research question one: what is the level of knowledge on prostate cancer among the interventional and the control groups before and after the intervention programme

Table 4.13: Knowledge of risk factors and symptoms of prostate cancer (pre-test)

Variables	Intervention		Control	
	Yes	No	Yes	No
	Freq (%)	Freq (%)	Freq (%)	Freq (%)
Family history of the prostate disease is a hazard to other male individuals	46(21.9)	164(78.1)	59(28.1)	151(71.9)
A man can have the prostate disease and have no issues or indications	45(21.4)	165(78.6)	59(28.1)	151(71.9)
More youthful men will probably get a prostate tumour than more seasoned men.	162(77.1)	48(22.9)	169(80.5)	41(19.5)
I can have the prostate disease and have an ordinary PSA blood test	128(61.0)	82(39.0)	70(33.3)	140(66.7)
One can have the prostate disease and don't think about it	49(23.3)	161(76.7)	72(34.3)	138(65.7)
The most well-known reason for malignancy in men is a prostate tumour	63(30.0)	147(70.0)	113(53.8)	97(46.2)
Prostate cancer affects both males and females	136(64.8)	74(35.2)	147(70.0)	63(30.0)
Prostate cancer may grow slowly in some men.	143(68.1)	67(31.9)	139(66.2)	71(33.8)
Visit torment frequently in your lower back could be an indication of prostate disease	170(81.0)	40(19.0)	5(2.4)	205(97.6)
Blacks have a higher rate of prostate growth than Whites	67(31.9)	143(68.1)	58(27.6)	152(72.4)

Result revealed that at the pre-intervention test, few 21.9% of intervention and 28.1% of control groups are on the affirmative that the family history of a prostate tumour is a hazard factor to other male individuals. The above findings is in line with a study by Sierra, Soerjomataram, and Forman (2016) who agreed with the submission that family history is a factor of prostate cancer. They indicated that a family history of prostate cancer has consistently been associated with an increased risk of prostate cancer that varies according to the degree of the relationship, the number of relatives affected, and the age at diagnosis. The above findings is also in line with Achebe and Robinson, (2009) who stated that adult black men are 2.5 times more likely to develop the disease than any other ethnic groups and are two to three times more likely to die of the disease

Table 4.14: Knowledge of PC screening and side effect from treatment (pre intervention test)

Variables	Intervention		Control	
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)
Most seventy year aged men need not bother with a prostate malignancy screening.	169(80.5)	41(19.5)	160(76.2)	50(23.8)
A few medicines for prostate growth can make it harder for men to control their pee.	163(77.6)	47(22.4)	139(66.2)	71(33.8)
A few medications for a prostate tumour can make issues with a man's capacity to engage in sexual relations.	170(81.0)	40(19.0)	79(37.6)	131(62.4)
Doing prostate self-examination/Digital Rectal Exam (DRE) or Prostate Specific Antigen (PSA) is sufficient to test for prostate malignancy.	64(30.5)	146(69.5)	72(34.3)	138(65.7)
Specialists can tell which men may bite the dust from a prostate tumour and which men won't be hurt by prostate malignancy.	161(76.7)	49(23.3)	116(55.2)	94(44.8)
An anomalous prostate particular antigen (PSA) blood test implies I have the prostate disease without a doubt.	143(68.1)	67(31.9)	145(69.0)	65(31.0)
A rectal examination is imperative in checking for prostate disease.	147(70.0)	63(30.0)	107(51.0)	103(49.0)
The prostate particular antigen is a blood test that can identify prostate growth.	147(70.0)	63(30.0)	93(44.3)	117(55.7)
Prostate growth can be relieved whenever recognized early.	50(23.8)	160(76.2)	66(31.4)	144(68.6)
The prostate can be forestalled by standard exercise.	144(68.6)	66(31.4)	139(66.2)	71(33.8)
It is prescribed to have a yearly computerized rectal examination starting at age 40.	47(22.4)	163(77.6)	99(47.1)	111(52.9)
I ought to have a yearly blood test for prostate malignancy beginning at age 40.	55(26.2)	155(73.8)	105(50.0)	105(50.0)
Test for a prostate tumour is required just when one has side effects or issues.	133(63.3)	77(36.7)	167(79.5)	43(20.5)
There is no remedy for prostate tumor.	83(39.5)	127(60.5)	37(17.6)	173(82.4)

Result showed that majority 80.5% of participants in intervention group and 76.2% control group agreed that most 70 year old men do not need a prostate cancer screening. The above findings is not true and points to the assertion that the knowledge of prostate screening uptake is poor among the participants. This is in a variance with a study conducted by Ohaeri and Ingwu (2015) who stated that there is need for creation of awareness of prostate cancer for those who are approaching this age range so that they can actively be screened for cancer of the prostate. They further asserted that early screening for prostate cancer may translate to reduced morbidity and mortality among the populace.

Majority 63.3% intervention group and 79.5% control group agreed that test for prostate cancer is needed only when one has symptoms or problems. This is contrary to a study done by Ogundipe and Obinna, (2010) and Ajape, Babata and Abiola, (2010) who stated that contrary to breast and cervical cancers in women where the results of the few published studies of public awareness of PC support the view that prostate cancer in men has had a much lower profile. This finding is not in agreement with several studies that health education campaigns from health professionals in developing countries have dramatically increased awareness of breast and cervical cancers in women at risk, and have led to increased rates of early diagnosis and treatment. Mortality from breast cancer is now reducing partly due to awareness and early detection measures.

Results also revealed that few 83(39.5) intervention group and 37(17.6) control group are on the affirmative that there is no cure for prostate cancer. The above findings is in disagreement with the works of Olasoji, Babagana, Tligali and Yahaya (2008), who states that cancer is believed to be as result of curses from wicked people, ancestors' punishment as a result of related family members' wrong doing. In Nigeria, lots of men believe that not being aware of prostate cancer can prevent them from having prostate cancer. They also believe that prostate cancer has no cure and it does not kill. Therefore, screening is not necessary and only 46.5% of their respondents indicated some level of awareness about prostate cancer screening (Nnodimele et al, 2010).

Table 4.15: Knowledge of risk factors and symptoms of prostate cancer (post intervention test one)

Variables	Intervention		Control	
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)
The family history of prostate growth is a hazard to other male individuals	179(85.2)	31(14.8)	60 (28.6)	150 (71.4)
A man can have prostate growth and have no issues or side effects	172(81.9)	38(18.1)	60 (28.6)	150 (71.4)
More youthful men will probably get the prostate disease than more established men.	67(31.9)	143(68.1)	166 (79.0)	44 (21.0)
I can have the prostate disease and have an ordinary PSA blood test	114(54.3)	96(45.7)	79(37.6)	131(62.4)
One can have the prostate disease and not think about it	210(100)	0(0.0)	159(75.7)	51(24.3)
The most well-known reason for disease in men is a prostate malignancy	167(79.5)	43(20.5)	140(66.7)	70(33.3)
A prostate tumour affects both males and females	0(0.0)	210(100.0)	124(59.0)	86(41.0)
A prostate tumour may develop gradually in a few men.	176(83.8)	34(16.2)	151(71.9)	59(28.1)
Blacks have a higher rate of prostate disease than Whites	181 (86.2)	29 (13.8)	78(37.1)	132(62.9)
Visit torment frequently in your lower back could be an indication of prostate disease	182(86.7)	28(13.3)	42(20.0)	168(80.0)

Result showed that 81.9% for intervention group indicated a man can have prostate cancer and have no problems or symptoms as versus few 28.0% in the control group that are on the affirmative to the statement. This is in conformity to the assertion of Cancer Council Australia (2018) who affirmed that early prostate cancer rarely causes symptoms. The council submission in tandem with the submission above that even when prostate cancer is advanced at the time of diagnosis, there may be no symptoms. Where symptoms do occur, they are often due to non-cancerous conditions, such as benign prostate hyperplasia. However, symptoms of advanced prostate cancer may include; unexplained weight loss, frequent or sudden need to urinate, blood in the urine pain in the lower back, hips or pelvis etc.

Majority of participants 86.2% in intervention group versus 37.1% in control group agreed that blacks have a higher rate of prostate cancer than Whites. In line with the submission above, African American men on average have a 60% higher incidence rate of prostate cancer and 2.4-fold higher mortality rates compared with white men (Odedina, Akinremi, Chinegwundoh, Roberts, Yu, Reams, et al., 2009). Also, Change (2016) corroborate the submission of the findings that it is more likely to affect men over 50 and prevalent among men who are African or African Caribbean. They are more likely to get prostate cancer than white or Asian men.

Table 4.16: Knowledge of PC screening and side effect from treatment (post-test one)

Variables	Post intervention test one			
	Intervention		Control	
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)
Most seventy year aged men need not bother with a prostate growth screening.	56(26.7)	154(73.3)	174 (82.9)	36 (17.1)
A few medicines for the prostate disease can make it harder for men to control their pee.	129(61.4)	81(38.6)	155(73.8)	55(26.2)
A few medicines for the prostate disease can make issues with a man's capacity to engage in sexual relations.	144 (68.6)	66 (31.4)	63 (30.0)	147 (70.0)
Doing Digital Rectal Exam (DRE) or Prostate Specific Antigen (PSA) is sufficient to test for a prostate tumour.	161 (76.7)	49 (23.3)	79 (36.7)	131 (62.4)
Specialists can tell which men may bite the dust from prostate malignancy and which men won't be hurt by a prostate tumour.	96(45.7)	114(54.3)	163 (77.6)	47 (22.4)
A strange prostate specific antigen (PSA) blood test implies I have the prostate disease without a doubt.	124(59.0)	86(41.0)	148(70.5)	62(29.5)
A rectal examination is vital in checking for prostate disease.	210(100.0)	0(0.0)	149(71.0)	61(29.0)
The prostate specific antigen is a blood test that can identify the prostate disease.	182(86.7)	28(13.3)	87 (41.4)	123 (58.6)
Prostate disease can be relieved whenever identified early.	210(100)	0(0.0)	160(76.2)	50(23.8)
Prostate can be anticipated by standard exercise.	180(85.7)	30(14.3)	143(68.1)	67(31.9)
It is prescribed to have a yearly advanced rectal examination starting at age 40.	201 (95.7)	9 (4.3)	101 (48.1)	109 (51.9)
I ought to have a yearly blood test for a prostate tumour beginning at age 40.	170(81.0)	40(19.0)	68(32.4)	142(67.6)
Test for prostate growth is required just when one has side effects or issues	73(34.8)	137(65.2)	145(69.0)	65(31.0)
There is no remedy for prostate growth.	131(62.4)	79(37.6)	63(30.0)	147(70.0)

Result showed that majority 82.9% of the participants in the control groups are on the affirmative that most 70 year old men do not need a prostate cancer screening. The above finding is in support of the results of a study made by Ajape, Babata and Abiola (2010) which shows that majority of the respondents had never had any information on cancer of the prostate. They concluded that there was remarkable lack of awareness of prostate cancer among the Nigerian native urban populace. This finding is not surprising in the study settings since there is no educational programme by healthcare professionals for this group of men who seek medical care in any secondary health care settings in Cross River State unlike few 26.7% in the intervention group.

Similarly, a significant number of participants 76.7% in intervention group versus 36.7% in control group indicated that doing Digital Rectal Examination (DRE) or Prostate Specific Antigen (PSA) is enough to test for prostate cancer. Digital rectal examination (DRE) is purely the process by which medical doctor feels an individual prostate through the wall of the back passage (rectum). They feel for any hard or lumpy areas that might be a sign of cancer. Willis and Wians (2003) disagreed with the submission of this study that doing Digital Rectal Examination (DRE) or Prostate Specific Antigen (PSA) is enough to test for prostate cancer. They opined that regular sex without any examination is enough to send prostate away.

Table 4.17: Knowledge of risk factors and symptoms of prostate cancer (post intervention test two)

Variables	Intervention		Control	
	Yes	No	Yes	No
	Freq (%)	Freq (%)	Freq (%)	Freq (%)
The family history of prostate malignancy is a hazard to other male individuals	185 (88.1)	25(11.9)	67 (31.9)	143 (68.1)
A man can have prostate malignancy and have no issues or manifestations	154 (73.3)	56 (26.7)	54 (25.7)	156 (74.3)
More youthful men will probably get prostate growth than more established men.	61(29.2)	148(70.8)	131 (62.4)	79(37.6)
I can have prostate malignancy and have a typical PSA blood test	134(64.1)	75(35.9)	127(54.1)	95(45.9)
One can have prostate malignancy and not think about it	181 (86.2)	29 (13.8)	57 (27.1)	153 (72.9)
The most well-known reason for malignancy in men is prostate disease	34 (16.2)	176 (83.8)	114 (54.3)	96 (45.7)
Prostate disease affects both males and females	0(0.0S)	210 (100)	111(60.5)	83 (39.5)
Visit torment frequently in your lower back could be an indication of prostate growth	186 (88.6)	24(11.4)	183(87.1)	27(12.9)
Prostate malignancy may develop gradually in a few men.	158(75.6)	51(24.4)	132(63.8)	75(36.2)
Blacks have a higher rate of prostate malignancy than Whites	190 (90.5)	20 (9.5)	79 (37.6)	131 (62.4)

At post intervention test two, majority 88.1% intervention group and few 31.9% control group agreed that family history of prostate cancer is a risk factor to other male members. This suggests that further studies are needed to assess the benefits of PSA screening in African men, and those with family history of Prostate Cancer (Thompson, Leach and Ankerst, 2014). There is no screening guidelines for Nigeria and other low and middle income countries in Africa as they are not sure if the ailment ever exist. Therefore, prostate cancer awareness and screening in Nigeria needs to be implemented between patients and health care practitioners or physicians.

Also, majority 73.3% of intervention group versus few 25.7% of the control group indicated that a man can have prostate cancer and have no problems or symptoms. The findings is contrary to the works of Olasoji, Babagana, Tligali and Yahaya (2008), who opined that cancer is believed to be as a result of curses from wicked people, ancestors' punishment as a result of family's wrong doing. According to Olasoji, Babagana, Tligali and Yahaya (2008), in Nigeria, lots of men believe that not monitoring prostate growth can keep them from the ailment. They also believe that prostate cancer is incurable and does not kill, therefore, screening is not necessary (Nnodimele et.al, 2010). Many patients are of the opinion that cancer diagnosis is a death sentence; therefore, they see no reason for cancer screening (Guz, Gursel and Ozbek, 2010).

Table 4.18: Knowledge of PC screening and side effect from treatment (posttest two)

Variables	Pretest two			
	Intervention		Control	
	Yes	No	Yes	No
	Freq (%)	Freq (%)	Freq (%)	Freq (%)
Most seventy year aged men need not bother with a prostate malignancy screening.	148(70.5)	62(29.5)	125 (59.5)	85(40.5)
A few medicines for prostate disease can make it harder for men to control their pee.	88 (41.9)	122 (58.1)	58 (27.6)	152 (72.4)
A few medicines for prostate growth can make issues with a man's capacity to engage in sexual relations.	171 (81.4)	39 (18.6)	71 **(**33.8**)**	139 (66.2)
Doing Digital Rectal Exam (DRE) or Prostate Specific Antigen (PSA) is sufficient to test for prostate growth.	135 (64.3)	75 (35.7)	75 (35.7)	135 (64.3)
Specialists can tell which men may kick the bucket from prostate malignancy and which men won't be hurt by prostate disease.	52(24.8)	158 (75.2)	160 (76.2)	50(23.8)
A strange prostate particular antigen (PSA) blood test implies I have prostate malignancy without a doubt.	184 (87.6)	26 (12.4)	95 (45.2)	115 (54.8)
A rectal examination is critical in checking for prostate disease.	169 (80.5)	41 (19.5)	68 (32.4)	142 (67.6)
The prostate particular antigen is a blood test that can distinguish prostate disease.	183 (87.1)	27 (12.9)	156 (74.3)	54 (25.7)
Prostate disease can be relieved whenever identified early.	197 (93.8)	13 (6.2)	145 (69.0)	65 (31.0)
The prostate can be avoided with customary exercise.	197 (93.8)	13 (6.2)	145 (69.0)	65(31.0)
It is prescribed to have a yearly advanced rectal examination starting at age 40.	135 (64.3)	75 (35.7)	67 (31.9)	143 (68.1)
I ought to have a yearly blood test for prostate growth beginning at age 40.	176 (83.8)	34 (16.2)	60 (28.6)	150 (71.4)
Test for prostate malignancy is required just when one has manifestations or issues.	87 (41.4)	123 (58.6)	142 (67.6)	68 (32.4)
There is no remedy for prostate disease.	123 (58.6)	87 (41.4)	67 (31.9)	143 (68.1)

Result revealed that 64.3 % of the intervention group versus 35.7% of the control group agreed that doing digital rectal examination or prostate specific antigen test is enough to detect prostate cancer. Majority 80.5% of the participants in intervention group versus 32.4% control group affirmed that a rectal examination is important in checking for prostate cancer. WCRF/AICR (2007) and Bouvard, Loomis, Guyton, Grosse, Ghissassi, and Benbrahim-Tallaa L, et al. digital rectal examination (2015) affirmed that abnormalities do not always indicate prostate cancer and that a normal DRE does not rule out prostate cancer, as the examination is unlikely to pick up a small cancer or one of the finger cannot reach. Digital rectal examination is no longer recommended as a routine test for men who do not have symptoms of prostate cancer. However, not all prostate cancers produce high levels of PSA, so the specialist may use a DRE to check the prostate before doing a biopsy.

Also, most of the participants in the intervention group 93.8% as compared to control group 69% indicated that prostate cancer can be cured if detected early. The above findings is in line with a study by Okonkwo (2017) who opined that prostate cancer if detected in an early stage can be cured. In another findings by Akinremi, Ogo and Olatunde (2011), revealed that education and knowledge about prostate cancer is very low in Nigeria, and suggested that medical students and other health care professionals need better training. The literature suggests that income, education, age and marital status may significantly impact an individual's knowledge and perception related to prostate cancer screening (Weinrich et al, 1998; Wilkinson et al, 2003).

Table 4.19: Knowledge of risk factors and symptoms of prostate cancer (post intervention test three)

Variables	Intervention		Control	
	Yes	No	Yes	No
	Freq (%)	Freq (%)	Freq (%)	Freq (%)
The family history of the prostate disease is a hazard to other male individuals.	189(90.0)	21(10.0)	53(25.2)	157(74.8)
A man can have the prostate disease and have no issues or manifestations.	141(67.1)	69(32.9)	59(28.1)	151(71.9)
More youthful men will probably get prostate growth than more established men.	73(34.8)	137(65.2)	136(64.8)	74(35.2)
I can have prostate malignancy and have a typical PSA blood test.	167(79.5)	43(20.5)	97(46.2)	113(53.8)
One can have prostate malignancy and not think about it.	188(89.5)	22(10.5)	163(77.6)	47(22.4)
The most widely recognized reason for disease in men is a prostate malignancy.	144(68.6)	66(31.4)	128(61.0)	82(39.0)
A prostate tumour affects both males and females.	0(0.0)	210(100)	124(59.0)	86(41.0)
Visit torment frequently in your lower back could be an indication of prostate malignancy.	166(79.0)	44(21.0)	162(77.1)	48(22.9)
Prostate growth may develop gradually in a few men.	149(71.0)	61(29.0)	137(65.2)	73(34.8)
Blacks have a higher rate of prostate growth than Whites.	185(88.1)	25(11.9)	73(34.8)	137(65.2)

Results have been consistent among the intervention group 100% disagreed that prostate cancer affects both sexes. This finding is in line with the assertion of Canadian Cancer Society's Advisory Committee on Cancer Statistics (2013) submit that prostate cancer is more prevalent in men older than 60 years as against both sexes, while testicular cancer is most common among young men under the age of 30 years. The society affirmed that it was estimated that 7,920 men would be newly diagnosed with testicular cancer in the United States and 370 deaths would occur from the disease (Siegel, Naishadham, and Jemal, 2013). This study shared similar likeness as the study carried out in Canada, it was projected that 23,600 men would be diagnosed with prostate cancer and 3,900 deaths would occur from the disease in 2013 (Canadian Cancer Society's Advisory Committee on Cancer Statistics, 2013). The most recent prostate cancer statistics for the United Kingdom are for 2012 with 41,736 new cases and 10,837 deaths (Cancer Research U.K., 2013a).

However, there is paucity of data among the Nigerian citizens even as the most populous Black Country in the world. Given that Nigeria is the most populous country in Africa, there is a need to address missing gaps in our current knowledge about prostate cancer among Nigerian men, particularly in relation to knowledge and screening practices of all forms of cancer. Like other low and middle income countries (LMIC), efforts in Nigeria to develop cancer prevention and control programmes have been hampered by lack of investment in health care infrastructure with multiple competing health priorities and lack of the political will of the government and non- governmental organization.

Interestingly, 71% versus 65.2% of intervention and control groups respectively are on the affirmative that prostate cancer grow slowly in some men. Thus, the increase in the incidence of prostate cancer in our environment may be due to lack of awareness about the disease. The result obtained from this study does not correspond to Woods et.al (2004) whose findings revealed that majority of their participants know the symptoms of prostate cancer. Finding also revealed that few participants were able to identify the specific symptoms and risk factors associated with prostate cancer. The result obtained from this study corresponds with Nnodimele (2010) whose findings revealed that only few of their participants know the specific symptoms of prostate cancer. With these findings from this study, it showed that knowledge about prostate cancer and its risk factors is poor, which is comparable to Nnodimele et.al (2010) whose findings revealed below average of their participants that know the risk factors of prostate cancer.

Table 4.20: Knowledge of PC screening and side effect from treatment (Posttest three)

Variables	Posttest Three			
	Intervention		Control	
	Yes Freq (%)	No Freq (%)	Yes Freq (%)	No Freq (%)
Most seventy year aged men need not bother with a prostate malignancy screening.	62(29.5)	148(70.5)	146(69.5)	64(30.5)
A few medicines for prostate malignancy can make it harder for men to control their pee	83(39.5)	127(60.5)	71(33.8)	139(66.2)
A few medicines for prostate malignancy can make issues with a man's capacity to engage in sexual relations.	169(80.5)	41(19.5)	57(27.1)	153(72.9)
Doing Digital Rectal Exam (DRE) or Prostate Specific Antigen (PSA) is sufficient to test for the prostate disease.	167(79.5)	43(20.5)	75(35.7)	135(64.3)
Specialists can tell those men that may pass on from prostate growth and the men that won't be hurt by a prostate tumour.	122(58.1)	88(41.9)	163(77.6)	47(22.4)
An unusual prostate particular antigen (PSA) blood test implies I have prostate growth without a doubt.	160(76.2)	50(23.8)	161(76.7)	49(23.3)
A rectal examination is essential for checking for a prostate tumour.	170(81.0)	40(19.0)	155(73.8)	55(26.2)
The prostate particular antigen is a blood test that can recognize a prostate tumour.	174(82.9)	36(17.1)	54(25.7)	156(74.3)
Prostate malignancy can be restored whenever recognized early.	194(92.4)	16(7.6)	54(25.7)	156(74.3)
Prostate can be anticipated by normal exercise.	31(14.8)	179(85.2)	130(61.9)	80(38.1)
It is prescribed to have a yearly computerized rectal examination starting at age 40.	187(89.0)	23(11.0)	99(47.1)	111(52.9)
I ought to have a yearly blood test for prostate disease beginning at age 40.	164(78.1)	46(21.9)	54(25.7)	156(74.3)
Test for prostate malignancy is required just when one has indications or issues.	86(41.0)	124(59.0)	67(31.9)	143(68.1)
There is no solution for prostate malignancy.	104(49.5)	106(50.5)	51(24.3)	159(75.7)

Results above revealed that majority 80.5% intervention group compared to 33.5% control group agreed that doing digital rectal examination or prostate specific antigen is enough test for prostate cancer. Majority 89% intervention group versus 47.1% support the recommendation to have yearly digital rectal examination beginning at age 40. This is in line with American Cancer Society, (2004), recommended that men at high risk, based on race and family history, should commence early screening with PSA blood test and digital rectal exam (DRE) at age 45 years. While American Urology Association, (2013), states that screening will be of great benefit in quality of life improvement and PSA screening should not be done for men below 40 years; routine screening for men between 40-54 years and men over 70 years or those with less than 10-15 years life expectancy, are also not recommended. But for men between 55-64 years, the decision should be personalized and based on weighing the benefits and potential harm of prostate cancer screening. These guidelines were approved base on the findings that screening pose lots of complications such as painful biopsies, bleeding from site of biopsy, infection, hematuria (blood in urine), dysuria, bone pain, and hematospermia (blood in sperm) which occur in 10-70% of patients (Journal of Urology, 2011).

Also according to WCRF/AICR (2007) and Bouvard, Loomis, Guyton, Grosse, Ghissassi, and Benbrahim-Tallaa L, et al. digital rectal examination (2015) affirmed that abnormalities do not always indicate prostate cancer and that a normal DRE does not rule out prostate cancer, as the examination is unlikely to pick up a small cancer or one of the finger cannot reach. Digital rectal examination is no longer recommended as a routine test for men who do not have symptoms of prostate cancer. However, not all prostate cancers produce high levels of PSA, so the specialist may use a DRE to check the prostate before doing a biopsy.

Also, most of the participants in the intervention group 93.8% as compared to control group 69% indicated that prostate cancer can be cured if detected early. The above findings is line with a study by Okonkwo (2017) who opined that prostate cancer detected in any early stage can be cured.

Table 4.21: Knowledge categorization table

TEST	Knowledge Level	Intervention	Control	χ^2	P value
Pre-test	Poor	129 (61.4%)	133 (63.3%)	0.175	0.916
	Fair	47 (22.4%)	44 (21.0%)		
	Good	34 (16.2%)	33 (15.7%)		
Post 1	Poor	0 (0.0%)	126 (60.0%)	290.679	0.000
	Fair	9 (4.3%)	56 (26.7%)		
	Good	201 (95.7%)	28 (13.3%)		
Post 2	Poor	7 (3.3%)	45 (21.4%)	228.674	0.000
	Fair	32 (15.25%)	148 (70.5%)		
	Good	171 (81.4%)	17 (8.1%)		
Post 3	Poor	1 (0.5%)	70 (33.3%)	266.442	0.000
	Fair	37 (17.6%)	131 (62.4%)		
	Good	172 (81.9%)	9 (4.3%)		

At baseline, the group categorization of the participants' level of knowledge of prostate cancer revealed that 129(61.4%) of the intervention group and 133 (63.3%) control group have poor knowledge of prostate cancer, intervention group 47 (22.4%) and control group 44 (21%) had fair knowledge while 34 (16.2%) and 33 (15.7%) of intervention and control groups respectively have good knowledge of prostate cancer ($P > 0.05$).

At post intervention test one, interestingly, only few 9 (4.3%) of the intervention group and 56 (26.7%) of control group had fair knowledge of prostate cancer while a significant number 201 (95.7%) of the intervention group and only few 56 (26.7%) of control group have good knowledge of prostate cancer ($P < 0.05$).

At post intervention test two, only 7 (3.3%) of the intervention group and 45 (21.4%) of the control group have poor knowledge of prostate cancer while majority 148 (70.5%) of control group and 32 (15.3%) of the intervention group have fair knowledge of prostate cancer. Meanwhile, 17 (8.1%) of control group and 171 (81.4%) of intervention acquired good knowledge of prostate cancer ($P < 0.05$).

Post intervention test three, 70 (33.3%) control group and 1 (0.5%) of intervention group have poor knowledge of prostate cancer, while majority 131 (62.4%) control group and 37 (17.6%) intervention group have fair knowledge of prostate cancer.

Hypothesis two: There is no significant association in the level of knowledge of prostate cancer and its risk factors among the participants before and after PC educational intervention.

Table 4.22: Intervention effect on knowledge

	Pre Intervention Mean ± SD	**Post intervention 1** Mean ± SD	**Post intervention 2** Mean ± SD	**Post intervention 3** Mean ± SD
Knowledge				
Control	9.1±4.8	9.8±3.6	11.3±2.1	10.7±2.3
Intervention	10.1±3.0	19.4±3.0	16.6±2.7	17.1±2.7

Over time effect on knowledge

Effect over time	**Df**	**F value**	**Partial Eta**	**p-value**
Knowledge	2.42, 1013.23	249.7	0.374	0.000
Group	1, 418	1109.0	0.726	0.000
Knowledge*Group	2.42, 1013.23	147.8	0.261	0.000

The intervention effect on knowledge was analyzed using repeated measures of ANOVA with a within-subject factor of knowledge and a between-subject factor of group (intervention, control). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 179.9, p=0.000), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity (ε = 0.81). Main effects of knowledge, F (2.42, 1013.23) = 249.7, p = 0.000, ηp^2 = 0.374, and group, F (1, 418) = 1109.0, p=0 .000, ηp^2 = 0.726, were qualified by an interaction between knowledge and group, F (2.42, 1013.23) = 147.8, p=0 .000, ηp^2 = 0.261. Thus, there was statistical significant difference in between intervention and the control group over time on knowledge score. This study is in line with the works of Terwase, Azuzu, & Mstor (2014) who results of regression analysis revealed that knowledge score (β=0.761, P<0.01) significantly predisposes someone to prostate cancer.

Table 4.23: Paired t-test results of the control group

	Knowledge	Mean ± SD	t-value	p-value
Pair 1	Pre intervention	9.1±4.8	-1.7	0.085
	Post intervention 1	9.8±3.6		
Pair 2	Pre intervention	9.1±4.8	-6.2	0.000
	Post intervention 2	11.3±2.1		
Pair 3	Pre intervention	9.1±4.8	-4.8	0.000
	Post intervention 3	10.7±2.3		
Pair 4	Post intervention 1	9.8±3.6	-5.6	0.000
	Post intervention 2	11.3±2.1		
Pair 5	Post intervention 1	9.8±3.6	-3.3	0.001
	Post intervention 3	10.7±2.3		
Pair 6	Post intervention 2	11.3±2.1	3.0	0.003
	Post intervention 3	10.7±2.3		

Paired-samples t-test was conducted pairing the knowledge scores at each point of contact/visitation in the control group. Pair 1 compared the pre intervention and post intervention 1. There was no significant difference in the scores for pre intervention (9.1±4.8) and post intervention 1 (9.8±3.6); t (209) 1.7, $p > 0.05$.

Pair 2 compared the pre intervention and post intervention 2. There was a significant difference in the scores for pre intervention (9.1±4.8) and post intervention 2 (11.3±2.1); t (209) = - 6.2, $p < 0.05$.

Pair 3 compared the pre intervention and Post intervention 3. There was a significant difference in the scores for the pre intervention (9.1±4.8) and Post intervention 3 (10.7±2.3); t (209) = -4.8, $p< 0.05$.

Pair 4 compared the post intervention 1 and post intervention 2. There was a significant difference in the scores for the post intervention 1 (9.8±3.6) and intervention 2 (11.3±2.1); t (209) = -5.6, $p<0.05$.

Pair 6 compared the post intervention 2 and post intervention 3. There was a significant difference in the scores for the post intervention 2 (11.3±2.1) and post intervention 3 (10.7±2.3); t (209) = 3.0, $p<0.05$. There is paucity of empirical review in the literature to justify the above findings.

Table 4.24: Paired t-test results of the intervention group

	Knowledge	Mean ± SD	t-value	p-value
Pair 1	Pre intervention	10.1±3.0	-32.2	0.000
	Post Intervention 1	19.4±3.0		

Pair 2	Pre intervention	10.1±3.0	-23.3	0.000
	Post intervention 2	16.6±2.7		
Pair 3	Pre intervention	10.1±3.0	-26.2	0.000
	Post intervention 3	17.1±2.6		
Pair 4	Post intervention 1	19.4±3.0	10.9	0.000
	Post intervention 2	16.6±2.7		
Pair 5	Post intervention 1	19.4±3.0	9.6	0.000
	Post intervention 3	17.1±2.6		
Pair 6	Post intervention 2	16.6±2.7	-2.6	0.010
	Post intervention 3	17.1±2.6		

Paired-samples t-test was conducted pairing the knowledge scores at the points of contact/visitation in the intervention group. Pair 1 compared the pre intervention test and post intervention test 1. There was significant difference in the scores for pre intervention test (10.1±3.0) and post intervention test 1 (19.4±3.0); t (209) = -32.2, p <0.05.

Pair 2 compared the pre intervention test and post intervention test 2. There was a significant difference in the scores for pre intervention test (10.1±3.0) and post intervention test 2 (16.6±2.7); t (209) =-23.3, p < 0.05.

Pair 3 compared the pre intervention test and post intervention test 3. There was a significant difference in the scores for pre intervention test (10.1±3.0) and post intervention test 3 (17.1±2.6), t (209) = -26.2, p < 0.05.

Pair 4 compared post intervention test 1 and post intervention test 2. There was a significant difference in the scores for post intervention test 1 (19.4±3.0) and post intervention test 2 (16.6±2.7); t (209) = 10.9, p < 0.05.

Pair 5 compared the post intervention test 1 and post intervention test 3. There was a significant difference in the scores for post intervention test 1 (19.4±3.0) and post intervention test 3 (17.1±2.6); t (209) = 9.6, p < 0.05.

Pair 6 compared the post intervention test 2 and post intervention test 3. There was a significant difference in the scores for post intervention test 2 (16.6±2.7) and post intervention test 3 (17.1±2.6); t (209) = -2.6, p < 0.05. There is paucity of empirical review in the literature to justify the above findings.

Table 4.25: Independent t-test results of the control versus intervention group

	Pre Intervention	**Post Intervention 1**	**Post Intervention 2**	**Post Intervention 3**
Knowledge	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD

Control	9.1±4.8	9.8±3.6	11.3±2.1	10.7±2.3
Intervention	10.1±3.0	19.4±3.0	16.6±2.7	17.1±2.7
t-value	-2.8	-30.0	-22.4	-26.8
p-value	0.006	0.000	0.000	0.000

Independent-samples t-test was conducted to test the significant difference in the knowledge score of the intervention and the control groups. At the pre intervention test, there was a significant difference in the knowledge scores of the intervention and control groups. Knowledge of the intervention group (10.1±3.0) was significantly higher than the control (9.1±4.8); $t(418) = -2.8$, $p < 0.05$.

At the post intervention test 1, there was a significant difference in the knowledge scores of the intervention and control groups. Knowledge of the intervention group (19.4±3.0) was significantly higher than the control group (9.8±3.6); $t(418) = -30.0$, $p < 0.05$.

At the post intervention test 2, there was a significant difference in the knowledge scores of the intervention and control groups. Knowledge of the intervention group (16.6±2.7) was significantly higher than the control group (11.3±2.1); $t(418) = -22.4$, $p < 0.05$.

At the post intervention test 3, there was a significant difference in the knowledge scores of the intervention and control groups. Knowledge of the intervention group (17.1±2.7) was significantly higher than the control group (10.7±2.3); $t(418) = -26.8$, $p < 0.05$.

There is paucity of empirical review in the literature to justify the above findings.

Research question two: what is the attitude of participants towards prostate cancer screening uptake among the intervention and the control groups?

Table 4.26: Attitude of participants towards PC screening uptake (Pre intervention test)

Options	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		χ^2	P-value
	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control		
I think I should have a rectal examination done for Prostate cancer now?	0(0.0)	0(0.0)	2(1.0)	9(4.3)	34(16.2)	81(38.6)	149(71.0)	86(41.0)	25(11.9)	29(13.8)	45.84	0.000
I feel ashamed and uncomfortable to have my rectum exposed.	11(5.2)	13(6.2)	119(56.7)	59(28.1)	27(12.9)	44(21.0)	8(3.8)	56(26.7)	45(21.4)	38(18.1)	61.052	0.000
Going to a doctor for digital rectal examination will only add to my expenses.	42(20.0)	28(13.3)	126(60.0)	76(36.2)	8(3.8)	9(4.3)	24(11.4)	45(21.4)	10(4.8)	52(24.8)	51.4	0.000
I feel going to a doctor once in a year for DRE is necessary.	2(1.0)	8(3.8)	10(4.8)	7(3.3)	141(67.1)	80(38.1)	23(11.0)	91(43.3)	34(16.2)	24(11.4)	66.9	0.000
I think submitting for DRE to be sure of PC on time is important.	2(1.0)	5(2.4)	32(15.2)	23(11.0)	25(11.9)	60(28.6)	137(65.2)	114(54.3)	14(6.7)	8(3.8)	42.0	0.000
Not doing DRE because of its pain.	7(3.3)	4(1.9)	15(7.1)	34(16.2)	113(53.8)	84(40.0)	36(17.1)	51(24.3)	39(18.6)	37(17.6)	82.2	0.000
Not submitting for PC test because of fear of the outcome.	43(20.5)	37(17.6)	114(54.3)	62(29.5)	35(16.7)	47(22.4)	13(6.2)	60(28.6)	5(2.4)	4(1.9)	77.3	0.000
I do not get checked for PC because it is embarrassing.	43(20.5)	62(29.5)	19(9.0)	34(16.2)	108(51.4)	65(31.0)	34(16.2)	47(22.4)	6(2.9)	2(1.0)	65.6	0.000
I think there is a need for Prostate cancer check?	5(2.4)	4(1.9)	2(1.0)	3(1.4)	28(13.3)	21(10.0)	156(74.3)	119(56.7)	19(9.0)	63(30.0)	29.89	0.000
Digital Rectal Examination is beneficial even if the man feels healthy.	8(3.8)	8(3.8)	5(2.4)	6(2.9)	30(14.3)	77(36.7)	146(69.5)	91(43.3)	21(10.0)	28(13.3)	34.49	0.000

In terms of the opinion that going to a doctor for digital rectal examination would only add to their expenses, 42 (20.0%) intervention group and 28 (13.3%) control group strongly agreed, 126 (60.0%) intervention group and 76 (36.2%) control group agreed, 24 (11.4%) intervention group and 45 (21.4%) control group disagreed while 10 (4.8%) intervention group and 52 (24.8%) control group strongly disagreed (< 0.05). Meanwhile, majority of the intervention group and few of the control group disagree to have rectal examination done (p=0.000) because they feel shy and uncomfortable to have their rectum exposed. This finding still points out to most studies conducted on men's attitude and practice relating to PC that showed that Nigerian men had poor knowledge and have negative attitude towards its prevention (Pillay, 2006 and Ajape, Babata and Abiola, 2010). Poor health attitudes and practices by most Nigerians men stem from poor health knowledge. We still believe that most Nigerians today are illiterates and literate ones are very ignorant about practising the required behaviour. Abone (2008) states that for a change in behaviour to occur in people, appropriate information which is of value to them must be given in an acceptable manner. Therefore, for effective health promotion to take place in our communities, awareness must be created on the under listed areas.

Few 43(20.5%) of the participants in the intervention groups and 37(17.6%) control group strongly agreed that they will not submit for PC test because of fear of the outcome, 114 (54.3%) intervention group and 62(29.5%) control group agreed not to submit for PC test because of fear of the outcome, 13 (6.2%) intervention group and 60 (28.6%) control group disagreed while 5 (2.4%) intervention group and 4 (1.9%) control group strongly disagreed to submit for PC test because of fear of the outcome, (P < 0.05). This findings is similar to the works of Arafa, Farhat, and Rabah (2015) who opined that only 10% of the respondents had practiced a regular PC examination checkup. Their knowledge about PC was poor and their attitude toward examination and screening was fair.

Table 4.27: Participants attitude towards risk factors and treatment of PC (Pre-test)

Options	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		χ^2	P-value
	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control		
I do not get checked for prostate cancer because if it is found and treated, I may be unable to have Sex (penile erection).	10(4.8)	8(3.8)	113(53.8)	83(39.5)	28(13.3)	30(14.3)	22(10.5)	36(17.1)	37(17.6)	53(25.2)	88.5	0.000
I feel Black men have a higher rate of Prostate Cancer than Whites.	0(0.0)	12(5.7)	5(2.4)	32(15.2)	47(22.4)	103(49.0)	136(64.8)	47(22.4)	22(10.5)	16(7.6)	96.84	0.000
I think Digital Rectal Examination is a quick simple test, non-painful at all.	2(1.0)	10(4.8)	9(4.3)	15(7.1)	126(60.0)	113(53.8)	33(15.7)	12(5.7)	40(19.0)	60(28.6)	92.32	0.000
I feel that getting a blood test for Prostate Cancer is easy.	7(3.3)	8(3.8)	4(1.9)	16(7.6)	134(63.8)	92(43.8)	31(14.8)	82(39.0)	34(16.2)	12(5.7)	67.4	0.000
I feel that any test for Prostate Cancer is useless because there's no cure.	45(21.4)	63(30.0)	110(52.4)	72(34.3)	36(17.1)	35(16.7)	14(6.7)	39(18.6)	5(2.4)	1(0.5)	68.3	0.000
Men are at risk of getting Prostate cancer.	2(1.0)	1(0.5)	1(0.5)	9(4.3)	30(14.3)	48(22.9)	158(75.2)	102(48.6)	19(9.0)	50(23.8)	36.876	0.000
As I get older, I am more at risk for Prostate cancer.	1(0.5)	11(5.2)	2(1.0)	8(3.8)	40(19.0)	60(28.6)	146(69.5)	94(44.8)	21(10.0)	37(17.6)	31.614	0.000

Few participants 10 (4.8%) intervention group and 8 (3.8%) control group strongly agreed that they do not get checked for prostate malignancy on the grounds that if PC is found and treated, they may have penile erection, average participants 113 (53.8%) intervention group and 83 (39.5%) control group agreed, 22 (10.5%) intervention group and 36 (17.1%) control group disagreed that because if PC is found and treated, they may have penile erection, while 37 (17.6%) intervention group and 53 (25.2%) control group strongly disagreed ($P < 0.05$). Few 12 (5.7%) control group strongly agreed that they feel black men have a height proportion of PC than Whites 5 (2.4%) intervention group and 32 (15.2%) control group agreed, The attitude of the participants towards prostate cancer screening at baseline for the intervention group and the control group was negative as they disagreed that there is a need for PC check ($p=0.000$). Not surprisingly then that majority of the intervention group and less than average of the control group disagreed that black men are at risk of having prostate cancer ($p= 0.000$). This finding conform with the findings of Oladimeji, Biemi, Olufisayo and Sola (2010) that men have negative attitude and they believed that cancer is a white man's' disease. This makes them present at advanced disease stage at the University of Calabar Teaching Hospital.

The above findings are indications to lack of awareness and negative attitude towards screening for the disease among the participants. Most research works revealed that prostate cancer (PC) had become the number one cancer in men with increasing incidence and morbidity in men of black ancestry (Delongchamps, Singh and Hass, 2007). Its incidence and prevalence in black men is higher than among men from other races (Odedna, Ogbunbiyi and Ukoli 2006). They further stated that black men are 2.5 times more likely to develop the disease than any other ethnic groups in the USA, and are two to three times more likely to die of the disease (Achebe and Robinson, 2009).

Table 4.28: Attitude towards PC screening uptake (Post-test 1)

Options	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		χ^2	P-value
	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control		
I think I should have a rectal examination done for PC now.	45(21.4)	0(0.0)	103(49.0)	5(2.4)	15(7.1)	70(33.3)	39(18.6)	113(53.8)	8(3.8)	20(9.5)	14.3	0.006
I feel ashamed and uncomfortable to have my rectum exposed.	7(3.3)	16(7.6)	17(8.1)	38(18.1)	20(9.5)	23(11.0)	95(45.2)	26(12.4)	71(33.8)	107(51.0)	61.8	0.000
Going to a doctor for digital rectal examination will only add to my expenses.	7(3.3)	21(10.0)	62(29.5)	54(25.7)	10(4.8)	20(9.5)	25(11.9)	108(51.4)		8(3.8)	32.6	0.000
I feel going to a doctor once in a year for DRE is necessary.	32(15.2)	4(1.9)	155(73.8)	8(3.8)	9(4.3)	78(37.1)	5(2.4)	81(38.6)	9(4.3)	39(18.6)	12.6	0.013
I think Submitting for DRE to be sure of PC on time is necessary.	31(14.8)	3(1.4)	79(37.6)	26(12.4)	10(4.8)	57(27.13)	85(40.5)	85(40.5)	5(2.4)	39(18.6)	10.2	0.038
Not doing DRE because of its pain.	2(1.0)	5(2.4)	5(21.4)	48(22.9)	21(10.0)	82(39.0)	74(35.2)	50(23.8)	108(51.4)	25(11.9)	93.8	0.000
Not submitting for PC test because of fear of the outcome.	17(8.1)	37(17.6)	47(22.4)	57(27.1)	20(9.5)	46(21.9)	81(38.6)	58(27.6)	42(20.0)	12(5.7)	98.7	0.000
I do not get checked for Prostate Cancer because it is embarrassing.	21(10.0)	56(26.7)	8(3.8)	41(19.5)	65(31.0)	56(26.7)	112(53.3)	56(26.7)	19(9.0)	13(6.1)	97.7	0.000
There is a need for Prostate cancer check.	40(19.0)	3(1.4)	136(64.8)	7(3.3)	3(1.4)	23(11.0)	14(6.7)	124(59.0)	17(8.1)	26(12.4)	10.9	0.028
Digital Rectal Examination is beneficial even if the man feels healthy.	32(15.2)	9(4.3)	114(54.3)	11(5.2)	31(14.8)	64(30.5)	29(13.8)	108(51.4)	4(1.9)	18(8.6)	29.9	0.000

At post intervention test one, small number 7 (3.3%) and 16 (7.6%) intervention and control groups respectively strongly agreed that they feel ashamed and uncomfortable to have their rectum exposed, 17 (8.1%) intervention group and 38 (18.1%) control group agreed to the statement, while majority 95 (45.2%) intervention group and 26 (12.4%) control group disagreed and 71 (33.8%) intervention group and 107 (51.0%) control group strongly disagreed that they feel ashamed and uncomfortable to have their rectum exposed (P=0.00). The finding is in consonance with the study by Mulira, Blos, & Nalwange, (2011) in Uganda on 323 male students in university of Uganda. Most participants (87%) reported a lack of skill for performing, 80% perceived procedure as embarrassing and 79% perceived it as time consuming.

Few 7(3.3%) intervention group and 21(10.0%) control group strongly agreed that going to a doctor for digital rectal examination would add to their expenses, 62 (29.5%) intervention group and 54 (25.7%) control group agreed to the assertion, 25 (11.9%) intervention group and 108 (51.4%) control group disagreed ($P < 0.05$).This finding is a variance with the works of Abdulwahab et al (2011) investigation, who observed that only 5.8% of the respondents were aware of prostate cancer screening; none of them had ever been screened for prostate specific antigen and they had never contemplated going for screening, all the respondents as a result of participating in the study agreed to be screened for prostate cancer but 15.4% indicated that they will screen if it's free.

Table 4.29: Attitude of participants towards risk factors and treatment of PC (post-test 1)

Options	Strongly agree		Agree		Undecided		Disagree		Strongly Disagree		χ^2	P-value
	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)		
I do not get checked for prostate malignancy on the grounds that if PC is for prostate growth in light of the fact that in the event that it is found and treated, I may be unable to have Sex (penile erection).	3(1.4)	19(9.0)	39(18.6)	114(54.3)	20(9.5)	39(18.6)	112(53.3)	22(10.5)	36(17.1)	16(7.6)	108.9	0.000
I feel Black men have a higher rate of Prostate Cancer than Whites.	63(30.0)	33(15.7)	7(3.3)	10(4.8)	21(10.0)	43(20.5)	101(48.1)	105(50.0)	18(8.6)	19(9.0)	36.2	0.000
I think Digital Rectal Examination is a quick simple test, non-painful at all.	142(67.6)	7(3.3)	20(9.5)	40(19.0)	15(7.1)	29(13.8)	4(1.9)	117(55.7)	29(13.8)	17(8.1)	17.5	0.002
I feel that getting a blood test for Prostate Cancer is easy.	96(45.7)	5(2.4)	63(30.0)	14(6.7)	12(5.7)	30(14.3)	8(3.8)	126(60.0)	31(14.8)	35(16.7)	15.1	0.005
I feel that any test for Prostate Cancer is useless because there's no cure.	12(5.7)	45(21.4)	44(21.0)	121(57.6)	19(9.0)	36(17.1)	115(54.8)	24(11.4)	20(9.5)	14(6.7)	102.2	0.000
Men are at risk of getting Prostate cancer.	39(18.6)	32(15.2)	11(5.2)	5(2.4)	3(1.4)	26(12.4)	140(66.7)	125(59.5)	17(8.1)	22(10.5)	16.8	0.002
As I get older, I am more at risk for Prostate cancer.	62(29.5)	7(3.3)	72(34.3)	3(1.4)	26(12.4)	43(20.5)	31(14.8)	121(57.6)	19(9.0)	37(17.6)	20.9	0.000

Below average 63(30.0%) intervention group and 33(15.7%) control group strongly agreed that they feel Black men have a higher rate of prostate cancer than Whites, few 7(3.3%) and 10 (4.8%) intervention group and control groups respectively agreed, majority 101(48.1%) intervention group and 105(50.0%) control group disagreed, while 18(8.6%) intervention group and 19 (9.0%) control group strongly disagreed (P<0.05). The above findings is in line with Yawe, Tahir and Nggada (2006) from Maiduguri, Northern Nigeria, also reported that late presentation with advanced prostate cancer was common and should be suspected in black men aged 50 years and above who present with symptoms of prostatism and should be investigated promptly and suggested that aggressive screening of men in this age group would facilitate early diagnosis and probably improve prognosis.

Few12 (5.7%) intervention group and 45 (21.4%) control group strongly agreed that they feel that any test for prostate cancer is useless because there's no cure, 44 (21.0%) intervention group and 121 (57.6%) control group agreed, 115 (54.8%) intervention group and 39 (18.6%) control group disagreed, while 20 (9.5%) intervention group and 14 (6.7%) control group strongly disagreed (P < 0.05). This findings is in line with many patients belief that cancer diagnosis is a death sentence; therefore, see no reason in screening (Guz, Gursel and Ozbek, 2010). It has also been discovered that patients in Sub-Sahara region of Africa present with locally advanced or metastatic disease due to limited screening programme, inadequate diagnostic facilities, limited skilled oncology personnel, poor access to health care facilities, lack of health education, past negative experience, physicians attitudes, cultural and religious beliefs and ignorance (Woods et al, 2004).

Table 4.30: Participants attitude towards PC screening uptake (Post-test 2)

Options	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		χ^2	P-value
	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control		
I think I should have a rectal examination done for Prostate cancer now.	47(22.5)	5(2.4)	119(56.7)	2(1.0)	12(5.7)	59(28.1)	19(9.0)	140(67.0)	3(1.4)	39(18.8)	20.50	0.00
I feel ashamed and uncomfortable to have my rectum exposed.	6(2.9)	14(6.8)	15(7.2)	31(15.0)	15(7.1)	25(11.9)	100(47.8)	83(40.1)	74(35.2)	57(27.1)	15.36	0.00
Going to a doctor for digital rectal examination will only add to my expenses.	5(2.4)	25(11.9)	41(19.6)	42(20.0)	-	-	99(47.4)	65(31.4)	64(30.6)	5(2.4)	7.42	0.06
I feel going to a doctor once in a year for DRE is necessary.	47(22.5)	1(0.5)	140(67.0)	4(1.9)	11(5.3)	10(4.8)	1(0.5)	122(58.9)	0(0.0)	70(33.8)	3.72	0.45
Submitting for DRE to be sure of PC on time.	59(28.1)	6(2.9)	14(6.7)	14(6.8)	121(57.9)	121(58.5)	6(2.9)	66(31.9)	-	-	1.03	0.91
Not doing DRE because of its pain.	19(9.1)	68(32.9)	30(14.4)	79(38.2)	12(5.7)	16(7.7)	80(38.3	26(12.6)	68(32.5)	18(8.7)	.92	0.92
Not submitting for PC test because of fear of the outcome.	14(6.7)	57(27.5)	24(11.5)	90(43.51)	27(12.9)	25(12.1)	85(40.7)	20(9.7)	59(28.2)	15(7.2)	.92	0.92
I do not get checked for Prostate Cancer because it is embarrassing.	9(4.3)	61(29.5)	27(12.9)	86(41.5)	19(9.1)	22(10.6)	84(40.2)	28(13.5)	70(33.5)	10(4.8)	.92	0.92
There is a need for Prostate cancer check.	54(25.8)	47(22.7)	128(61.2)	4(1.9)	3(1.4)	6(2.9)	2(1.0)	104(50.2)	22(10.5)	46(22.2)	14.77	0.01
Digital Rectal Examination is beneficial even if the man feels healthy.	43(20.6)	39(18.8)	13(6.2)	11(5.3)	14(6.7)	14(6.8)	130(62.2)	105(50.7)	9(4.3)	38(18.4)	22.82	0.00

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At Post-test two, few 6(2.9%) and 14(6.8%) intervention and control groups respectively strongly agreed that they feel ashamed and uncomfortable to have their rectum exposed, 15(7.2%) intervention group and 31(15.0%) control group agreed, 100 (47.8%) intervention group and 83 (40.1%) control group disagreed while 74 (35.2%) intervention group and 57 (27.1%) control group strongly disagreed ($P < 0.05$). In support of the above reports, Yeboah-Asiamaha, Yirenya-Tawiahb, Baafic, Ackumey (2017) affirmed that majority of respondents agreed that PC screening is beneficial (95.0%) and disagreed with the assertion that going through PC screening is embarrassing (72%) and painful (49.3%), although the majority had never been screened (90%). This lay credence to the fact that prostate cancer patients are willing to be screened provided they are enlightened on the demands and details of the diseases in clear terms.

Furthermore, 9 (4.3%) intervention group and 61 (29.5%) control group strongly agreed that they do not get checked for PC because it is embarrassing, 27 (12.7%) intervention group and 86 (41.5%) control group agreed, 84 (40.2%) intervention group and 28 (13.5%) control group disagreed while 70 (33.5%) intervention group and 10 (4.8%) control group strongly disagreed ($P=0.05$). Several reports have documented poor prostate cancer awareness and screening practices in men. On poor subjection of carriers for prostate cancer screening, Morrison, Aiken, Mayhew, Gordon, and Odedina (2017) agreed with the statement patients are feeling ashamed of subjecting themselves to screening and health scrutiny when discovered they have the disease. In their study, they submit that most men had a favorable attitude towards screening. This is confirmed by prostate cancer patient to responses to whether they have undergone Prostate specific antigen (PSA) and digital rectal examination (DRE) or not. Thus the results were collected as evidence of the screening done.

Table 4.31: Attitude towards risk factors and treatment (Post Test 2)

Options	Strongly agree		Agree		Undecided		Disagree		Strongly Disagree			
	Interv. Freq (%)	Control Freq (%)	Interv. Freq(%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%	χ^2	P-value
I do not get checked for prostate cancer because if it is found and treated, I may be unable to have Sex (penile erection).	11(5.3)	69(33.3)	29(13.9)	85(41.1)	6 (2.9)	15(7.2)	80(38.3)	23(11.1)	83(39.7)	15(7.2)	6.239	0.182
I feel Black men have a higher rate of Prostate Cancer than Whites.	48(23.0)	49(23.7)	3(1.4)	5(2.4)	19(9.1)	21(10.1)	117(56.0)	91(44.0	22(10.5)	41(19.8)	15.614	0.004
I think Digital Rectal Examination is a quick simple test, non-painful at all.	113(54.1)	5(2.4)	19(9.1)	47(22.7)	21(10.0)	54(25.8)	2(1.0)	93(44.9)	19(9.2)	43(20.8)	17.441	0.002
I feel that getting a blood test for Prostate Cancer is easy.	75(35.9	5(2.4)	100(48.3)	10(4.8)	11(5.3)	13(6.3)	106(50.7)	11(5.3)	6(2.9)	79(38.2)	.560	0.967
I feel that any test for Prostate Cancer is useless because there's no cure.	27(12.9)	39(18.8)	26(12.4)	96(46.4)	31(14.8)	25(12.1)	84(40.2)	25(12.1)	41(19.6)	22(10.6)	1.973	0.741
Men are at risk of getting Prostate cancer.	45(21.5)	49(23.7)	18(8.6)	5(2.4)			143(68.4)	112(54.1)	3(1.4)	41(19.8)	19.793	0.000
As I get older, I am more at risk for Prostate cancer.	54(25.8	46(22.2)	13(6.2)	12(5.8)	129(61.7)	103(49.8)			13 (6.2)	46(22.2)	23.038	0.000

Results at posttest 2 revealed that few 11(5.3%) intervention group and 69(33.3%) control group strongly agreed that they do not get checked for prostate cancer because if it is found and treated, they may be unable to have penile erection, Also, 29 (13.9%) intervention group and 85 (41.1%) control group agreed, 80 (38.3%) intervention group and 23 (11.1%) control group disagreed, while 83 (39.7%) intervention group and 15 (7.2%) control group strongly disagreed (P>0.05). The above findings is in agreement with Morrison, Aiken, Mayhew, Gordon, and Odedina (2017) affirmed that Jamaican men surveyed have moderate prostate cancer knowledge and a positive attitude towards screening and prostate cancer prevention activities. Hence, the application of activities for potential prevention of modifiable risk factors is poor.

Prostate cancer is the most common malignancy occurring in men but the relatively low participants are aware of or take cognizance of the risk factor thereof. Culig (2017) was of the opinion that the perceived personal risk of contracting prostate cancer was associated with a higher level of education, in those who had received information about prostate cancer from a physician and in those with prostate problems. Respondents have a moderate knowledge about prostate cancer and a good propensity to undergo the PSA-test. Therefore, it would be necessary to increase information on the risks of prostate cancer and the benefits of prostate cancer prevention.

Few participants 27 (12.9%) intervention group and 39 (18.8%) control group strongly agreed that they feel that any test for prostate cancer is useless because there's no cure, 26 (12.4%) intervention group and 96 (46.4%) control group agreed, 84 (40.2%) intervention group and 25 (12.1%) control group disagreed, while 41 (19.6%) intervention group and 22 (10.6%) control group strongly disagreed (P>0.05).

Table 4.32: Attitude towards PC screening uptake (Post-test 3)

Options	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control	Interv.	Control
I think I should have a rectal examination done for Prostate cancer now.	47(22.5)	12(5.7)	47(22.7)	80(38.3)	5(2.4)	48(22.9)	95(45.2)	57(67.1)	16(7.7)	13(6.1)
I feel ashamed and uncomfortable to have my rectum exposed.	17(8.1)	18(8.6)	13(6.2)	32(15.2)	9(4.3)	10(4.80)	95(45.5)	46(21.9)	166(79.0)	11(5.2)
Going to a doctor for digital rectal examination will only add to my expense.	0(0.0)	33(15.7)	44(21.1)	103(49.0)	93(44.5)	3(1.4)	5(2.4)	67(31.9)	67(32.1)	4(1.9)
I feel going to a doctor once in a year for DRE is necessary.	124(59.3)	0(0.0)	71(34.0)	0(0.0)	8(3.8)	13(6.2)	0(0.0)	125(59.5)	2(1.0)	72(34.3)
I think Submitting for DRE to be sure of PC on time is important.	121(57.9)	0(0.0)	70(33.5)	6(2.9)	13(6.2)	18(8.6)	0(0.0)	119(56.7)	5(2.4)	67(31.9)
Not doing DRE because of its pain.	10(4.8)	71(33.8)	22(10.5)	81(38.6)	69(33.0)	13(6.2)	30(14.4)	28(13.3)	78(37.3)	17(8.1)
Not submitting for PC test because of fear of the outcome.	17(8.1)	62(29.5)	22(10.5)	88(41.9)	27(12.9)	28(13.3)	25(12.0)	81(38.8)	59(28.2)	10(4.8)
I do not get checked for Prostate Cancer because it is embarrassing.	13(6.2)	73(34.8)	19(9.1)	87(41.4)	78(37.3)	24(11.4)	31(14.8)	22(10.5)	68(32.5)	4(1.9)
There is a need for Prostate cancer check.	52(24.8)	22(10.5)	123(58.9)	0(0.0)	6(2.9	3(1.4)	52(63.3)	133(63.3)	21(10.0)	3(1.4)
Digital Rectal Examination is beneficial even if the man feels healthy.	45(21.5)	7(3.3)	15(7.2)	10(4.8)	12(5.7)	18(8.6)	125(59.8)	129(61.4)	12(5.7)	46(21.9)

Few 52 (24.8%) intervention group and 22 (10.5%) control group strongly agreed that there is a need for prostate cancer check, 123 (58.9%) intervention group and 0 (0.0%) control group agreed, 3(1.4%) intervention group and 52(63.3%) control group disagreed; while 133 (63.3%) intervention group and 21 (10.0%) control group strongly disagreed for a need for prostate cancer check (P>0.05). This findings is in consonant with the works of Allard, Dason, Lusis, and Kapoor, (2012) on prostate cancer screening: attitudes and practices of family physicians in Ontario. They lay claim to the fact that screening with DRE and PSA provides a survival benefit. This shows that the benefits of prostate cancer screening outweigh the risks. Above average 51.4% were convinced that the benefits outweighed the harms.

Digital rectal examination is essential even if the man feels healthy, 60(28.7%) and 17(8.1%) in the intervention and control groups respectively strongly affirmed to the statement. This is a variance with an investigation conducted by Davidson, Kirk, Degner and Hassard (2009) with male primary care patients presenting for periodic health examinations, it was found that intervention (verbal and written material about screening) and control patients had similar rates of DRE and PSA testing. In this present time, emphasis is laid on health promotion in developing countries like Nigeria in abating most diseases. This is premised on creating awareness on the maintenance of good health rather than on curative aspect. This is in line with what Shireffs (2008) posits that if the medical profession began to focus attention on the prevention of diseases and health promotion, in future, the effects of health on the nation would no doubt be significantly improved.

Table 4.33: Attitude towards risk factor and treatment (Post-Test 3)

Options	Strongly agree		Agree		Undecided		Disagree		Strongly Disagree			
	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq (%)	Interv. Freq (%)	Control Freq(%)	Interv. Freq (%)	Control Freq (%)	χ^2	P-value
I do not get checked for prostate cancer because if it is found and treated, I may be unable to have Sex (penile erection).	6(2.9)	87(41.4)	17(8.1)	84(40.0)	8(3.8)	9(4.3)	102(48.6)	26(12.4)	77(36.8)	4(1.9)	9.407	0.052
I feel Black men have a higher rate of Prostate Cancer than Whites.	49(23.4)	22(10.5)	6(2.9)	0(0.0)	22(10.5)	20(9.5)	110(52.6)	120(57.1)	22(10.5)	48(22.9)	6.538	0.162
I think Digital Rectal Examination is a quick simple test, non-painful at all.	114(54.3)	23(11.0)	55(26.3)	17(8.1)	24(11.5)	4(1.9)	110(52.6)	0(0.0)	16(7.7)	56(26.7)	4.13	0.389
I feel that getting a blood test for Prostate Cancer is easy.	78(37.1)	6(2.9)	10(48.1)	12(5.7)	8(3.8)	13(6.2)	109(52.2)	8(3.8)	6(2.9)	78(37.1)	2.293	0.682
I feel that any test for Prostate Cancer is useless because there's no cure.	29(13.9)	43(20.5)	29(13.9)	87(41.4)	79(37.8)	34(16.2)	29(13.9)	22(10.5)	43(20.6)	24(11.4)	2.212	0.697
Men are at risk of getting Prostate cancer.	134(64.1)	16(7.6)	48(23.0)	0(0.0)	6(2.9)	3(1.4)	0(0.0)	147(70.0)	21(10.0)	44(21.0)	2.449	0.485
As I get older, I am more at risk for Prostate cancer.	56(26.8)	54(25.7)	0(0.0)	0(0.0)	16 (7.7)	14(6.7)	121(57.9)	130(61.9)	16(7.7)	12(5.7)	1.061	0.786

At the post–test intervention 3, only few 6 (2.9%) intervention group and majority 87 (41.4%) control group strongly agreed that they do not get checked for prostate cancer because if found and treated, they may be unable to have penile erection, 17 (8.1%) intervention group and 84 (40.0%) control group agreed to the assertion, 102 (48.6%) intervention group and 26 (12.4%) control group disagreed; while 77(36.8%) intervention group and 4 (1.9%) control group strongly disagreed (P<0.05). The above findings is not in consonant with underline study. Prostate cancer (PC) is an important concern for all men since it poses a health threat especially to men over the age of 40. Over the past decades, screening for PC with serum prostate-specific antigen (PSA) testing and digital rectal examination (DRE) has been the subject of intense investigation in the medical community. On this note, Arafa, Farhat, and Rabah (2015) agreed with the findings above that beliefs and attitudes have a great impact, at every stage of the cancer continuum, this attitudes depends mainly on level of knowledge and quantity of information provided to patients and their families. Such attitudes should rely on a solid background of proper information and motivation from physicians to enhance and empower attitudes toward PC screening behavior.

Few 29 (13.9%) intervention group and 43 (20.5%) control group strongly agreed that they feel that any test for prostate cancer is useless because there's no cure, 29 (13.9%) intervention group and 87 (41.4%) control group agreed, 29 (13.9%) intervention group and 22 (10.5%) control group disagreed, while 43 (20.6%) intervention group and 24 (11.4%) control group strongly disagreed (P>0.95). This findings agreed with Adibe, Aluh, Isah & Anosike (2017) assertion that to some extent the staff of the University of Nigeria have appreciable knowledge and a positive attitude with regard to prostate cancer but a significant proportion of staff however, exhibited poor knowledge and negative attitudes and perceptions of prostate cancer screening and treatment. This is deeply affecting the health of men above forty in the university

Table 4.34: Participants categorization of attitude towards prostate cancer risk factors and screening uptake

TEST	Attitude	Intervention	Control	χ^2	P-value
Pre-test	Negative attitude	184(87.6%)	174 (82.9%)	1.9	0.169
	Positive attitude	26(12.4%)	36 (17.1%)		
Post 1	Negative attitude	134 (63.8%)	172(81.9%)	17.4	0.000
	Positive attitude	76 (36.2%)	38 (18.1%)		
Post 2	Negative attitude	118 (56.2%)	193(91.9%)	69.7	0.000
	Positive attitude	92 (43.8%)	17(8.1%)		
Post 3	Negative attitude	92(43.8%)	190(90.5%)	103.7	0.000
	Positive attitude	118 (56.2%)	20 (9.5%)		

Results in table 4.26 show that at baseline, the group categorization of attitude was 184 (87.6%) intervention group and 174 (82.9%) control group have negative attitude towards risk factors, treatment and screening practices of prostate cancer while 26 (12.4%) intervention group and 36 (17.1%) control group have positive attitude (P > 0.05).

At post-test one, there was a significant decrease in the number of participants in the intervention group 134 (63.8%) versus 172 (81.9%) of control group that have negative attitude towards prostate cancer risk factors, screening and treatment while majority 76 (36.2%) intervention group versus 38 (18.1%) of the group have positive attitude (P<0.05).

At post-test two, 118 (56.2%) intervention group and 193 (91.9%) of the control group had negative attitude while 92 (43.8%) of the intervention group and 17 (8.1%) of control group had positive attitude towards risk factors, treatment and screening practices for early detection measures of prostate cancer (P<0.05).

At post-test three, 92 (43.8%) of the intervention group and 190 (90.5%) of the control group have negative attitude towards risk factors, treatment and screening practices for early detection of prostate cancer while majority 118 (56.2%) intervention group versus 20 (9.5%) control group have positive attitude. There is paucity of empirical review in the literature to justify the above findings.

Hypothesis three: There is no significant association in the attitude of men towards screening uptake of prostate cancer before and after educational programme.

Table 4.35: Intervention Effect on Attitude

	Pre Intervention	**Post intervention 1**	**Post intervention2**	**Post intervention3**
Attitude	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Control	54.0±7.3	60.0±11.0	62.1±12.3	66.9±9.6
Intervention	58.8±11.8	57.7±10.3	66.0±10.0	65.5±10.6

Over time Effect on Attitude

Effect over time	**Df**	**F value**	**p-value**
Attitude	2.94, 1232	81.0	0.000
Group	1, 418	6.0	0.015
Attitude *Group	2.94, 1232	13.0	0.000

The intervention effect on attitude was analyzed using repeated measures ANOVA with a within-subject factor of attitude and a between-subject factor of group (intervention, control). Mauchly's test indicated that the assumption of sphericity had been violated (χ^2 (5) = 11.2, p<0.05), therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity (ε = 0.98). Main effects of attitude, F (2.94, 1232 = 81.0, p < 0.05, ηp^2 = 0.162, and group, F (1, 418) = 6.0, p<0 .05, ηp^2 = 0.014, were qualified by an interaction between attitude and group, F (2.94, 1232) = 13.0, p <0.05, ηp^2 = 0.030. Thus, there was statistical significant difference in between intervention and the control group over time on attitude. This study is in line with the works of Terwase, Azuzu, & Mstor (2014) who results of regression analysis revealed that attitude (β= -0.018, P.>0.05) negatively but significantly influences prostate cancer.

Table 4.36: Paired t-test results of the Control Group

		Mean ± SD	t-value	p-value
Pair 1	Pre intervention test	54.0±7.3	-7.2	0.000
	Post intervention test 1	60.0±11.0		
Pair 2	Pre intervention test	54.0±7.3	-8.8	0.000
	Post intervention test 2	62.1±12.3		
Pair 3	Pre intervention test	54.0±7.3	-15.7	0.000
	Post intervention test 3	66.9±9.6		
Pair 4	Post intervention test 1	60.0±11.0	-1.9	0.006
	Post intervention test 2	62.1±12.3		
Pair 5	Post intervention test 1	60.0±11.0	-6.9	0.000
	Post intervention test 3	66.9±9.6		
Pair 6	Post intervention test 2	62.1±12.3	-4.8	0.000
	Post intervention test 3	66.9±9.6		

Paired-samples t-test was conducted pairing the attitude scores at each point of contact/ visitation in the control group. Pair 1 compared the pre intervention and post intervention test 1. There was a significant difference in the scores for pre intervention (54.0±7.3) and post intervention test 1 (60.0±11.0); t (209) = -7.2, $p < 0.05$.

Pair 2 compared the pre intervention test and post intervention test 2. There was a significant difference in the scores for pre intervention test (54.0 ±7.3) and post intervention test 2 (62.1±12.3); t (209) = -8.8, $p< 0.05$.

Pair 3 compared the pre intervention test and post intervention test 3. There was a significant difference in the scores for the pre intervention test (54.0±7.3) and post intervention test 3 (66.9±9.6); t(209) = -15.7, $p< 0.05$.

Pair 4 compared the post intervention test 1 and post intervention test 2. There was a significant difference in the scores for the post intervention test 1 (60.0±11.0) and post intervention test 2 (62.1±12.3); t (209) = -1.9, $p< 0.05$.

Pair 5 compared the post intervention test 1 and post intervention test 3. There was a significant difference in the scores for the post intervention test 1 (60.0±11.0) and post intervention 3 (66.9±9.6); t (209) = -6.9, $p< 0.05$.

Pair 6 compared the post intervention test 2 and post intervention test 3. There was a significant difference in the scores for the post intervention test 2 (62.1±12.3) and post intervention test 3 (66.9±9.6); t (209) = - 3.0, $p< 0.05$.

There is paucity of empirical review in the literature to justify the above findings.

Table 4.37: Paired t-test Results of the Intervention Group

		Mean ± SD	t-value	p-value
Pair 1	Pre intervention test	58.8±11.8	0.9	0.350
	Post intervention test 1	57.7±10.3		
Pair 2	Pre intervention test	58.8±11.8	-7.2	0.000
	Post intervention test 2	66.0±10.0		
Pair 3	Pre intervention test	58.8±11.8	-5.8	0.000
	Post intervention test 3	65.5±10.6		
Pair 4	Post intervention test 1	57.7±10.3	-7.9	0.000
	Post intervention test 2	66.0±10.0		
Pair 5	Post intervention test 1	57.7±10.3	-7.5	0.000
	Post intervention test 3	65.5±10.6		
Pair 6	Post intervention test 2	66.0±10.0	0.6	0.562
	Post intervention test 3	65.5±10.6		

Paired-samples t-test was conducted pairing the attitude scores at the points of contact/ visitation in the intervention group. Pair 1 compared the pre intervention test and post intervention test 1. There was no significant difference in the scores for pre intervention (58.8±11.8) and post intervention test 1 (57.7±10.3); t (209) = 0.9, $p > 0.05$.

Pair 2 compared the pre intervention test and post intervention test 2. There was a significant difference in the scores for pre intervention test (58.8±11.8) and post intervention test 2 (66.0±10.0); t (209) = -7.2, $p < 0.05$.

Pair 3 compared the pre intervention test and post intervention test 3. There was a significant difference in the scores for pre intervention test (58.8±11.8) and post intervention test 3 (65.5±10.6); t (209) = -5.8, $p < 0.05$.

Pair 4 compared the post intervention test 1 and post intervention test 2. There was a significant difference in the scores for post intervention test 1 (57.7±10.3) and post intervention test 2 (66.0±10.0); t (209) = -7.9, $p < 0.05$.

Pair 5 compared the post intervention test 1 and post intervention test 3. There was a significant difference in the scores for post intervention test 1 (57.7±10.3) and post intervention test 3 (65.5±10.6); t (209) = -7.5, $p < 0.05$.

Pair 6 compared the post intervention test 2 and post intervention test 3. There was no significant difference in the scores for post intervention test 2 (M=66.0 ±10.0) and post intervention ±3 (65.5±10.6); t (209) = 0.6, $p > 0.05$.

Table 4.38: Independent t-test results of the control versus intervention group

	Pre Intervention	Post Intervention 1	Post Intervention 2	Post Intervention 3
Attitude	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Control	54.0±7.3	60.0±11.0	62.1±12.3	66.9±9.6
Intervention	58.8±11.8	57.7±10.3	66.0±10.0	65.5±10.6
t-value	-5.1	2.2	-3.6	1.4
p-value	.000	.029	.000	.152

Independent-samples t-test was conducted to test the significant difference in the attitude score of the intervention and the control groups. At the pre intervention test, there was a significant difference in the attitude scores of the intervention and control groups. Attitude of the intervention group (58.8±11.8) was significantly higher than the control group (54.0 ±7.3); t (418) = -5.1, $p < 0.05$.

At the post intervention test 1, there was a significant difference in the attitude scores of the intervention and control groups. Attitude of the intervention group (57.7±10.3) was not significantly higher than the control group (60.0±11.0); t (418) = 2.2, $p < 0.05$.

At the post intervention test 2, there was a significant difference in the attitude scores of the intervention and control groups. Attitude of the intervention group (66.0±10.0) was significantly higher than the control group (62.1±12.3); t (418)= -3.6, $p < 0.05$.

At the Post intervention test 3, there was a significant difference in the attitude scores of the intervention and control groups. Attitude of the intervention group (65.5±10.6) was not significantly higher than the control group (66.9±9.6),t (418) =1.4,$p > 0.05$. There is paucity of empirical review in the literature to justify the above findings.

Research Question three: To what extent is the screening uptake of prostate specific antigen test and digital rectal examination are being utilized by participants in the intervention and control groups?

Table 4.39: Participants' utilization of PC screening uptake

Variables	**Test**	**Options**					
		Yes		No		χ^2	P-value
		Intervention Freq (%)	Control Freq (%)	Intervention Freq (%)	Control Freq (%)		
Ever carried out any test to look out for prostate cancer.	Pretest	10(4.8)	8(3.8)	200(95.2)	202(96.2)	0.232	0.000
	Post 1	63(30.0)	9(4.3)	147(70.0)	201(95.7)	48.879	0.000
	Post 2	107(51.0)	14(6.7)	103(49.0)	196(93.3)	100.406	0.000
	Post 3	155(73.8)	20(9.5)	55(26.2)	190(90.5)	180.894	0.000

At base line, only 10 (4.8%) intervention group and 8 (3.8%) control group had carried out any test to detect prostate cancer (P>0.05). The result of this study at baseline revealed poor uptake of screening test as it almost not exist among the participants. Very few participants at the intervention group and control group respectively ever carried out any test to detect prostate cancer (P=0.630). This result is in concurrence with the investigation conducted by Ajape, Babata and Abiola, 2010 in an urban populace in Nigeria which uncovered that just 5.8% of 156 respondents had known about any test for prostate cancer. This was similar to another study among older men in Nigeria which revealed that only few of the respondents had ever been screened for prostate cancer (Oladimeji, Bidemi, Olufisayo and Sola, 2010)

The result obtained in this study corroborates Abdulwahab et.al (2010) whose result revealed that only few of their respondents were knowledgeable about prostate cancer screening. It is also comparable to Oghenetejiri (2007) whose findings show that there is a remarkable lack of knowledge about prostate cancer screening among African population in Nigeria. This study result is comparable to Abdulwahab, Abdullateef and Olusegun (2010) which reported that only few 5.8% of their respondents have heard about prostate cancer screening. Thus, decrease participation in prostate cancer screening is a serious health problem, given decreased survival rates when the diagnosis of prostate cancer is delayed. It is vital that men of black ancestry who are at risk of prostate cancer engage in life style changes, increase participation and engage in other recommended cancer prevention activities.

Result showed that after the intervention package at posttest one, few control group and majority of intervention group had carried out prostate cancer screening tests for early detection of the disease (P=0.000). This trend continued to increase among the participants of the intervention group at post intervention test two and three, while the poor screening practices was fairly stable among the control group. The low level of screening of prostate cancer among the control group was due to lack of knowledge about prostate cancer risk and screening uptake. This is in line with the assertion of Kenerson, (2010) who stated that the main reason for screening is to reduce possibility of developing the disease at asymptomatic stage as a method of early detection because of their various negative attitudes, poor knowledge and beliefs. The major problem with early detection of prostate cancer prevention is lack of knowledge about screening and poor detection guidelines among medical professional groups

(Woods et al, 2004).

Table 4.40: Participants' age at first uptake screening and type of PC test conducted

Variables	Test	Options							
		Intervention Freq (%)	Control Freq (%)	Intervention Freq (%)	Control Freq (%)	Intervention Freq (%)	Control Freq (%)	χ^2	P-value
		40-49 years		**50-59 years**		**60 -70 years**			
Age at First PC screening	Pretest	3(1.4)	2(0.9)	7(3.3)	5(2.4)	0(0.0)	1(0.5)	4.500	0 .105
	Post 1	27(12.9)	2(0.9)	33(15.7)	6(2.9)	3(1.4)	1(0.5)	4.62	0.032
	Post 2	41(19.5)	5(2.4)	59(28.1)	7(3.3)	7(3.3)	2(1.0)	27.00	0.000
	Post 3	64(30.5)	7(3.3)	78(37.1)	11(5.2)	13(6.2)	2(1.0)	4.979	0.026
		PSA		**DRE**		**PSA and DRE**			
Type of PC test conducted	Pretest	0(0.0)	1(0.5)	10(4.8)	5(2.4)	0(0.0)	2(1.0)	4.500	0 .105
	Post 1	40(19.0)	2(0.9)	16(7.6)	5(2.4)	7(3.3)	2(1.0)	5.533	0.063
	Post 2	68(32.4)	7(3.3)	22(10.5)	5(2.4)	17(8.1)	2(1.0)	1.661	0.436
	Post 3	95(45.2)	10(4.8)	37(17.6)	7(3.3)	23(11.0)	3(1.4)	1.249	0 .535

On the type of screening tests the participants undergo for the early detection of prostate cancer, results revealed that for the intervention group 0(0%) carried out prostate serum antigen test 10(4.8%) did digital rectal examination only and no participant undergoes both prostate serum antigen and for the control group, 1(0.5%) did prostate serum antigen test, 5(2.4%) carried out digital rectal examination and 2(1%) did both PSA and DRE. This result is in concurrence with the investigation result in Ugandan by Nakandi, Kirabo, Semugabo Kittengo Kitayimbwa, Kaling and Maena (2013) which uncovered that just a few of the respondents thought about PSA and had experienced PSA screening.

At post intervention test three, 95(45.2%) intervention group carried out PSA test alone, 10(4.8%) did DRE and 23(11%) undergo both PSA/DRE. This findings are in a variance from observations in the report by Nwafor et al (2012) who found that increase availability of PSA screening has contributed to the increase incidence of prostate cancer in our environment. The benefits of PSA as screening tool have not been put to maximum use in our environment, we still found ourselves in a scenario of waiting for the patients to present at a late stage of the disease when it can be diagnosed clinically using digital rectal examination (DRE) and PSA test which was relied upon in majority of the patient in this environment. These findings suggest that health providers are still lagging behind in sensitizing the public about the menace of prostate cancer if not detected early.

Table 4.41: Uptake screening of digital rectal examination among the participants

Variables	Test	Options				χ^2	P-value
		Yes		No			
		Intervention Freq (%)	Control Freq (%)	Intervention Freq (%)	Control Freq (%)		
		Yes		No			
Ever examined prostate for detection of prostate cancer.	Pretest	5(2.4)	5(2.4)	205(97.6)	205(97.6)	168.091	0.000
	Post 1	16(7.6)	5(2.4)	194(92.4)	205(97.6)	0.000	1.000
	Post 2	22(10.7)	5(2.4)	188(89.5)	205(97.6)	11.439	0.001
	Post 3	37(17.6)	7(3.3)	173(82.4)	203(96.7)	22.848	0.000
		Health personnel					
Who did the prostate examination?	Pretest	10(4.8)	5(2.4)			0.000	1.000
	Post 1	16(7.6)	5(2.4)			0.000	1.000
	Post 2	22(10.5)	5(2.4)			10.133	0.001
	Post 3	37(17.6)	7(3.3)			12.291	0.000
		Once					
How many times in a year did you go for digital rectal examination?	Pretest	10(4.8)	5(2.4)			1.360	0.767
	Post 1	16(7.6)	5(2.4)			3.360	0.067
	Post 2	22(10.7)	5(2.4)			13.798	0.003
	Post 3	37(17.6)	7(3.3)			2.482	0.478
		Once		**Twice**			
In the past 12 months, how many times have you visited physicians/urologists for digital rectal examination?	Pretest	5(2.4)	3(1.4)		2(1.0)	4.615	0.032
	Post 1	15 (7.1)	4(1.9)		0(0.0)	22.848	0.000
	Post 2	22(10.5)	5(2.4)		0(0.0)	35.309	0.000
	Post 3	37(17.6)	6(2.9)		1(0.5)	4.979	0.026

At baseline, for intervention and control groups, only 5 (2.4%) of the participants, respectively affirmed to ever examined their prostate for detection of prostate cancer ($P<0.05$). At post intervention test one, there was a little increase among intervention group 16 (7.6%) examined their prostate while the trend for the control 5 (2.4%) that carried out the digital rectal examination remained the same. At posttest two, intervention group further increased to 22 (10.7%) and the control group remained at 5 (2.4%) of number of participants that examined their prostate. The trend above was continued in the post intervention test three, where intervention group 37 (17.6%) versus control group 7 (3.3%) that agreed to had examined their prostate for early detection of cancer. The above findings are in line with a study conducted by Weinrich, Yoon and Weinrich (1998), which discovered that even when free prostate cancer screenings were offered, African-American men were less likely than Caucasian men to be screened for prostate cancer. These findings support Parchment's (2004) suggestion, that African-American men delay or avoid screenings. Combined with disparities in access to health care, health screening delays could impact early diagnosis and mortality in African American men.

Table 4.42: Duration of uptake of screening of digital rectal examination by participants

		Intervention Freq (%)	Control Freq (%)	Intervention Freq (%)	Control Freq(%)	Intervention Freq (%)	Control Freq (%)	Intervention Freq (%)	Control Freq (%)	χ^2	P-value
		< 1yr ago		One year ago		two years ago		three years ago			
How long ago?	Pretest	4(1.9)	3(1.4)	1(0.5)	1(0.5)	0(0.0)	0(0.0)	0(0.0)	1(0.05)	0.000	1.000
	Post 1	14(6.7)	3(1.4)	1(0.5)	1(0.5)	1(0.5)	1(0.5)	0(0.0)	0(0.0)	1.868	0.393
	Post 2	20(9.5)	3(1.4)	1(0.5)	1(0.5)	1(0.5)	1(0.5)	0(0.0)	0(0.0)	3.084	0.214
	Post 3	34(16.2)	4(1.9)	2(1.0)	2(1.0)	1(0.5)	1(0.5)	0(0.0)	0(0.0)	4.721	0.112

How long ago the digital rectal examination was done for the intervention group, 4 (1.9%) indicated less than one year and 1(0.5%) affirmed over one year and for the control group, 3 (1.4%) said less than one year, 1 (0.5%) indicated one year ago and 1 (0.5%) said three years ago (P>1.05). This finding is in line with the American Cancer Society and the American Urologic Association who recommends that most men should start prostate cancer screening at the age of 50. While men with a family history of prostate cancer should start screening from the age of 40 at least once annually.

Table 4.43: Participants' uptake of screening practices of PSA

Variables	Test	Options				χ^2	P-value
		Intervention Freq (%)	Control Freq (%)	Intervention Freq (%)	Control Freq (%)		
		Yes		**No**			
Ever had a Prostate Specific Antigen (PSA) test/ blood test.	Pretest	0(0.0)	1(0.5)	210(100)	209(99.5)	1.002	0.32
	Post 1	40(19.0)	2(1.0)	170(81.0)	208(99.0)	262.080	0.00
	Post 2	68(32.4)	7(3.3)	142(67.9)	203(96.7)	59.053	0.00
	Post 3	95(45.2)	10(4.8)	115(54.8)	200(95.2)	262.812	0.00
		Under one year		**One year ago**			
How long ago?	Pretest	0(0.0)	1(0.5)	0(0.0)	0(0.0)	0.000	1.00
	Post 1	40(19.0)	2(1.0)	0(0.0)	0(0.0)	28.890	0.00
	Post 2	68(32.4)	4(2.0)	0(0.0)	3(1.4)	29.928	0.00
	Post 3	93(44.3)	9(4.5)	2(1.0)	1(0.5)	41.144	0.00
		Yes		**No**			
Would you like to carry out the test for early detection of prostate cancer?	Pretest	17(8.1)	57(27.1)	193(91.9)	153(72.9)	37.994	0.00
	Post 1	93(44.3)	58(27.6)	117(55.7)	152(72.4)	136.806	0.00
	Post 2	127(60.5)	98(46.7)	83(39.5)	112(53.3)	152.727	0.00
	Post 3	141(67.1)	99(47.1)	69(32.9)	111(52.9)	150.874	0.00

At baseline for ever had prostate specific antigen blood test, result shows that for the intervention group, no participant had done prostate specific antigen test and for the control group, 1(0.4%) out of the 210 participants did the blood test. At post-test three, there was a significant increase among the intervention group 95 (45.2%) of the participants did the test versus the control group that few 10 (4.8%) carried out the blood test. The result in this study indicates that the participants' uptake of the screening increased after the educational package in the intervention group and remains fairly stable in the control group. The implication of the findings in this study is that, there is a great influence of knowledge and screening behaviour towards prostate cancer. This means that the more knowledge an individual has on the disease, the less chances of contacting the disease and that screening behaviour, which is getting screened or not screened could predispose someone to prostate cancer. This implies that a clarion call for initiation of aggressive prostate cancer education/teachings in hospitals, schools, churches and traditional gatherings by oncologist nurses to men and the general public. This finding is in line with Okobia (2008), who asserts that the situation calls for urgent steps such as embarking on health educational programmes. This creation of awareness on early detection measures is essential in order to aid informed decisions on prevention and care. This agreed with Ottawa Charter for Health promotion (2007) which observed that health educational programmes enable people to increase control over and to improve their health. It is expected that oncologist nurses who form the bulk of health care workers, and provide health care services across all the sectors of health care delivery, should use their skills to educate men and give proper information about the disease. The creation of awareness on early detection measures is essential in order to aid them in making informed decisions on prevention and promote healthy living.

Table 4.44: Group categorization of uptake of screening tests for PC

TEST		**Intervention**	**Control**	X^2	P. value
Pre-test	Poor	205 (97.6)	205 (97.6)	0.000	1.000
	Good	5 (2.4)	5 (2.4)		
Post-test 1	Poor	177 (84.3)	205 (97.6)	22.684	0.000
	Good	33 (15.)	5 (2.4)		
Post-test 2	Poor	162 (77.1)	203 (96.7)	8.334	0.004
	Good	48 (22.9)	7 (3.3)		
Post-test 3	Poor	147 (70.0)	201 (95.7)	48.879	0.000
	Good	63 (30.0)	9 (4.3)		

The group categorization of utilization of screening tests for prostate cancer revealed that at baseline, majority 205 (97.6%) intervention and control groups respectively had poor utilization of screening tests while only few 5 (2.4%) for intervention and control groups had good utilization (P >0.05). At post intervention test one, majority 177 (84.3%) intervention group had poor utilization of screening tests and 33 (15.7%) had good utilization while for the control group there was no significant difference like in the pre-test (P<0.05). At post intervention test three, there was a significant increase among the participants in the intervention group that had good utilization 63 (30%) versus the control group 9 (4.3%).

Hypothesis four: There is no significant difference in PC screening uptake (such as prostate specific antigen test and digital rectal examination) among participants pre and after nurse-led educational programme.

Table 4.45: Intervention effect on uptake of screening using Friedman's non-parametric test

Utilization	**Pre Intervention** Median, IQR	**Post intervention 1** Median, IQR	**Post intervention 2** Median, IQR	**Post intervention** Median, IQR	χ^2	**Df**	**p-value**
Control	0.0, 0.0	1.0, 1.0	1.0, 1.0	1.0, 1.0	174.8	3	0.000
Intervention	0.0, 0.0	1.0, 4.0	2.0, 4.0	5.0, 5.0	351.7	3	0.000

The intervention effect on utilization was analyzed using Friedman's non-parametric test for repeated measures ANOVA. In the control group, there was statistical significant difference in the median scores over time at the points of observation, (χ^2 (3) = 174.8, p< 0.05). Similarly, significant difference in the median scores over time at the points of observation was observed in the intervention group, (χ^2 (3) = 221.5, p< 0.05). There is paucity of empirical review in the literature to justify the above findings.

Table 4.46: Wilcoxon Test Results of the Control Group

		Median, IQR	Z-value	p-value
Pair 1	Pre intervention	0.0, 0.0	-10.0	0.000
	Post intervention 1	1.0, 1.0		
Pair 2	Pre intervention	0.0, 0.0	-6.2	0.000
	Post intervention 2	1.0, 1.0		
Pair 3	Pre intervention	0.0, 0.0	-5.7	0.000
	Post intervention 3	1.0, 1.0		
Pair 4	Post intervention 1	1.0, 1.0	-4.4	0.000
	Post intervention 2	1.0, 1.0		
Pair 5	Post intervention 1	1.0, 1.0	-5.0	0.000
	Post intervention 3	1.0, 1.0		
Pair 6	Post intervention 2	1.0, 1.0	-0.5	0.594
	Post intervention 3	1.0, 1.0		

Wilcoxon test was conducted pairing the utilization scores at the points of contact/ visitation in the control group. Pair 1 compared the pre intervention and post intervention test 1. There was significant difference in the scores for pre intervention (M=0.0, IQR=0.0) and post intervention test 1 (M=1.0, IQR=1.0); Z= -10.0, $p < 0.05$.

Pair 2 compared the pre intervention and post intervention test 2. There was a significant difference in the scores for pre intervention (M=0.0, IQR=0.0) and post intervention test 1 (M=1.0, IQR=1.0); Z= -6.2, $p < 0.05$.

Pair 3 compared the pre intervention and post intervention test 3. There was a significant difference in the scores for pre intervention (M=0.0, IQR=0.0) and post intervention 3 (M=1.0, IQR=1.0); Z= -5.7, $p < 0.05$.

Pair 4 compared 1 post intervention test 1 and post intervention test 2. There was a significant difference in the scores for post intervention test 1 (M=1.0, IQR=1.0) and post intervention test 2 (M=1.0, IQR=1.0); Z= -4.4, $p < 0.05$.

Pair 5 compared post intervention test 1 and post intervention test 3. There was a significant difference in the scores for post intervention test 1 (M=1.0, IQR=1.0) and post intervention test 3 (M=1.0, IQR=1.0); Z= -5.0, $p < 0.05$.

Pair 6 compared post intervention test 2 and post intervention test 3. There was no significant difference in the scores for post intervention test 1 (M=1.0, IQR=1.0) and post intervention test 3 (M=1.0, IQR=1.0); Z= -0.5, $p > 0.05$.

There is paucity of empirical review in the literature to justify the above findings.

Table 4.47:Wilcoxon Test results of the intervention group

		Median, IQR	Z-value	p-value
Pair 1	Pre intervention	0.0, 0.0	-9.9	0.000
	Post intervention 1	1.0, 4.0		
Pair 2	Pre intervention	0.0, 0.0	-11.4	0.000
	Post intervention 2	2.0, 4.0		
Pair 3	Pre intervention	0.0, 0.0	-11.8	0.000
	Post intervention 3	5.0, 5.0		
Pair 4	Post intervention 1	1.0, 4.0	-2.2	0.030
	Post intervention 2	2.0, 4.0		
Pair 5	Post intervention 1	1.0, 4.0	-5.8	0.000
	Post intervention 3	5.0, 5.0		
Pair 6	Post intervention 2	2.0, 4.0	-5.1	0.000
	Post intervention 3	5.0, 5.0		

Wilcoxon test was conducted pairing the utilization scores at the points of contact/ visitation in the control group. Pair 1 compared the pre intervention and post intervention 1. There was significant difference in the scores for pre intervention (M=0.0, IQR=0.0) and post intervention 1 (M=1.0, IQR=4.0); Z= -9.9, $p < 0.05$.

Pair 2 compared the pre intervention and post intervention 2. There was a significant difference in the scores for pre intervention (M=0.0, IQR=0.0) and post intervention 1 (M=2.0, IQR=4.0); Z= -11.4, $p < 0.05$.

Pair 3 compared the pre intervention and post intervention 3. There was a significant difference in the scores for pre intervention (M=0.0, IQR=0.0) and post intervention 3 (M=5.0, IQR=5.0); Z= -11.8, $p < 0.05$.

Pair 4 compared post intervention 1 and post intervention 2. There was no significant difference in the scores for pre intervention 1 (M=1.0, IQR=4.0) and post intervention 2 (M=2.0, IQR=4.0); Z= -2.2, $p < 0.05$.

Pair 5 compared post intervention 1 and post intervention 3. There was a significant difference in the scores for post intervention 1 (M=1.0, IQR=4.0) and post intervention 3 (M=5.0, IQR=5.0); Z= -5.8, $p < 0.05$.

Pair 6 compared post intervention 2 and post intervention 3. There was a significant difference in the scores for post intervention 2 (M=2.0, IQR=4.0) and post intervention 3 (M=5.0, IQR=5.0); Z= -5.1, $p < 0.05$. There is paucity of empirical review in the literature to justify the above findings.

Table 4.48: Mann-Whitney U Test results of the control versus intervention groups

	Pre Intervention	**Post Intervention 1**	**Post Intervention 2**	**Post Intervention 3**
Utilization	Median, IQR	Median, IQR	Median, IQR	Median, IQR
Control	0.0, 0.0	1.0, 1.0	1.0, 1.0	1.0, 1.0
Intervention	0.0, 0.0	1.0, 4.0	2.0, 4.0	5.0, 5.0
U	17576.5	21111.5	10331.5	5974.0
p-value	0.000	0.392	0.000	0.000

Mann-Whitney U test was conducted to test the significant difference in the utilization score of the intervention and the control groups. At the pre intervention, there was a significant difference in the utilization scores of the intervention and control. Utilization of the intervention group (M=0.0, IQR=0.0) was significantly higher than the control (M=0.0, IQR=0.0); U= -2.8, $p < 0.05$.

Independent-samples t-test was conducted to test the significant difference in the attitude score of the intervention and the control groups. At the pre intervention, there was a significant difference in the utilization scores of the intervention and control groups. Utilization of the intervention group (0.0±0.0) was significantly higher than the control (0.0±0.0); t (418) = 17576.5, $p < 0.05$.

At the post intervention 1, there was a significant difference in the utilization scores of the intervention and control groups. Utilization of the intervention group (1.0±4.0) was significantly higher than the control (1.0±1.0); t (418) = 21111.5, $p = 0.392$.

At the post intervention 2, there was a significant difference in the utilization scores of the intervention and control. Utilization of the intervention group (2.0±4.0) was significantly higher than the control (1.0±1.0); t (418) = 10331.5, $p < 0.05$.

At the post intervention 3, there was a significant difference in the utilization scores of the intervention and control. Utilization of the intervention group (5.0±5.0) was significantly higher than the control (1.0±1.0); t (418) = 5974.0, $p < 0.05$.

There is paucity of empirical review in the literature to justify the above findings.

1. **Research question four:** Identify the perceived reasons that influence screening uptake of prostate cancer among the intervention and control groups before and after intervention programme.

Table 4.49: Perceived reasons for undergoing PC screening uptake (Pretest and posttest 1)

Variables	Pre-test						Post-test one					
	Intervention		Control		χ^2	P-value	Intervention		Control		χ^2	P-value
	Not important Freq (%)	Important Freq (%)	Not important Freq (%)	Important Freq (%)			Not important Freq (%)	Important Freq (%)	Not important Freq (%)	Important Freq (%)		
Worry about cancer	207 (98.6)	3 (1.4)	209 (99.5)	1 (0.5)	12.86	.000	160(76.2)	50(23.8)	202(96.2)	8(3.8)	389.17	0.000
Fear of having PC	209(99.5)	1(0.5)	210(100)	0(0.0)	3.022	.082	150(71.4)	60(28.6)	206(98.1)	4(1.9)	60.473	0.000
Screening is free/cheap	203(96.7)	7(3.3)	210(100)	0(0.0)	0.000	1.000	190(90.5)	20(9.5)	209(99.5)	1(0.5)	64.068	0.000
Convenience of hospital	210(100)	0(0.0)	210(100)	0(0.0)	0.000	1.000	170(81.0)	40(19.0)	207 (98.6)	3 (1.4)	77.280	0.000
Reputation of hospital	210(100)	0(0.0)	209(99.5)	1(0.5)	0.000	1.000	190(90.5)	20(9.5)	203(96.7)	7(3.3)	127.519	0.000
PC has been in the news	206(98.1)	4(1.9)	210(100)	0(0.0)	0.000	1.000	190(90.5)	20(9.5)	207 (98.6)	3 (1.4)	191.041	0.000
Screening is recommended by friend	209(99.5)	1(0.5)	201(95.7)	9(4.3)	1.822	0.177	200(95.2)	10(4.8)	197(93.8)	13(6.2)	179.60	0.000
Screening recommended by health professional	210(100)	0(0.0)	210(100)	0(0.0)	1.002	0.317	0(0.0)	210(100)	210(100)	0(0.0)	166.355	0.000
Family history of PC	209(99.5)	1(0.5)	209(99.5)	1(0.5)	9.197	0.002	209(99.5)	1(0.5)	209(99.5)	1(0.5)	86.897	0.000
Family history of other cancers	207(98.6)	3(1.4)	206(98.1)	4(1.9)	1.002	0.317	196(93.3)	14(6.7)	195(92.9)	15(7.1)	190.953	0.000
Pain when urinating	203(96.7)	7(3.3)	210(100)	0(0.0)	1.01	.315	203(96.7)	7(3.3)	193(91.9)	17(8.1)	180.269	0.000
Problem having sex	210(100)	0(0.0)	210(100)	0(0.0)	1.373	0.241	210(100)	0(0.0)	210(100)	0(0.0)	184.130	0.000
Part of routine check-up	209(99.5)	1(0.5)	209(99.5)	1(0.5)	1.002	0.317	160(76.2)	50(23.8)	208(99.0)	2(1.0)	190.38	0.000
Wanting a second opinion	209(99.5)	1(0.5)	209(99.5)	1(0.5)	0.000	1.000	167(79.5)	43(20.5)	208(99.0)	2(1.0)	199.61	0.000

At the baseline level, majority 207(98.6%) of participants and 209(99.5%) of the intervention versus control groups respectively did not perceive worry about cancer as an important factor with (P =0.000). A similar trend was also perceived for worry of having prostate cancer, majority 209 (99.5%) intervention group and all participants in control group did not perceived it as important factor (P>0.05). This findings are in a variance with an investigation conducted by Wahnfired, Strigo, Catoe (1999) on knowledge, belief and prior screening behaviour among men which states that the four leading reasons reported for attending prostate cancer screening events were identical between blacks and whites. "Peace of mind", "it was time for a check-up", "it was free", and "prostate" cancer have been in the news" account for approximately 70% of all responses for both groups. Oliver and Grindel (2006) reported similar findings. Results of the research suggested that the following factors have an impact on participation in prostate cancer screening: fear, mistrust in the healthcare system, threat to manhood, traditional practices and lack of perceived value for preventive care, feelings of disparity and knowledge deficits.

In 2004, Weinrich, Reynolds, Tingen and Starr identified similar findings, which included: embarrassment, mistrust, concern about insufficient disease knowledge and abnormal test results, fear of post-operative sexual difficulty, frustrations regarding not having a regular doctor and concern over financial limitations for adequate screening. Furthermore, other barriers to prostate cancer screening were identified as lack of cultural sensitivity and fatalism.

Table 4.50: Perceived reasons for undergoing PC screening uptake (Posttest 2 and 3)

	Post-test two						Post-test Three					
	Intervention		Control		χ^2	P-value	Intervention		Control		χ^2	P-value
	Not important Freq(%)	Important Fre(%)	Not important Freq(%)	Important Freq(%)			Not important Fre(%)	Important Fre(%)	Not important Fre(%)	Important Fre(%)		
Worry about cancer	137(65.2)	73(34.8)	200(95.2)	10(4.8)	75.029	0.000	86(41.0)	124(59.1)	200(95.2)	10(4.8)	1.288	0.256
Fear of having PC	133(63.3)	77(36.7)	207(98.6)	3(1.4)	0.166	0.684	123(58.6)	137(41.4)	207(98.6)	3(1.4)	81.779	0.000
Screening is free/cheap	119(56.7)	91(43.3)	207(98.6)	3(1.4)	0.010	0.919	114(54.3)	96(45.7)	207(98.6)	3(1.4)	26.122	0.000
Convenience of hospital	167(79.5)	43(20.5)	202(96.2)	8(3.8)	0.480	0.488	165(78.6)	45(21.4)	202(96.2)	8(3.8)	37.709	0.000
Reputation of hospital	200(95.2)	10(4.8)	204(97.1)	6(2.9)	8.826	0.003	200(95.2)	10(4.8)	200(95.2)	10(4.8)	0.000	1.000
PC has been in the news	196(93.3)	14(6.7)	203(96.7)	7(3.3)	40.428	0.000	193(91.9)	17(8.1)	200(95.2)	10(4.8)	14.623	0.000
Screening is recommended by friend	199(94.8)	11(5.2)	209 (99.5)	1 (0.5)	27.685	0.000	199(94.8)	11(5.2)	206(98.1)	4(1.9)	1.768	0.184
Screening recommended by health professional	0(0.0)	210(100)	210(100)	0(0.0)	52.307	0.000	210(100)	0(0.0)	210(100)	0(0.0)	0.210	0.647
Family history of PC	209(99.5)	1(0.5)	209(99.5)	1(0.5)	219.13	0.000	209(99.5)	1(0.5)	209(99.5)	1(0.5)	343.636	0.000
Family history of other cancers	205(97.6)	5(2.4)	207(98.6)	3(1.4)	61.404	0.000	205(97.6)	5(2.4)	207(98.6)	3(1.4)	24.738	0.000
Pain when urinating	203(96.7)	7(3.3)	210(100)	0(0)	52.46	0.000	203(96.7)	7(3.3)	210(100)	0(0)	4.465	0.035
Problem having sex	210(100)	0(0.0)	210(100)	0(0.0)	60.399	0.000	210(100)	0(0.0)	210(100)	0(0.0)	2.456	0.117
Part of routine check-up	137(65.2)	73(34.8)	209(99.5)	1(0.5)	61.967	0.000	209(99.5)	161(0.5)	207(98.6)	3(1.4)	26.582	0.000
Wanting a second opinion	167(79.5)	43(20.5)	207(98.6)	3(1.4)	1.321	0.250	155(73.8)	55(26)	210(100)	0(0.0)	214.773	0.000

.The profile for prostate cancer to have been on the news was considered as not important reason for majority of the participants 196 (93.3%) and 203 (96.7%) among the intervention and control groups respectively. The entire participants 210 (100%) intervention group considered screening recommended by health professionals as important versus 200 (95.2%) control group that considered the recommendation as not important. Majority 209(99.5%) of participants in the intervention and control groups respectively perceived family history of prostate cancer as not important factor. This is not in conformity with American Cancer Society (ACS) (2008) recommendations, which states that the PSA and the DRE should be offered annually beginning at age 50 for men who have a life expectancy of at least 10 years. Men at high risk, such as African-American men and men with a strong family history of one or more first-degree relatives diagnosed with prostate cancer, should be provided with information concerning testing by age 45 (ACS).

Few participants 75(34.8%) intervention group and 1(0.5%) perceived screening as problem having sex. The findings is in line with Clarke-Tasker and Wade (2002) and Woods et al (2004), who asserted that that sexual dysfunction is a sensitive issue for black men. This therefore discourages them from participation in prostate cancer screening and early detection strategies. Direct rectal examination (DRE) was identified as a major problem as it threatens men's sexuality (Woods et al, 2004). Majority of their participants indicated fear of weak erection, impotence and insufficient strength for vaginal penetration as a major concern why men do not go for prostate cancer screening (Woods et al, 2004). A goal of healthy people 2020 is to eliminate racial health disparities and reduce prostate cancer death rate to 21.2 per 100,000 males.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This section discusses the summary, conclusion, recommendation and suggestion for further studies from the study which was carried out on prostate cancer educational intervention as a strategy for enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, Nigeria.

5.1 Summary

Prostate Cancer (PC) is a common cause of cancer-related death among men. In developing countries, available evidence indicates that factors responsible for high PC-related mortality rate include poor knowledge and low uptake of screening practices. In Nigeria, there is paucity of literature on PC-specific health promotion package that emphasise knowledge and screening uptake of men. This study, therefore, was designed to evaluate the effectiveness of PC-specific educational intervention on the knowledge and screening uptake among men in selected hospitals in Cross River State, Nigeria.

A mixed method research comprising of focus group discussion and a quasi-experimental pretest-posttest research design was used. Focus Group Discussion (FGD) was used to collect data at the pre-intervention stage that assisted in designing the questionnaire, while the developed instrument was used in collecting data both at the pre-intervention and post-intervention stages using a quasi-experimental pretest-posttest research design.The study was conducted in four randomly selected General hospitals in three senatorial districts in Cross River State. The hospitals in Ogoja and Ugep were purposively designated Intervention Group (IG) while Akamkpa and Calabar constituted the Control Group (CG). A sample of 420 men out of 980 regular Out Patient Department attendees was proportionately distributed 210 to IG and CG respectively. An educational training package on knowledge and screening uptake of PC with four teaching sessions of 60 minutes each was administered weekly to participants in IG while CG received no intervention. A validated structured questionnaire (r = 0.89) was used to assess knowledge and PC screening uptake of men at baseline (PT_1), immediate post intervention (PT_2),

at three months (PT_3) and six months post intervention (PT_4) periods. The PC screening uptake was assessed using questionnaire and authenticated by Prostate Specific Antigen assay and Digital Rectal Examination. Data were analysed using descriptive statistics, student t-test, and Cochran Q test at $\alpha_{0.05}$.

5.2 Findings

- At the pre intervention phase, participants in both groups claimed ignorant of the knowledge of existence of prostate cancer. At the baseline level, only few 55 (26.2%) participants in the intervention groups and 48 (22.9%) in the control group agreed to have heard about prostate cancer.

- Similarly result revealed that at baseline no participant in both the intervention and control groups indicated intervention package as the source of information about prostate cancer.

- The result also revealed that at baseline, there was poor uptake of screening test for prostate cancer as it almost not exist among the participants.

- However, after implementation of the educational package to the intervention group, results were significantly greater than scores at baseline.

- The knowledge increased in the intervention group, there was an increase in knowledge scores from (10.1 ±3.0) to 19.4 ± 2.0 at PT_2, 16.6 ± 2.7 at PT_3 and 17 ±2.7 at PT_4. Similarly, the knowledge scores increased slightly in control group to 9.8 ± 3.6 at PT_2, 11.3 ± 2.1 at PT_3 and decreased to 10.7 ± 2.3 at PT_4

- At baseline only 2.4% of participants had utilized PC screening uptake, 5.2% at PT_2, 10.5% at PT_3 and 45.2% at PT_4 among intervention group. Likewise among the control group, only 2.9% of participants had utilized PC screening uptake at baseline and at PT_2, 5.4% at PT_3 and at 8.1% at PT_4. The observed increment in utilisation of PC screening uptake was significantly higher among IG than CG. This trend continued to increase among the participants of the intervention group at post intervention test two and three, while the poor screening practices was fairly stable among the control group.

5.3 Recommendations

From the findings of this study, the following recommendations are made:

- First, the findings revealed that there is lack of knowledge about prostate cancer pointing to the need to design an intervention programme through innovative health education strategies by the government to sustain and improve knowledge about prostate cancer in the three senatorial districts of the state.
- The findings also point to the need to do regular screening. In order to achieve this, the study recommends health promotion campaigns that emphasize prostate cancer screening uptake which should be organized twice yearly by the government through the Ministry of Health and other NGOs.
- Initiation of aggressive prostate cancer education/teachings in hospitals, schools, churches, markets and traditional gatherings by Oncology specialists should be given twice a year to men and the general public to create awareness campaign and education about prostate cancer and its screening uptake.
- There should be a policy formulation that every male from age 40 should be involved in health education and health promotion programmes for prostate cancer
- Government and Non-Governmental Organizations should fund the training and equipping of Oncology specialists about cancer and its preventive measures and Mass media campaign on behavioural change strategies to curb the morbidity and mortality rate from cancer should be intensified.
- The Cross River State Ministry of Health should encourage policy on men's health and should provide screening services at least once a year for prostate cancer at no cost in all health care settings.

5.4 Conclusion

The study to evaluate Prostate cancer educational intervention as a strategy for enhancing knowledge and screening uptake of men in selected hospitals in Cross River State, Nigeria is further seen in the use of the proceed – precede model as a framework for the study. Through a comprehensive assessment using a focus group discussion, the researcher was able to identify the areas of deficits among adult men in the settings to include a remarkable lack of knowledge about cancer of the prostate among the native of Cross River State, Nigeria and PSA screening uptake is unknown among the participants. A prostate cancer educational intervention was therefore designed to help in meeting these needs. Furthermore, the researcher in collaboration with the research assistants was able to institute prostate cancer intervention that had a positive impact on the adult men knowledge and screening uptake of prostate cancer.

In conclusion, the researcher suggests that initiation of aggressive prostate cancer education/teachings in hospitals, schools, churches and traditional gatherings by nurses and other health care providers should be given regularly to men and the general public and there should be a policy formulation that every male from age 40 should be involved in health education and health promotion programmes for prostate cancer.

5.5 Suggestions for Further Studies

There is need to replicate this study in every General Hospital in Cross River State in order to increase men's knowledge of prostate cancer and screening uptake for early detection measures.

There is need to replicate this study in a larger scale in every state in the south –south, south east or south west etc. to increase generalization of the findings and for comparison of findings.

There is need to replicate this research at tertiary hospitals in the country to improve its universality.

5.6. Contribution to knowledge

- This study increase public awareness of the participants' knowledge regarding prostate cancer (there was an increase in knowledge scores from (10.1 ±3.0) to 19.4 ± 2.0 at $PT_{2,}$ 16.6 ± 2.7 at PT_3 and 17 ±2.7 at $PT_{4.}$).

- There was increased uptake of screening practices among the participants (At baseline only 2.4% of participants had utilized PC screening uptake, 5.2% at PT_2, 10.5% at PT_3 and 45.2% at PT_4 among intervention group).

- The study contribute in promoting the activities of a public health advocacy groups such as WHO, as well as Non-Governmental Organisations (NGOs) in Cross River State that have declared a war on prostate cancer awareness and importance of regular prostate specific antigen test and digital rectal examination.
- This study emphasizes health promotion of prostate cancer and risk reduction of the disease. In a supportive environment, this can positively influence health behaviour and health outcomes. Hence, it will act as a moral check on participants.

- The work stands as a contribution to the existing knowledge of the practices controlling, preventing and early detection of PC disease. It is also an addition to the existing academic debate on the effect of nursing education on awareness and prevention of PC.

REFERENCES

Abduwahab, A. A, AbdulLateef, B and Olusegun, O.A. 2010. Knowledge of prostate cancer screening among Native African Urban Population in Nigeria. *Nigerian quarterly Journal of Hospital Medicine 20* (2) 10-19

Adeloye D, David RA, Aderemi AV, Iseolorunkanmi A, Oyedokun A, Iweala E. 2016. An Estimate of the Incidence of Prostate Cancer in Africa: A Systematic Review and Meta-Analysis. PLoS ONE 11(4): e0153496. doi:10.1371/journal.pone.0153496

Ajape A.A, Mustapha K., Lawal I. O, and Mbibu H. N. 2011. Survey of urologists on clients' demand for screening for prostate cancer in Nigeria. *Nigeria Journal of Clinical Practical* 20.14:151-3.

Ajape, A. A., Babata, A., and Abiola, O.2009. Knowledge of prostate cancer screening among Native African Urban Population in Nigeria. *Nigerian quarterly Journal of Hospital Medicine 19* (3):145-7.

Ajape, Babata and Abiola 2010. Knowledge of prostate cancer screening among Native African Urban Population in Nigeria. *Nigerian quarterly Journal of Hospital Medicine 20* .2: 94-96.

Akinremi T. O, Ogo C.N and Olutunde A. O. 2011. Review of prostate cancer research in Nigeria. *Infection. Agent cancer 6.*2: S8.

Amaku E.O., Da Rocha-Afodu A. and Elebute E. A.1971. Prostatic obstruction in Nigerians. *West African Medicine Journal 20:*189-191.

American Cancer Society, *Cancer Facts & Figures 2010*, November 2010

American Cancer Society. *Cancer Facts and Figures 2011*. Atlanta, GA: *American Cancer Society 2011*.

American Cancer Society. *Cancer Facts and Figures 2012*. Atlanta, GA: *American Cancer Society 2012.*

American Cancer Society. *Cancer Facts and Figures 2016*. Atlanta, GA: *American Cancer Society 2016.*

American Cancer Society. *Cancer Facts and Figures.* 2010. Atlanta, GA: *American Cancer Society 2010.*

Andreas, U. 2013. Nigeria has the highest Cancer Death Rate in Africa: *Hope for Nigeria*.

Angwafo F. F., Yomi J. and Mbakop. A. 1994. Is cancer of the prostate rare in tropical (black) Africa? Case series from the Center Hospitalier Et Universitaire and the Hospital General De Younde from 1986- 1990. *Bullettin. Cancer Radiotherapy* 81:155-159.

Angwafo F. F., Zaher A., Befidi-Mengue R., *et al* .2003.The National Health Survey team for National epidemiology Board of Cameroon. *Prostate Cancer Prostatic Disorder 6:*34-38.

Angwafo F.F. 1998. Migration and prostate cancer: An international perspective. *Journal of National Medical Association* 11.l0:S720-S723.

Antopulos, I. M., Pompeo, A. C. L. and El Hayek, O.R. *et al.2001*. Results of prostate cancer screening in non-symptomatic men. *Brazilian Journal of Urology* 27:227-234.

Atkinson S, Haran D. 2005. Individual and district scale determinants of user's satisfaction with primary health care in developing countries. *Soc Sci Med.* 60:501–13. doi: 10.1016/j.socscimed.2004.05.019.

Atulomah NO, Olanrewaju MF, Amosu AM, Adedeji O. 2010. Level of Awareness, perception and screening behavior regarding prostate cancer among men in a rural community of Ikenne Local Government Area, Nigeria. Prim Prev Insight,2(11-20)

Badmus TA, Adesunkanmi AR, Yusuf BM, Oseni GO, Eziyi AK, Bakare TI, 2010. Burden of prostate cancer in southwestern Nigeria. Urology 2010; 76:412-6. Back to cited text no.

Bell, K.J., *et al.*2015 Prevalence of incidental prostate cancer: A systematic review of autopsy studies. *Int J Cancer*, 137: 1749.

Best Plummer WS, Persaud P, Layne PJ. 2009. Ethnicity and cancer in Guyana, South America. Infect Agent Cancer. 2009; 4: S7.

Beth A. Jones,Wen-Liang Liu, Andre B. Araujo, Stanislav V. Kasl, Stephanie N. Silvera, Hosanna Soler-Vila, Mary G.M. Curnen, and Robert Dubrow 2008. Explaining the Race Difference in Prostate Cancer Stage at Diagnosis. Downloaded from cebp.aacrjournals.org on March 29, 2019

Bouvard V, Loomis D, Guyton KZ, Grosse Y, Ghissassi FE, Benbrahim-Tallaa L, et al 2015.; International Agency for Research on Cancer Monograph Working Group. Carcinogenicity of consumption of red and processed meat. *Lancet Oncol.* http://dx.doi.org/10.1016/S1470-2045(15)00444-1 PMID:26514947

Boyles, G. Moore, A. D. what's more, Edwards, Q. T. 2003. Wellbeing practices of male division of safeguard social insurance recipients: A follow-up on prostate disease screening in the national capital zone. Military Medicine 168'12: 992-996.

Brawley OW. 2012 Prostate cancer epidemiology in the United States. *World J Urol* 30(2):195–200

Brawley, O. W. 2000. The unequal weight of growth. Minority Health. Recovered April 7, 2004. http://www.findarticles.com/cf_dls/m0HKU/5_1/66918343/print.jhtml

Brawley, O. W. and, Kramer, B. S. 2005. Tumor screening in principle and practice. Diary of Clincial Oncology 23.2: 293-300.Bostwick, B.D, Euling, H. L, 2004. Human prostate cancer Risk factors. *Cancer* 101.10: 2371-490.

Brink, M., Reulen, R.C, et. al. 2006. Are men with low selenium levels at increased risk of prostate cancer? *European Journal of Cancer* 42.15: 2463-71

Calabrese, D. A and Mueller, N. M, 2006. *Cancer prevention and detection: Society of Urologic Nurses and Associates.* Retrieved on the 25th April 2014 from http://www.suna.org

Chan, J. M., Gann, P. H, and Giovannucci E. L, 2005. *Role of diet in Prostate cancer development and progression.Journal of clinical Oncology* 8152-8160

Chinegwundoh F., Enver M., Lee A., *et al.* 2006. Risk and presenting features of prostate cancer amongst African Caribbean, South Asian and European men in North East England. *British Journal Urology Intern* 98:1216-1220.

Clarke-Tasker, V.A, Wade, R. 2002. What we thought we knew: African American males' perceptions of prostate cancer and screening methods. *ABNF Journal* 13:56–60.

Coard, K. C., 2002. Prostate cancer at the University hospital of West Indies in Jamaica. *A clinocopathological profile at the time of needle biopsy diagnosis. West Indian Medical ournal* 51**:** 40-43.

Cooper, C. P., Jorgensen, C. M., and Merritt, T. L. 2003. Report from the CDC. Telephone focus groups: An emerging method in public health research. *Journal of Women's Health 12:* 945-951.

Cooperberg, M. R, Broering J. M, and Carroll, P.R, 2009. Risk assessment for prostate cancer metastasis and mortality at the time of diagnosis. *Journal of National Cancer Institute* 16. 101:878-87.

Davidson, B. J, Kirk, P., Degner, L.F and Hassard, T. H 1999. Information and patient participation in screening for prostate cancer. *Patient Education Counellor*. 37.3:255-63

Davies, J. N. P.1984. Pathology of central African natives: Mulago Hospital post mortem studies. *East Afican Medical Journal* 24**:** 352.

De Lavega, E. L. 2004. Awareness, Knowledge, and Attitude about Environmental Education: Responses from Environmental Specialists, High School Instructors, Students, and Parents. Unpublished Dissertation in Partial Fulfillment for the Degree of Doctor of Education in Curriculum and Instruction College of Education, University Central Florida, Orlando, Florida.

Demark-Wahnefried, W., Strigo, T., Catoe, K., Conaway, M., Brunetti, M., Rimer, B. K, and Robertson, C.N., 1995. Screening for prostate cancer among adult men. *Urology* 46.3: 346-51.

Denmeade, S. R. and Isaacs, J. T., 2002. A history of prostate cancer treatment. *National. Review Cancer* 2.5:389-96.

Dennis, L. K, Lynch, C.F and Torner, J. C, 2002. Epidemiologic association between prostatitis and prostate cancer. *Urology* 60.1:78–83.

Deongchamps, B. N., Singh, A., and Haas, G. P. 2007. Epidemiology of Prostate Cancer in African: Another step in the understanding of the disease? *Current Problems in Cancer.* 31.3:226–236. Retrieved on 13th May, 2014 from http://www.ncbi.nlm. nih.gov/ pubmed/17543950.

Dodge, O. G., 1963. Carcinoma of the prostate in Ugandan Africans. *Cancer* 16**:** 1264.

Drury, R. A. B. and Owor, R. 1981. Latent carcinoma of the prostate in Uganda. *East Afican. Medical Journal* 58**:** 732-737.

Ebuehi, O. M, and Otumu, I. U. 2011. Prostate screening practices among male staff of the University of Lagos: Lagos, Nigeria. *African Journal of Urology* 17.4:122–34.

Ejike, C. E and Ezeanyika, L.U. 2009. Lifestyle changes in Nsukka metropolis in relation to prostate cancer and benign prostatic hyperplasia. *Journal of Biology* 24.1: 44-48.

Ejike,C.E. 2006.Towards the Prevention and Management of Prostatic Diseases in Nigeria: A Framework. *Malaysian Journal of Medical Sciences* 18.3: 65-70.

Ekwere, P. D. and Egbe, S. N. 2002. The changing pattern of prostate cancer in Nigerians: Current status in South Eastern States. *Journal of National Medical Association* 94: 619-627.

Elem, B. and Patil, P. S. 1991. Pattern of urological malignancy in Zambia. A hospital based histopathological study. *British Journal of Urology* 67.37-39.

Ferlay, J., *et al*.2012 Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer*, 2015. 136: E359.

Fernando Antonio Glasnerda Rocha Araujo1 and Ubirajara Oliveira Jr, 2017. Current guidelines for prostate cancer screening: A systematic review and minimal core proposal Rev Assoc Med Bras 2018; 64(3):290-296

Figueiredo, J.C, Grau, M.V, Haile, R.W, Sandler, R.S, Summers, R.W, Breasalier R.S, Burke, C. A, Mckeown-Eyassen, G.E, and Baron J.A., 2009. Folic acid and risk of prostate cancer: results from a randomized clinical trial. *Journal of National. Cancer Inst*itute 18.101.6:432-5.

Gallegher, R. P. and Fleshner, N. 1998. Prostate Cancer: individual risk factors. *CMAJ* 159 .7:807-13.

Glover, F. E., Coffey, D.S., and Douglas, L. L., 1998. Epidemiology of prostate cancer in Jamaica. *Journal of Urology* 159.1984-1986.

Guerra, C. E., Jacobs, S. E., Holmes, J. H., and Shea, J. A. 2007. Are doctors examining prostate disease screening with their patients and why or why not? A pilot contemplate. Diary General Internal Medicine 22: 901-907.

Gueye, S.M., Ziegler-Johnson, C.M., and Friebel, T., 2003. Clinical qualities of prostate tumor in African-Americans, American whites and Senegalese men. Urology 61:987-992.

Guttman, C. 2001. Attention to PC, a hazard among low wage urban blacks. Urology Times 29(3): 28-36.

Guz, H., Gursel, B and Ozbek, A 2010. Religious and spiritual practices among patients with cancer. *Journal of religion and health 2:3025-34.*

Gwede, C.K and McDermott, R.. J, 2006. Prostate cancer screening decision making under controversy; implications for health promotion practice. *Health Promotion Practice* 7.1: 134-146.

Haas, G.P., *et al.*2008 The worldwide epidemiology of prostate cancer: perspectives from autopsy studies. *Can J Urol*, 15: 3866.https://www.ncbi.nlm.nih.gov/pubmed/18304396

Hancard, B., Blake, G., and Wolf, C.,.2001.Age specific incidence of cancer in Kingston and St. Andrew Jamaica *1993-1997. West Indian Medical Journal* 50**:**123-129.

Hass, G.P., Nicholas Delongchamps, M. D., Brawley, O. W., Wang, C.Y and Gusstavo de la Roza, M. D. 2008. The World Epidemiology of prostate disease: Perspectives from Autopsy studies.Cancer Journal Urology. 15.1: 3866-3871. Recovered on the thirteenth May, 2014 from http://www.ncbi.nlm.nih.gov/pmc/articles/2706483

Heyns, C. F., Mathee, S., and Isaacs, A., 2003. Issues with prostate particular antigen screening for prostate disease in the essential human services setting in South Africa. BJU International 91:785-788.

Higginson, J. and Oettle, A. G. 2004. Cancer incidence in Bantu and Cape coloured races: Report of cancer survey in Transvaal. *Journal of National Cancer Instutute* 24**:**259.

Hill, P., Wynder, E. L., Garbaczewski, L. and Walker, A. R. 1982. Effect of diet on plasma and urinary hormones in South African men with prostatic cancer. *Cancer Research* 42:3864-3869.

Hoffman, R. M, Gilliland, F.D, Eley, J. W, Harlan, L.C, Stephenson, R. A, Stanford, J. L, Albertson, P. C, Hamilton, A. S, Hunt, W. C, and Potosky, A. L. 2001. Racial and ethnic differences in advanced-stage prostate cancer: the prostate cancer outcomes study. *Journal of National Cancer Institute* 93.5: 388-95.

Houston, W. 1972. The Bantu prostate. A study of prostatic disease in Central Africa. *Journal of Urology* 108:943.

Hsing, A. W. and Chokkalingam, A. P. 2006. Prostate cancer epidemiology. *Frontiers in Bioscience*. 11: 1388-1413

Ikuerowo SO, Omisanjo OA, Bioku MJ, Ajala MO, Mordi VP, Esho JO. 2013. Prevalence and characteristics of prostate cancer among participants of a community-based screening in Nigeria using serum prostate specific antigen and digital rectal examination. Pan Afr Med J 2013; 15:129

Jackson, M. A., Ahluwalia, B. S. and Herson, J. 1977. Characterization of prostatic carcinoma among blacks: A continuation report. *Cancer Treatment Repository* 61**:**167-172.

Jackson, M. A., Ahluwalia, B. S.and Attah, E. B.1975.Characterization of prostatic carcinoma in Blacks: A preliminary report. *Cancer Chemotherapy Repository* 59**:**3-15.

Jackson, M. A., Kovi, J. and Heshmat, M.Y.1980. Characterization of prostatic carcinoma among blacks: A comparison between low incidence area Ibadan Nigeria and high incidence Washington DC. *Prostate.*1**:** 185-205.

Jemal, A., Murray, J., and Ward, E. 2005. Cancer statistics: *A Cancer Journal for clinicians*. 55.1: 10-30.

Jernigan, J. C., Trauth, J. M., Neal-Ferguson, D. and Carter-Ulrich, C. 2001. Factors that influence cancer screening in older African American men and women: Focus group findings. *Family and Community Health 24*.3: 27-33.

Jon Johnson 2018 Can women get prostate cancer? Medicalnewstoday.com

Junior, I. M, Leach, R. J and Ankerst, D. P. 2014. Focusing PSA testing on detection of high-risk prostate cancers by incorporating patient preferences into decision making. JAMA 312.10:995– 99.

Kehinde, E. O. 1995. The geography of prostate cancer and its treatment in Africa. *Cancer Survey* 23:281- 286.

Kenerson, D. 2010. Utilization of the hypothesis of arranged conduct to survey prostate malignancy aim among African American men. Europe Pub Med Central Mayo Foundation for Medical training and Research. 2012. Prostate malignancy screening: Should you get a PSA screening ailments and Conditions. Prostate disease. Recovered on twelfth April, 2014 from www.mayoclinic.org/.../prostate-tumor/in.../prostate-malignancy/workmanship 2004808

Kleier, J. H. 2003. Prostate disease in dark men of African Caribbean drop. Diary of Cultural Diversity 10:56-61.

Kovi, J., Jackson, M. A., and Rao, M.S. 1982. Cancer of the prostate and ageing: An autopsy study in black men from Washington DC and selected African cities. *Prostate* 3**:** 73-80.

Krish, V.A , Peters, U., Mayne, S. T., Subar, A. F, Chatterjee, N., Johnson, C. C., and Hayes, R. B. 2007. Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial. *Journal National Cancer Insutitute* 99.15*: 1200-9*

Lambert, S., Fearing, A. and Bell, D. 2002. A comparative study of prostate screening, health beliefs and practices between African American and Caucasian men. *ABNF Journal* 13:61–3.

Lawson, K. A., Wright, M. E, Mouw, T., Hollenbeck, A., Schatzkin, A. and Leitzmann, M. F. 2007. Multivitamin use and risk of prostate cancer in the National Institute of Health-AARP Diet and Health Study. *Journal of Natioanal Cancer Institute* 99.10: 754-64

Lee, M. M., Gomez, S. L, Chang, J. S, Wey, M., Wang, R. T. and Hsing, A. W. 2003. Soy and Isoflavone Consumption in relation to prostate cancer risk in China. *Cancer Epidmiology Biomarkers Preview* 12.7: 665-8

Lichtenstein, P., Holm, N. V., Verkasalo, P.K., Iliadou, A., Kaprio, J. and Koskenvuo, M. 2000. Environmental and heritable factors in the causation of cancer--analyses of cohorts of twins from Sweden, Denmark, and Finland. *National England Journal Med*icine 343.2:78–85.

Lidell C, Barrett L, Bydawell M., 2005. Indigenous representations of illness and AIDS in Sub-Saharan Africa. *Soc Sci Med.*;60:691–700. doi: 10.1016/j.socscimed.2004.06.020

Lister, S., 2009. Urine test could speed treatment of prostate cancer. London: *The Sunday Times.* Retrived 9th August 2016

Ma, R. W. and Chapman, K. 2009. A systematic review of the effect of diet in prostate cancer prevention and treatment. *Journal of Human Nutrition Dietetics* 22:187-199

Magoha, G. A. O. 1995. Epidemiological and clinical parts of accidental carcinoma of the prostate in Africans: Experience at the Lagos University Teaching Hospital, Lagos and the Kenyatta National Hospital, Nairobi. East Africa Medical Journal 72:283-287

Mathers CD, Lopez AD, Murray CJ 2006. The burden of disease and mortality by condition: Data, methods, and results for 2001. In: Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL, editors. Global Burden of Disease and Risk Factors. Washington, DC: The International Bank for Reconstruction and Development/The World Bank Group

Mayo Foundation for Medical training and Research. 2012. Prostate growth screening: Should you get a PSA screening? ailments and Conditions. Prostate tumor. Recovered on twelfth April, 2014 from www.mayoclinic.org/.../prostate-malignancy/in.../prostate-tumor/workmanship 2004808

Mesfin H. Kahissay, Teferi G. Fenta, and Heather B, 2017. Beliefs and perception of ill-health causation: a socio-cultural qualitative study in rural North-Eastern Ethiopia. *BMC Public Health*. 2017; 17: 124

Mill operator, D.C.; Gruber, S.B., Hollenbeck, B. K., Montie, J. E. furthermore, Wei, J. T. 2006. Occurrence of introductory neighborhood treatment among men with bring down hazard prostate malignancy in the United States. Diary of National Cancer Institute 98.16: 1134-41

Mill, D. C., Hafez, K. S., Stewart A, Montie, J. E and Wei J. T 2003. Prostate carcinoma introduction, determination and organizing: a refresh from the National Cancer Data Base. Tumor 98.6: 1169-7

Mofolo N, Betshu O, Kenna O, Koroma S, Lebeko T, Claassen FM, et al. 2015 Knowledge of prostate cancer among males attending a urology clinic, a South African study. *Springer Plus* 4(67):6

MOH. National strategy for cancer control in Ghana, 2012–2016.2011:72.

Molazem, Z Ebadi, M, Khademian, M and Zare, R, 2016. Effects of an Educational Program for Prostate Cancer Prevention on knowledge and PSA Testing in Men over 50 Years old in Community Areas of Shiraz in 2016 Asian Pac J Cancer Prev. 2018; 19(3): 633–637

Moore, K. and Dalley, A. 1999. Clinically oriented anatomy. Baltimore, Maryland: *Lippincott Williams and Wilkins*. ISBN 0-683-06132-1

Mould, J. W., Doughlas, T. H. and McCarthy, W. F. 1996. Black in adverse prognostic factor for prostate cancer recurrence following radical prostatectomy in equal access health care setting. *Journal of Urology* 155: 1667-1673.

Movsas, S. 1966. Prostatic obstruction in the African and Asiatic. *British Journal of Surgery* 53:538.

Naik, K. G. 1977. Pattern of tumours of the male genitalia in Zambia. *Int. Surg.*62:356-357.

Nakandi, M., Kirabo, C., Semugabo, A., Kittengo, P., Kita-Yimbwa , S., Kalungi , J. Maena 2013. Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. *African Journal of Urology* 19, 165–170

National Cancer Institute. 2012. What you need to know about prostate cancer. *National Cancer Institute*. Accessed June 16th, 2013 from http://www.cancer.gov/ cancer topics/ wyntk/prostate

Nkposong, E. O. and Lawani, J. 1973. Primary carcinoma of the prostate in Ibadan. *West Africa Medical Journal* 22: 108.

Nnodimele, O. A., Motunrayo, F. O., Ademola, M. A., and Omotoyosi, A. 2010. Level of Awareness, Perception and Screening Behavior regarding prostate Cancer Among men in rural Community of Ikenne Local Government Area, Nigeria. *Primary Prevention* Insights. 10 (2):11-12. Retrieved on the 13thApril, 2013 from http://www.la-press.com

Obrien, T. G., Guo, Y., and Vivasnathan, K. *2004*. Differences in ornithine decarboxylase and androgen receptors alleles frequencies among ethnic groups. *Molecular Carcinogen*. 41:120-123.

Odedina F.T, Akinremi TO, Chinegwundoh F, Roberts R, Yu D, Reams RR, et al. 2009. Prostate cancer disparities in Black men of African descent: a comparative literature review of prostate cancer burden among Black men in the United States, Caribbean, United Kingdom, and West Africa. Infect Agent Cancer. 4(S1):S2. http://dx.doi.org/10.1186/1750-9378-4-S1-S2 PMID:19208207

Odedina, F. T., Ogunbiyi J. O., Ukoli, F. A. 2006. Roots of prostate cancer in African-American men. *Journal of National Medical Assoc*iation 98.4:539-43.

Odedina, F.T., Akinremi, T. O, Chinegwundoh, F., Roberts, R., Daohai Y. U., Reams, R., Freedman, M. L., Rivers, B., Green, B. and Kuma, N. 2009. Prostate cancer disparities in black men of Africa decent: A comparative literature review of prostate cancer burden among black men in the U.S, Caribbean, UK and West Africa. *Infectious agents and cancer* 4.1:52

Ogunbiyi JO, Shittu OB 1999. Increased incidence of prostate cancer in Nigerians. J Natl Med Assoc 1999;91:159-64.

Ogunbiyi, J. O. 2013. *Cancer in Nigeria:* A pathologist's view*: The Nation*. Retrieved on the 9th September, 2013 from http://thenationonlineng/news/cancer-in-nigeria-a-pathologistview/

Ogunbiyi, J. O. and Shittu O. B. 1999. Increased incidence of prostate cancer in Nigerians. *Journal of National Medical Assoc*iation 91:159-164.

Ogundele and Ikuerowo, 2015. A survey of the awareness of prostate cancer and its screening among men attending the outpatient clinics of a tertiary health center in Lagos, Nigeria 21 (115-118)

Ogundele, S.O and Ikuerowo S.O, (2015). A survey of the awareness of prostate cancer and its screening among men attending the outpatient clinics of a tertiary health center in Lagos, Nigeria 21(115)

Ogundipe, S. and Obinna, C. 2008.*Why cancer is on the rise in country*. Accessed 20th May, 2013 from http://allafrica.com/stories/200806170258.html

Ogunlewe, J. A. and Osegbe D. N. 1989. Zinc and cadmium concentrations in indigenous normal, hypertrophic and malignant prostate. *Cancer* 63:1388-1392.

Ogunsanya, M. E., Brown, C. M., Odedina, F. T., Barner, J. C., Adedipe, T. B., and Corbell, B. 2017. Knowledge of Prostate Cancer and Screening among Young Multiethnic Black Men. American Journal of Men's Health, 11(4), 1008–1018. http://doi.org/10.1177/1557988316689497.

Olademeji E., 2016. Effects of an Educational Program for Prostate Cancer Prevention on knowledge and PSA testing in men over 50 Years old in Community Areas of Shiraz in 2016

Oladimeji, O, Bidemi, Y, Olufisayo, J.A, Sola, A. 2010. Prostate cancer awareness, knowledge and screening practices among older men in Oyo State, Nigeria. *International Quater Community Health Education* 30.3:271–86.

Oliver, J., and Grindel, C. 2006. Beliefs and attitudes about prostate cancer and prostate cancer screening practices among rural African American men. *Oncology Nursing Forum 33*.2: 454.

Omoniyi T. O 2016. Environmental knowledge and attitude as correlates of senior secondary school students' environmental practices; submitted to the department of Teacher Education, University of Ibadan, Ibadan Unpublished

Osegbe DN. Prostate cancer in Nigerians: Facts and nonfacts. J Urol 1997;157:1340-3

Osegbe, D. N.1997. Prostate growth in Nigerians: Facts and no-realities. Diary of Urology 157:1340-1343.

Osegbe, D.N. furthermore, Magoha, G. A.1982. The impact of rectal examination on serum corrosive phosphatase levels in favorable and harmful prostatic ailment. Postgraduate Medical Journal 58:763-766.

Osinubi, P. 2011. Early screening is the best prevention. *Vanguard Newspaper*. Retrieved on 13th April, 2014 from http://www.vanguardngr.com/2011/02/early-screening-is-the-best-preventionsays-osi

Partin, M. R., Nelson, D., Radosevich, D., Nugent, S., Flood, A. B., Dillon, N., Holtzman, J., Haas, M., and Wilt, T. J. 2004: Randomized trial examining the effect of two prostate cancer screening educational interventions on patient knowledge, preferences and behaviors. *Journal of General Internal Medicine* 19:835-42.

Peters, U., Leitzmann M. F., Chatterjee, N., Wang, Y., Albanes, D., Gelmann, E. P., Friesen, M. D., Riboli, E. and Hayes, R. B. 2007. Serum lycopene, other carotenoids, and prostate cancer risk: a nested case-control study in the prostate, lung, colorectal and ovarian cancer screening trial. *Cancer Epidemiology Biomarkers Preview* 16.5: 962-8

Pillay, V., Dass, C. R., Choong, P. F. 2007. The urokinase plasminogen activator receptor as a gene therapy target for cancer. *Trends Biotechnology* 25:33-39

Polednak, A. P. and Flannery J. T. 1992. Black versus white racial differences in clinical state at diagnosis and treatment of prostate cancer in Connecticut. *Cancer.*70:2152-2158.

Price, J. H., Colvin, T. L. and Smith, D. 1993. Prostate cancer: Perceptions of African-American males. *Journal of the National Medical Association*, 85.12: 941-947.

Prorok PC, Andriole GL, Bresalier RS, Buys SS, Chia D, Crawford ED, *et al*. 2000. Design of the prostate, lung, colorectal and ovarian (PLCO) cancer screening trial. *Control Clin Trials* 2000; 21 6 Suppl: 273S-309.

Rebbeck TR, Devesa SS, Chang BL, Bunker CH, Cheng I, CooneyK, 2013. Global patterns of prostate cancer incidence, aggressiveness, and mortality in men of African descent. *Prostate Cancer*, 560857

Rebbeck, T. R., Zeigler-Johnson, C.M., Heyns, C. F and Gueye, S.M. 2011. Prostate tumor screening rehearses among Sub-Sahara African urologists. African diary of urology. 17.3:85-91.

Reddy, S.,Shapirao, M., Morton, R. what's more, Brawley, O.W. 2004. Prostate growth in high contrast Americans. Diary of Cancer and Meastatic Reviews 22:83-86.

Rishi, I., Baiduri, H. furthermore, Abbasi, J. A. 2003. Prostate growth in African American men is related with down direction of zinc transporters. Appl. Immunohistochem. Mol. Morphology l1:253-260.

Schapira, M. M. and Van Ruiswyk, J. 2000. The effect of an illustrated pamphlet decision-aid on the use of prostate cancer screening tests. *Journal of Family Practice* 49.5: 418-24

Schröder FH, Hugosson J, Roobol MJ, Tammela TL, Ciatto S, Nelen V, et al. 2009. Screening and prostate-cancer mortality in a randomized European study. N Engl J Med 2009;360:1320-8.

Schulman, C. C., Kirby, R. and Fitzpatrick, J. M. 2003. Awareness of prostate cancer among the general public: findings of an independent international survey. *European Urol ogy* 44: 294-302

Shannon, J, Tewoderos, S, Garzotto, M, Beer, T. M, Derenick, R, Palma A. and Farris, P. E. 2005. Statins and prostate cancer risk: a case-control study. *American. Journal of Epidemiolology* 162(4): 318-25

Shirley, S. E., Coffey, C. T., Sargearnt, L. A. and Tulloch, T. 2002. Clinicopathological features of prostate cancer in Jamaican men. *BJU International* 89: 390-396.

Shittu, O. B. and Kamara, T.B. 2001. Transrectal Biopsy of the Prostate Gland in Ibadan. Nigeria. *Journal of Surgical Research* 3:3-4

Sierra MS, Soerjomataram I, Forman D 2016 Etiology of prostate cancer (C61) in Central and South America. In: Cancer in Central and South America. Lyon: International Agency for Research on Cancer. Available from: http://www-dep.iarc.fr/CSU_resources.htm, accessed [4/5/2019].

Sighoko D, Oluwole O, Zheng Y, Olopade O.I, 2013. Opportunities in genetic epidemiology in developing countries. In: Soliman A, Schottenfeld D, Boffetta P, editors. Cancer epidemiology: low-and middle-income countries and special populations. Oxford: Oxford University Press; pp. 63–4. http://dx.doi.org/10.1093/med/9780199733507.003.0004

Silverberg, E. and Lubera, J. A. 1989. Cancer statistics - C. A. *Cancer Journal of Clinicals* 39:3-20.

Steele, C. B., Miller, D. S., Maylahn, C., Uhler, R. J.,and Baker, C. T. 2000. Knowledge, attitudes and screening practices among older men regarding prostate cancer. *American Journal of Public Health, 90*(10), 1595-1600.

Steinberg, G. D., Carter, B. S., Beaty, T. H., Childs, B., Walsh, P. C. 1990. Family history and the risk of prostate cancer. *Prostate* 17.4:337-47

Stroud, L., Ross, L. E. furthermore, Rose, S. W. 2006. Developmental assessment of the prostate tumor screening practices of African American doctors. Diary National Medical Association. 98.10:1637– 1643.Retrieved on seventh May, 2014. http://www.ncbi. nlm.nih.gov/pmc/articles/pmc2569742

Struewing, J. P., Hartge, P, Wacholder, S., Baker, S. M., Berlin, M., McAdams, M., Timmerman, M. M., Brody, L. C., Tucker, M. A . 1997. The risk of cancer associated with specific mutations of BRCA1 and BRCA2 among Ashkenazi Jews. *National England Medicine* 336.20: 1401-8

Talcott, J. A., Spain, P., Clark, J. A., Carpenter, W. R., Do, Y. K. and Hamilton, R.J. 2007. Shrouded hindrances among information and conduct: The North Carolina prostate malignancy screening and treatment encounter. Growth 109.8: 1599-1606

Thompson, I. M., Resnick, M. I., Klein, E. A. (Eds.). 2001. Prostate malignancy screening. Totowa New Jersey: Humana Press.

Tolis, G., Ackman, D., Stellos, A., Mehta, A., Labrie, F., Fazekas, A. T., Comaru-Schally, A. M., Schally, A.V. 1982. Tumor growth inhibition in patients with prostate carcinoma treated with luteinizing hormone-releasing hormone agonists. *Proc Natl Acad Sci USA* 79(5):1658-62

U.S. Department of Health and Human Services. 2006. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General—6 Major Conclusions of the Surgeon General Report. Atlanta. *U.S Department of Health and Human Services, Centers for Disease Control and Prevention*. Retrieved on 24th May, 2014 from http://www.cdc.gov/tobacco/data_statistics/sgr/ 2006 /highlights/ cancer

Udeh, F. N. 1981. Prostatic carcinoma in Nigeria: A 10 year retrospective study. *Journal of Int. Urol. Nephrol.*13: l59-166.

Ukoli F, Osime U, Akereyeni F, Okunzuwa O, Kittles R, Adams-Campbell L. 2003. Prevalence of elevated serum prostate-specific antigen in rural Nigeria. Int J Urol 2003;10:315-22.

Urology Care Foundation - What is Prostate Cancer? 20i8 http://www.urologyhealth.org/urologic-conditions/prostate-cancer/printable-version

Vander, Cruijsen-Koeter, I. W., Vis, A. N., Roobol, M. J., Wildhagen, M. F., de Koning, H. J., Van der Kwast, T. H., and Schroder, F. H., 2005. Comparison of screen detected and clinically diagnosed prostate cancer in the European randomized study of screening for prostate cancer. .*Journal of Urology* 174.1: 121-5

Vint, F. W.1935. Malignant disease in the African natives of Kenya. *Lancet.*2**:**628.

Volk, R. J, Spann, S. J, Cass, A. R and Hewley, S. T. 2003. Patient education for informed decision making about prostate cancer screening: a randomized controlled trial with 1-year follow-up. *Annal of Family Medicine* 1.1: 22-8

Volk, R. J. and Spann S. J, 2000. Decision-aids for prostate cancer screening. *Journal of Family Practice* 49.5:425-7

Walker, A.L.R., Walker, B. F., Isaacson C., Doodha, M. I. and Segal I. 1986. Survival of black men with prostate cancer in Soweto and Johannesburg, South Africa. *Journal of Urology* 135:58-59.

Walsh, P. C., Lepor, H. and Eggleston, J. C. 1983. Radical prostatectomy with preservation of sexual function: anatomical and pathological considerations. *The Prostate* 4.5: 473-85

WCRF/AICR 2007 Food, nutrition, physical activity, and the prevention of cancer: a global perspective. World Cancer Research Fund/American Institute for Cancer Research. Available from: http://www.dietandcancerreport.org/cancer_resource_center/downloads/Second_Expert_Report_full.pdf

Weinrich, M. 1998. Recruitment of African Americans into Prostate cancer screening: *Cancer Practice* 6: 23-29.

Weinrich, S. P, Greiner, E., Reis-Starr, C., Yoon, S. furthermore, Weinrich, M. 1998. Indicators of interest in prostate disease screening at worksites. Diary of Community Health Nurssing 15.2: 113-29

Weinrich, S. P, Weinrich, M. C, Boyd, M. D. furthermore, Atkinson, C. 1998. The effect of prostate malignancy information on growth screening. Oncololgy Nurs Forum. 3: 527-34

Weinrich, S. P., Reynolds, W. A., Tingen, M. S., and Starr, C. R. 2004. Barriers to prostate cancer screening. *Cancer Nursing* 23.2: 117- 121.

Weinrich, S. P., Seger, R., Miller, B. L., Davis, C., Kim, S. and Wheeler, C. 2004. Learning of the restrictions related with prostate tumor screening among low-pay men. Disease Nursing 27.6: 442-450.

Weinrich, S. P., Weinrich, M. C., Boyd, M. D. furthermore, Atkinson, C. 1998. The effect of prostate malignancy information on growth screening. Oncology Nursing Forum 25.3: 527-534.

Weinrich, S. P., Yoon, S. and Weinrich, M. 1998. Predictors of participation in prostate cancer screening at worksites. *Journal of Community Health Nursing* 15.2: 113- 129

WHO, 2001 Legal status of traditional medicine and complementary/alternative medicine. A worldwide review. Geneva: World Health Organization; 2001.

WHO, IARC. GLOBOCAN 2012: Estimated cancer incidence, mortality, and prevalence worldwide in 2012, in: *World Health Organization; International Agency for Cancer Research, 2015.*

Wigle, D. T., Turner, M. C., Gomes, J., Parent, M. E. 2008. Job of hormonal and different factors in human prostate disease. Diary of toxicology and natural wellbeing, Part B, basic surveys 11.3-4: 242-59

Wilkinson, S., List, M., Sinner, M., Dai, L. and Chodak, G. 2003. Educating African-American men about prostate cancer: Impact on awareness and knowledge. *Urology,* 61: 308-313.

Wilkinson, S., List, M., Sinner, M., Dai, L., Chodak, G. 2003. Instructing African-American men about prostate malignancy: affect on mindfulness and information. Urology. 61.2: 308-313

Willis MS, Wians F, 2003. The role of nutrition in preventing prostate cancer: a review of the proposed mechanism of action of various dietary substances. *Clin Chim Acta*. 330(1-2):57–83. http://dx.doi.org/10.1016/S0009-8981 (03)00048-2 PMID: 12636926

Wiredu, E. K. also, Armah, H. B. 2006. Malignancy mortality designs in Ghana: A multiyear survey of post-mortem examinations and healing center mortality. BMC Public Health 6: 159.

Witte, J.S. 2010. Personalized Prostate Cancer Screening: Improving PSA Tests with genomic information. *Science Translational Medicine* 2.62: 62

Wolf, A. M, Nasser, J. F., Shorling, J. B. 1996. The effect of educated assent on quiet enthusiasm for prostate-particular antigen screening. Archieve of Internal Medicine 156: 1333-1336

Woods, V. D., Montgomery, S. B., Billiard, J. C., Ramirez-Johnson J. also, Wilson, C. M. 2004. Culture, Black men and prostate malignancy: What is reality? Malignancy Control. 11.6: 388-396

World Health Organization. The Global Health Observatory. 2012.

World, Health Organization. 2004. World Health Report: Changing history. Accessible at http://www.who.int/whr

Yawe KT, Tahir MB, Nggada HA. Prostate cancer in Maiduguri. West Afr J Med 2006; 25:298-300

Yawe, K. T., Tahir, M. B. also, Nggada, H. A. 2006. Prostate malignancy in Maiduguri. West Africa Medical Journal 25: 298-300.

Youthful, H. H. 1905. Four instances of radical prostatectomy .John Hopkins Bulletin. 16.

Zeigler-Johnson, C. M., Walker, A. H. and Mancke, B. 2002. Ethnic differences in the frequency of prostate cancer susceptibility alleles at SRDSA2 and CYP3A4.*Human Hereditary* 54:13-21.

QUESTION GUIDE FOR FOCUS GROUP DISCUSSION (QGFGD)

Dear Participant,

You are invited to participate in this discussion being organized by a research student from the Department of Nursing, University of Ibadan. The researcher is interested to determine the Prostate educational intervention on the knowledge and screening uptake among men in selected hospitals in Cross River State, Nigeria.

To fully understand these, it is necessary to talk with as many people as possible that may have not gotten the disease. The information gathered shall help to formulate plans to ensure awareness of prostate cancer and screening uptake.

All information given is used for this purpose and confidentiality is assured. Your participation is anonymous and voluntary. Your honest answers to questions and co-operation are required.

For purposes of recall of information given, the group discussion will be audio taped. Your permission for this is also sort.

SECTION A: DEMOGRAPHIC DATA OF PARTICIPANTS

1. Participant Initials
2. Age
3. Sex
4. Educational attainment
5. Ethnic group
6. Occupation
7. Religion
8. Marital status
9. Reason for attending outpatient clinic

SECTION B

Instruction to facilitator: Begin the discussion with an introduction that should include the purpose of the discussion, the guidelines and your bio data. Elicit similar self-introduction from discussants.

1. We would like to begin this discussion by finding out the kinds of information given to patients/relations by the various health workers about prostate cancer. Discuss the much you could recall about, what prostate cancer is, causes, risk factors, signs /symptoms, etc who provided the information and whether it was adequate. If not what other information need to be provided?

2. Many times our impression about our attitude to something is based on what people say. What are those things people have said or told you about prostate cancer generally that may have affected your attitude to screening uptake of prostate cancer? Who are they? Do you think this information affected your attitude to early detection of prostate cancer?

3. What are the likely causes, signs and symptoms of prostate cancer, you may have heard. Can prostate cancer be prevented? What would be done to prevent it?

4. After being informed of prostate cancer. Did you do anything to prevent suffering from prostate cancer? If so, what are they?

5. What does screening for Prostate cancer mean?

6. Do you know or have heard of any likely type of screening that could be utilized to recognize early event of prostate tumor? What are the screening tests?

7. Who does the screening and how often are these screening tests done? How should screening for prostate cancer be performed?

8. How accurate are the screening tests for the detection of prostate cancer?

9. What if the results of the screening tests indicate that you have prostate cancer? What will you do?

10. What do you think are the benefits of prostate cancer screening?

11. What are the likely treatments for prostate cancer?

12. Does the treatment have side effects? Explain the likely side effects.

APPENDIX 1I

PATIENT INFORMED CONSENT FORM

Introduction to Interviewer

Please read the introductory statement to the respondent. His response will determine whether you should proceed with the interview.

Introductory Statement

Dear Respondent,

You are being invited to participate in this study concerning prostate cancer knowledge and screening uptake being conducted by Justin Agorye Ingwu, a student of the Department of Nursing, University of Ibadan.

Purpose of study

The purpose of the study was to determine the Prostate educational intervention on the knowledge and screening uptake among men in selected hospitals in Cross River State, Nigeria. The result of the study, it is hoped that increase knowledge about prostate cancer and screening uptake will help men to appreciate the need to recognize signs and symptoms of prostate cancer and aid informed decision making.

Procedure of the Research

The study lasted for four weeks of training of participants in each hospital. During the study, participants in intervention hospitals received the educational intervention on knowledge and screening uptake for early detection of prostate cancer. While at the control hospitals, participants were not exposed to formal educational intervention but only the routine lecture delivered by nurses on duty. The decision of which group of participants will receive educational

intervention was determined by chance. However, the participants that were not exposed to the educational programme during the study but received it at the end. The participants were required to fill a questionnaire at interval of every months during the study for three months duration.

Confidentiality: Your participation does not require giving your name. Any information given, or reports and publications from this study shall not bear your name.

Voluntariness: Participation is also voluntary and you are free to refuse or withdraw from the study at any time you wish without denying your standard of care. Since people react differently to information, you are free not to answer any question or participate in any discussion you find very sensitive.

Risk(s): There are no risks involved in your participation in the study.

Costs to the participants in joining the Research: Your participation in this research will cost nothing.

Benefit(s): The goal of this study is to create prostate cancer awareness and informed decision for PC screening practices.

Due inducement(s): You will not be paid any fees. However, you will be compensated with refreshments and lunch for participating in the educational programme of this research.

What Happens to Participants and Communities when Research is over?

Hospital management will be informed of the outcome of study. Management will be encouraged to continue with the prostate cancer knowledge programme for informed decision by the patients.

Statement of Sharing Benefits among Researchers and whether this include or exclude Research Participants:

There is no plan to contact any participant either now or in the future about commercial benefits.

Conflict of Interest: No form of conflict or interest in this study.

Statement of Person Obtaining Informed Consent:

I have explained fully and have given sufficient information including purpose, method, benefits and risks of this study to Mr. ……..... to make an informed decision.

Name …….. Signature and Date…….

Statement of Person Giving Consent:

Now that the study has been described and explained to me, and I fully understand the content of the study process, I am willing to take part in the study. I understand the purpose, method and benefit of the study and that there are no risks involved. I have a copy of this informed consent.

…… ……

Signature of participant/date Signature of researcher/date

Detailed contact information of the Principal Investigator.

The Principal Investigator, Mr. Justin Agorye Ingwu, can be contacted at the Department of Nursing, University of Ibadan. GSM Number 08063601549.

APPENDIX 111

QUESTIONNAIRE

Instruction to Interviewer: Tick [√) or circle appropriately or write down the participants' responses in the spaces provided

Section A: Demographic and medical data

Serial Number ……..

Name of Hospital…….

1 How old were you during your last birthday? .....

2 Marital status 1. Married [ ] 2. Never married [ ] 3. Separated [ ]

4. Widower [ ] 5. Divorced [ ] 6.Co-habiting [ ]

3 Highest educational background/qualification

1. No formal education [ ] 2. Primary school [ ]

3. Adult education [ ] 4. Secondary school [ ]

5. Diploma [ ] 6. Degree [ ]

4. Which ethnic group do you belong?

1. Efik [ ] 2.Yoruba [ ] 3.Hausa [ ] 4. Ekoi [ ] 5. Igbo [ ]

Others, please specific…….

5. What do you do for a living?

1. Civil servant [ ] 2. Self-employed [ ] 3. Employed in a paid job [ ]

4. Retiree [ ] 5. Student/apprentice [ ] 6.others, please specify ……

6. Which religion do you practice?

1. Traditional African religion [ ] 2. Islam [ ]

3. Christianity [ ] 4. Others please specify……

7. Please what is your household income level per month?

Belief about causation of prostate cancer

9. Do you think illness?

SN	Option	Yes	No
1	Illness is from God and His will shall prevail		
2	Illness is as a result of your sin or parental sin		
3	Spiritual attack from the evil one		
4	Microorganisms is cause of illness		

10. Which of the following places do you or your family attend when ill? Please tick as many options as applicable

1. Traditional medicine [ ] 2. Church medicine [ ]

3. Prayer medicine [ ] 4. Hospital medicine [ ]

Section B: Knowledge of Prostate Cancer

11. Have you ever heard of prostate cancer?

1. Yes [ ] 2. No [ ]

12. What is the source(s) of your information? (Tick as many as applicable)

1. Television/Radio [ ] 2.Hand bills [ ] 3.Video films [ ] 4.Intervention package [ ]

5. Friend/Relative [ ] 6. Health professional [ ]

Please select only one (1) response for each of the statement below:

SN	VARIABLE **Knowledge of risk factors and symptoms of prostate cancer**	True (yes)	False (No)	Not sure/ Don't Know
1.	The family history of a prostate tumour is a hazard to other male individuals			
2.	A man can have a prostate tumour and have no issues or side effects			
3.	More youthful men will probably get prostate malignancy than more seasoned men.			
4.	I can have a prostate tumour and have a typical PSA blood test			
5.	One can have a prostate tumour and won't think about it			
6.	The most widely recognized reason for disease in men is prostate growth			
7.	Prostate growth influences the two guys and females			
8.	The prostate disease may develop gradually in a few men.			
9.	Visit torment frequently in your lower back could be an indication of a prostate tumour			
10.	Blacks have a higher rate of a prostate tumour than Whites			
	Knowledge of PC screening and side effect from treatment			
12.	Most seventy year aged men need not bother with a prostate tumour			

	screening.			
13	A few medicines for the prostate disease can make it harder for men to control their pee.			
14	A few medicines for the prostate disease can make issues with a man's capacity have intercourse.			
15	Doing prostate self-examination/Digital Rectal Exam (DRE) or Prostate Specific Antigen (PSA) is sufficient to test for prostate growth.			
16	Specialists can tell which men may kick the bucket from a prostate tumour and which men won't be hurt by prostate growth.			
17	A prostate specific antigen (PSA) blood test implies I have a prostate tumour without a doubt.			
18	A rectal examination is critical in checking for prostate malignancy.			
19	The prostate specific antigen is a blood test that can distinguish prostate malignancy.			
20	Prostate disease can be cured whenever identified early.			
21	The prostate can be averted by normal exercise.			
22	It is prescribed to have a yearly rectal examination starting at age 40.			
23	I ought to have a yearly blood test for a prostate tumour beginning at age 40.			
24	Test for prostate malignancy is required just when one has side effects or issues.			

Section C. Attitude: Please select one (1) response for each statement

SN	VARIABLE	Strongly Disagree	Disagree	I don't know	Agree	Strongly Agree
1	I figure I ought to have a rectal examination carried out on the situation of Prostate disease now?					
2	I feel embarrassed and awkward to have my rectum uncovered.					
3	Setting off to a specialist for advanced rectal examination will just add to my costs.					
4	I feel setting off to a specialist once a year for DRE is fundamental.					
5	I think submitting for DRE to make certain of PC on time is critical.					
6	Not doing DRE on account of its agony.					
7	Not submitting for PC test on account of dread of the result.					
8	I don't get checked for PC since it is humiliating.					
9	I think there is a requirement for Prostate tumour check?					
Participants attitude towards risk factors and treatment of PC						
11	I don't get checked for prostate growth in light of the fact that in the event that it is found and treated, I might be not able to engage in sexual relations (penile erection).					
12	I feel Black men have a higher rate of Prostate Cancer than Whites.					
13	I think Digital Rectal Examination is a speedy straightforward test, non-agonizing by any means.					
14	I feel that getting a blood test for Prostate					

	Cancer is simple.					
15	I feel that any test for Prostate Cancer is futile on the grounds that there's no fix.					
16	Men are in danger of getting Prostate tumor.					
17	As I get more established, I am more in danger of Prostate growth.					

Section D: Screening Uptake of Prostate Cancer

1. Have you ever carried out any test to look out for prostate cancer?

   a. Yes [ ] b. No [ ]

2. If yes, how old were you when you had your first prostate cancer screening?

3. If yes, which of the following screening test(s) did you undergo for early detection of prostate cancer? **Please tick as many as applicable**

   a. Prostate serum antigen only [ ]

   b. Digital rectal examination only [ ]

   c. Prostate serum antigen and digital rectal examination [ ]

   d. Any other test please specify……

4. Have you ever examined your prostrate for detection of prostate cancer?

   a. Yes [ ] b. No [ ]

5. If yes, how long ago?

   < 1year ago [ ]
   1-2 years ago [ ]
   2-3 years ago [ ]
   3-4 years ago [ ]
   4-5 years ago [ ]
   More than 5 years ago [ ]
   Don't remember [ ]

6. Who did the prostate examination? A. self [ ] b. Health personnel [ ] c. Friend [ ]

   d. Others please specify……..

7. How many times in a year do you do prostate examination?

   a. One Time [ ] b. Twice [ ] c. Thrice d. I don't know [ ]

8 In the past 12 months, how many times have you carried out prostate examination?

Times [ ] I don't know [ ]

9 In the past 12 months, how many times have you visited health workers for prostate examination?

Once [ ] Twice [ ] I don't know [ ]

10 Have you ever had a Prostate Specific Antigen (PSA) blood test?

Yes [ ] No [ ]

11. If yes, how long ago?

Within the last year [ ]

1-2 years ago [ ]

2-3 years ago [ ]

Over 3 years ago [ ]

Don't remember [ ]

12. Would you like to have PC screening tests?

Yes [ ] No [ ]

Section E: Perceived reasons that influence screening uptake of prostate cancer

Please tick as many as applicable to you

Reasons	Not at all important	Highly important
- For significant serenity		
- Worry about malignancy		
- the dread of having PC		
- Screening is free/shoddy		
- The convenience of healing facility		
- The reputation of healing facility		
- PC has been in the news		
- Screening is prescribed by companion		
- Screening prescribed by wellbeing proficient		
- The family history of PC		
- The family history of different malignancies		
- Pain while urinating		
- Problem having intercourse		

- Part of the normal registration - Wanting a second feeling		

Others please specify……

APPENDIX 1V: Mbume nda usung emi edade eneme nneme otu owo.

Andino unyime nneme edi UCTH/MOH IRC NO:

Ndima (Ndito ete Andibuana,)

Ekot fi edibuana ke nneme otu owo, andikot nneme emi edi eyen ufok-nwed nta-ifiok (University of Ibadan, Nursing Departmment). Eyen ufok-nwed nta-ifiok emi (anam ndungore) anam ndungore oyom ndidiongo ufon emi odude ke ndibak nkut idiongo idiok udongo emi ekotde **cancer emi esinamde iren-owo ke etak edak** (Prostate cancer).

Man inengede inyene oyogho ifiok, ofon ndineme nneme ye uwak owo emi akanam minyeneke udongo eni kanga. Nneme ntem, ye iboro emi mme owo edinode, eyeno ikike ke ndibak nkut nyung mbiongo udongo **cancer etak edak** emi (Prostrate cancer) ke ntongho esie

Kpukpru se edinemede, edi ndida unwam ke usung ntem, ndien owo idiyarakede ke afo emebuana ke nneme emi, owo nko nyikenyike fi. Eyom iboro fo ke ofuri akpaniko ye ofuri esit kiet.

Man otodo ikeme nditi nneme emi ke ini iso, mbok, iyebo unyime fo ndisin nneme emi ke "usan ikwo" (Audio Tape).

IKPHEGE A: SE IBANGADE MME ANDIBUANA KE NNEME

1.Enying (ntongo letter ikpong): ……
2.Isua emana: ……
3.Nwan mme eren: ……
4.Idagha Ifiok-nwed: ……
5.Obio emana: ……
6.Ubok-utom: ……
7.Ido Ukpono Abasi: ……
8.Omodo ndo?: ……
9.Sidade fi idi ufok ibok?: ……

OYOGHO IKPEGHE: B

ITEM ENODE ANDINWAM KE NNEME: Tongo nneme emi ke nditin enying fo, isua ye obio emana fo. Nko, ting ntak enernede nneme erni. Tiene nam owo kiet-kiet eting eyin, isua ye ibio ernana mmo nde.

1) Ke akpa ifet, ikpima ndikop kpukpru se mme ono-usobo mbakara ekesitingde eno mbon-udongo (ye ndito eka mmo), ebangha udongho **cancer etak edak.** Ting kpukpru se etide yung kere mme edi nnen-nnen; edieke midighe nnen-nnen nsidi se akpamade ndifiok mbanga udongo emi.
2) Ediwak ini se ikerede ibangha edu uwem nyin, esikongo ke se mme owo etingde. Ndien nso idi mme nduting emi obiongode fi ndisop ndiongo udongo **cancer etak edak.** Mme enie edi mme anditing iko emi? Emekere ete se esikopde obiongo fi ndisop ndiongo udongo **cancer etak edak emi?**
3) Nte esikopde, nso idi ntak ye idiongo udongo cancer emi? Nte ekeme ndikpan udongo emi? Nso ke ekeme ndinam ndikpan udongo emi?
4) Ke ema eketing kpukpru nkpo eno fi ebanga **cancer etak edak**, nte ama anam nkpo ndomo kiet ndikpan udongo emi ke idem fo? Edieke edide ntre, nso ke akanam?
5) Ndidungore nyung nsari udongo **cancer etak-edak**, oworo nso ono fi?
6) Nte omodiongo (mme omokop) abanga uto ndungore ndomokiet emi edade ebak ediongo idiongo udongo cancer emi? Nso idi ndunghore emi?
7) Anie enam uto ndunghore emi, nko ekenam enye, ebighi didie? Enam ndunghore emi didie?
8) Ndungore emi ofon didie ke ndida nsop ndiongo udongo **cancer etak edak?**
9) Ediekei ndungore emi onode iboro ete ke afo emenyene **cancer etak edak**, edinam didie?
10) Ekere ete nso idi mme ufon ndunghore emi?
11) Nso idi usobo **cancer etak edak?**
12) Nte usobo emi esifina owo? Esifina owo didie?

APPENDIX II: NWED EDINYIME ODONGO-UDONGO.

AKPA IBUOT IKO

EDITONGO MBUB-MBEME: Mbok bemiso kot ntongo udim-iko no mme andikop. Iboro mmo eyenam fi odiongo mme eyeka iso ke mbume fo.

NTONGO UDIM-IKO

(Andikop) ndima ndi ete:

Ekot fi edibuana ke edinam ukpep-nkpo ye ndungore emi edinode mme-owo ifiok abanga undongo **cancer etak edak** (Prostrate cancer). Andinam ndutum ukpep-nkpo emi edi eyen akwa ufok nwed ntaifiok eke University of Ibadan. Ntak ukpep-nkpo emi edi man otodo ediongo mme ufon emi nka ukpep nwed "nursing" anamde ke ndisop ndiong nyung nkpan udongo **cancer etak-edak** ke otu iren owo.

Imenyene idorenyin ite ke iboro ukpep-nkpo emi eyemenere ifiok onyung anwam iren-owo ndibak nkut idiongo **cancer etak edak** ke ntongo.

Ukpep-nkpo emi eyebighi ke nkpo nte urua inang ke ufok ibok kiet,kiet. Ke ufang ini emi, mme andibuana ke ukpep-nkpo ke ufok ibok kiet emi eyebo ifiok ebanga ndungore emi edade ebak ediongo udongo emi, edi ke ufok ibok efen, mme andibuana idiboho ifiok ndungore emi. Edibiere edinam udim kiet ebo ukpep-nkpo ndungore emi, udim eken iboho, edi ke mfoniso; edi ke akpatre, udim eke mikoboho ukpep-nkpo ndungore emi eyebo.

Ke afo ndibuana ke ukpep-nkpo emi, owo iyomke enying fo ewere ke ikpa nwed ndomo kiet. Nko, afo ndibuana edi ke unyimme fo, ndien emeyene unen nditre ndibuana ke ini kiet eke ededi, emi ikpanke owo ndino fi usobo. Sia mme owo enyenede nsio-nsio ekikerre ye edu ebanga nsio-nsio nneme iko, emenyene unen ndiboro, mme nditre ndiboro, mbume kiet eke ofonde mme ifonke ye afo. Idughe iboro emi ofonde mme odiokde akan efen, edi mbok yak iboro fo edi akpaniko emi oworode ke owong esit fo. Obup mbume eyenwam ndikot mbume nyung nwed iboro mme owo kiet-kiet.

Nte afo emenyime ndibuana ke ukpep-nkpo? Ih ☐ Ih- Ih ☐

Enying usen ofiong ye ufok ibok andibuana: ……

Enying usen ofiong ye ufik ibok ntiense: ……

Edieke enyenede mbume, sobo ye mme mmo emi:

Etie ibuot okpokoro Etie ibuot okpokoro

Nka mbet nsongidem

Etie Ibuot okpokoro (MAC)

Ke Calabar

Uruk uting iko:

mme Akwa ufok

Usiak ifia nsongidem

ke Calabar

Uruk Uting Iko:

Ebiet edisobode ye Ami;
Department of Nursing Sciences
Faculty of health Science & Technology
University of Nigeria, Enugu Campus
Enugu State.

Uruk Uting Iko:
08063601549.

APPENDIX III: MBUME

Ami nkere JUSTIN AGORYE INGWU, Akamba eyen ufok nwed (Ph.D) ke ikpeghe ukpep nursing, ke akwa ufok nwed nta ifiok emi ekotde University ke Ibadan. Ami nnam ukpep-nkpo eni man otodo ndiongo ufon ye unwam emi nka ukpep nurse enode iren-owo emi ekade nsio-nsio ufok ibok ke state nnyin, ke ndibak nkut idiongo **udongo cancer etak edak**. Eyenem mi ndikop ekikere fo ka'banga ukpep-nkpo emi. Ke ntre, mmebenge fi esin unwam ke ndiboro mme mbume emi. Kpukpru se oborode edidi ke odu, owo iditingke ino owo efen.

Mbok, nte mmekeme nditongo mbume?

…….. ……

Ufik ubok andibuana Ufik ubok obup mbume

…….. ……

Usen ofiong Usen ofiong

ITEM OBUP MBUME:

Nim idiongo emi (√) ke nnenen itie, midighe ntre, wet mme iboro ke mme ufang emi enimde.

OYOGHO IKPEHE A: SE IBANGADE ANDIBUANA

Oyogho owo ifang: ……..

Enying Ufok Ibok: ……..

1) Edi isua ifang? …….

2) Idagha ndo: (a) Mmedo Ndo ( ) (b) Ndogho Kanga ( ) (c) Mmadianade ndo ( ) (d) Nwan Akpa ( ) (e) Ebe kpa ( ) (f) Ndung ye odiongo ( ).

3) Idagha ifiok nwed: (a) Nkagha Nwed ( ) (b) Ntre ken nwed Primary ( ) (c) Ufok nwed Ikpo Owo ( ) (d) Ntre ke nwed secondary ( ) (e) Diploma ( ) (f) Akpa Degree ( )

4) Oto mmong? (a) Efik ( ) (b) Yoruba ( ) (c) Hausa ( ) (d) Ekoi ( ) (e) Igbo ( )

Mbok wet ebiet eke midughe mi: ……

5) Nso idi ubok utom fo? (a) Utom Mbakara ( ) (b) Nnam Mbubeghe mi ( ) (c) Ukpe utom ( ) (d) Mbo Nduok Odudu ( ) (e) Ndu ke Ukpep ( ) (f) Mbok wet utom eke midughe mi: ……

6) Edu ukpono fo edi ewe? (a) Edu ukpono mbubit owo ( ) (b) Edu ukpono islam ( ) (c) Edu ukpono Christianity ( ) (d) Mbok wet eke midughe mi……

7) Nte afo odung ke ufok fo? (a) Ih ( ) (b) Ih-Ih ( )

8) Mbok se afo anwanade ke isua esidi okuk ifang ono fi? ……

SE AFO EKEREDE ETE EDI NTAK UDONGO EMI: NSO IDI EKIKERE FO?

S/N	SE ISIODE EDA	IH	IH-IH
1.	Udongo oto abasi ndien uduak esie enyene ndisu		
2.	Udongo oto ntak idiok nkpo nyin mme eke m'ete nyin		
3.	Udongo oto ekong emi ndioi spirit enwanade		
4.	Mme nkenge unam ibak ada udongo edi		

9) Mmong ke otu itie emi ke afo ye ikot fo esikibo usobo? (mbok nim idiongo ke mme itie eke odotde) (a) Ufok abia ibok ( ) (b) Ufok abasi ( ) (c) Ufok Akam ( ) (d) Ufok ibok mbakara ( )

OYOHO IKPEGHE B: IFIOK ABANGADE CANCER ITAK EDAK

10) Akananam nte afo omokop abanga udongo cancer itak edak? (a) Ih ( ) (b) Ih-Ih ( )

11) Edieke okokopde, okokop ke mmong? (Nim idiongo ebiet itie kiet) (a) Ekebe ndise/uting iko ( ) (b) Nkpri nwed edemede ke efak ( ) (c) Ukpep-nkpo otu owo ( ) (d) Nkop nto mme ufan/oruk ye iman ( ) (e) Nkop nto mme ono usobo mbakara ( )

MBOK MEK IBORO KIET NO MME UDIM IKO EMI

S/N	MME UDIM IKO	AKPAN IKO	NSU	NDIONGO KE
1.	Iren Owo Emi Iman Mmo Enyende Udongo Cancer esiwak nditiene ndongo udongo emi.			
2.	Eren owo ekeme ndiyene udongo **cancer etak edak** edi ikopke idiongo baba kiet.			
3.	Mme mkparawa esop edongo udongo emi ekan nkani iren.			
4.	Ubiak eke osughore ke abaedem ekeme ndidi kiet ke otu ididongo emi			
5.	Ekese mmo emi eyohode isua ata-ye-duop idighe se ekenamde ndungore ebanga udongo emi.			
6.	Ndusuk usobo **cancer etak edak** esinam mme odongo udongo emi ikemeke nditok ikim mfon-mfon.			
7.	Ndusuk usobo **cancer etak edak** ekeme ndinam andidongo ikemeke ndinyene ebuana ye nwan.			
8.	Ediman kiet ke otu mme ndungore ye udomo emi (D.R.E, PS.A) eyenam ediongo mme udongo emi mmodo.			
9.	Mme ono usobo mbakara (doctor) ekeme nditing mme anie ke udongo			

	emi ekeme ndiwot ye emi midiwotke.			
10.	Ndunghore emi edade iyip enam, emi ekotde (PSA) eyeno ata nnen-nnen iboro, me owo enyene udongo emi.			
11.	Owo ekeme ndinyene udongo emi ndien ndungore emi (PSA) ikwe			
12.	Udongo emi ekeme ndikori sung-sung ke idem usuk owo.			
13.	Udongo emi afina iren ye iban.			
14.	Se idade udongo cancer eken ino iren owo edi **cancer etak edak emi.**			
15.	Ndungore ke odudu mbombom edi akpan ndungore edade efiok mme **cancer etak edak mmodo.**			
16.	Ndungore iyip emi ekotde PSA ekeme nditing mme udongo emi mmodo.			
17.	Owo ekeme ndinyene udongo emi edi idiongoke.			
18.	Udongo emi enyene usobo edieke ebakde ekut enye.			
19.	Ekeme ndida unek-ekong ekpan udongo emi.			
20.	Mbubit owo esop enyene udongo emi ekan mfia owo			

21.	Eteme ete mmo emi eyohore isua aba, esinam ndungore ke odudu mbom-mbom ke isua ke isua.			
22.	Ke isua aba, akpana nsinam ndungore iyip mbanga udongo emi k'isua k'isua.			
23.	Ekpenam ndungore udongo emi ke ini ekopde idiongo udongo emi.			
24.	Udongo **cancer etak edak** inyeneke usobo.			

OYOHO IKPEHE C: EDU-UWEM: MBOK MEK IBORO KIET-KIET NO MME UDIM IKO EMI.

S/N	MME UDIM IKO	NYIMEKE NDOMOK IET	NYIM EKE	NDION GOKE	MMEN YIME	MMEN YIME ETI ETI
1.	Edi nnen-nnen nkpo owo ndinam ndungore **cancer etak edak.**					
2.	Iren owo esiwak ndinyene **cancer etak edak.**					
3.	Nte owo osongde ntre ke enye ekpere ndinyene udongo emi.					
4.	Mme mbubit owo esop enyene udongo emi ekan mfia owo.					
5.	Akpana nnam ndungore ke odudu					

	mbom-bom mbanga udongo emi.					
6.	Ndunghore emi ekotde DRE ofon ndinam okpokom owo odu ke nsongidem.					
7.	Ami mmokop but ndinam ndunghore ke odudu mbom-bom.					
8.	Ndunghore emi edi usop-usop, mmem-mmem inyung ibiatke owo ini.					
9.	Ami ndika nkanam ndunghore emi DRE oyokpon ubiat okuk.					
10.	Nyeka mbine abia ibok mbakara nkanam ndunghore emi ini kiet ke isua.					
11.	Nyeyak enam mi ndungore emi DRE koro nyom ndibak ndiongo mme mmenyene udongo **cancer etak ekporo.**					
12.	Mmekere nte ndisio iyip nno enam ndungore emi edi mmem-mmem nkpo.					
13.	Nkpamagha ndinam ndungore ke odudu mbom-mbom koro abiakde eti-eti.					
14.	Mmokop ndik mbanga ndungore ye iboro ndungore udongo emi.					
15.	Nkere nte ufon mme ndungore emi idughe koro udongo emi inyeneke usobo.					

16.	Nnamke ndungore mbangha **cancer etak edak.**					
17.	Nnamke ndunghore mbanga udongo emi koro, edieke ekutde enyung esobode mi udongo emi, ami ndikemeke aba ndiyene ebuanna mfon-mfon ye nwan.					

IKPEHE D: MME EDINAM EDIBAK NYARADE UDONGO EMI

1) Akanam nte afo amanam ndungore ndomokiet man ofiok mme emeyene **cancer etak edak?** (a) Ih ( ) (b) Ih-Ih ( ).

2) Edieke iboro fo edide Ih, isua ifang edi emi tongo afo akanam akpa ndungore?

3) Edieke iboro fo edide Ih, ewe ke otu mme ndungore emi ke afo akanam? Mbok fik ubok tiene ibat ndungore akanamde;

(a) Ndungore eke iyip ikpong (PSA) ( )

(b) Ndungore ke odudu mbom-bom (DRE) ( )

(c) Ndungore iyip ye ke odudu mbom-bom (PSA & DRE) ( )

(d) Ndungore enyene idem anamde ( )

(e) mbok wet uto ndungore emi miwereke mi …….

4) Akanam nte afo omodungore man abak ofiok mme emenyene **cancer etak edak?**

(a) Ih ( ) (b) Ih-Ih ( )

5) Edieke iboro fo edide Ih, ebighi didie tongo akanam;

a.Iyohoke Isua Kiet ( )

b.Isua kiet ebine isua iba ( )

c. Isua iba ebine isua ita ( )

d. Isua ita ebine isua inang ( )

e. Isua inang ebine isua ition ( )

f. Ebe isua ition ( )

g. Nkemeke nditi ( )

6. Anie ekenam fi ndungore emi? (a) Ami nkenam idem mi ( ) (b) Ono usobo mbakara ( ) (c) ufan mi ( ) (d) Mbok wet eke miwereke mi ……

7. Ikafang ke isua ke afo anam ndungore udongo ke etak edak? (a) Ini kiet ( ) (b) Ikaba ( ) (c) Ikata ( ) (d) Ndiongoke ( ).

8. Ke nkpo-nte ofiong duopeba emi ebede, ikafang ke akanam ndunghore idem fo ke etak edak fo? (a) Ibat ini ( ) (b) ndiongoke ( )

9. Ke ofiong duopeba emi ebede, ikafang ke akebine abia-ibok mbakara man enye anam fi ndunghore ke etak edak man ebak ekut idiongo **cancer etak edak?** (a) Inikiet ( ) (b) Ikaba ( ) (c) Ndiongoke ( )

10. Akananam, nte afo amanam ndungore etak edak eke edade iyip enam (PSA)? (a) Ih ( ) (b) Ih-Ih ( )

11. Edieke iboro fo edide ih, ebighi didie tongo akanam?

a. Ufang isua kiet ( )

b. Isua kiet, ebine isua iba ( )

c. Isua iba, ebine isua ita ( )

d. Ebe isua ita ( )

e. Nkemeke nditi ( )

12. Ekere ete nso idi mme ntak emi enamde ndungore ebanga **cancer etak edak?**

MBOK FIK UBOK NO MME NTAK EMI AFO EKEREDE

S/N	MME NTAK	IDIGHE AKPAN	EDI ATA AKPAN

		NTAK	NTAK
1.	Man Nyene Emem k'uwem (ekikere).		
2.	Iduo-esit kabangha udongho cancer.		
3.	Ndik ndinyene cancer etak edak		
4.	Koro ndungore edi ke mfon onyung emem urua.		
5.	Ufok-ibok enem idung.		
6.	Nti etop ufok ibok.		
7.	Eting ebanga **cancer etak edak** ke ekebe utingiko.		
8.	Mme ufan edogho nnam ndungore emi.		
9.	Mme mbia-ibok mbakara edogho nnam ndungore		
10.	Udongo **cancer etak edak** odu ke ekpuk nyin.		
11.	Udongho mme cancer enwen edu ke ekpuk nyin.		
12.	Ubiak ke ini ntokde ikim.		
13.	Mfina ke ini nyenede ebuana ye nwan.		
14.	Ndinam kiet ke ata mme ndungore nte ido mi esidide.		
15.	Nnam ndungore nte ekikere oyoho iba.		
16.	Mbok wet ntak efen ……		

APPENDIX IV: LOKURR TRANSLATION OF QUESTIONNAIRE

Lękpọng jana: Liblabau ja litoowại ọ eti kạ atọngai ọbanga lẹnẹkpạng

Eboootọ yokpekpea yạ ẹtọ nwẹnẹ yạ edeen yạ efil obaa enạnạngtọ yạ ekpenại wool daala ja ọnẹn yafọngi yayoo.

Ọdẹinẹn wạ onạngi yonạnạg,

Yadẹ ọ tạ adạ ọtọnganẹn mạ kọtọnga kimin sạ awẹẹn nwẹna wạ ọyau kạ aboong kewoi wạ ọyau kạ ekpekpetọ yạ yanẹn bạ yakpenại ọbanga wool ja yanẹn onạngi, dạ ẹtọ nwẹnẹ yạ edeen yạ Ibadạn. Kiyau kạ aboong kewoi ọtuma ẹ tạ oyimạ kẹ dạ nạ yasẹẹnga yasẹẹl yatạạni kẹ

Bloong bimin tạ yegbongạ ọ, oyom tạ atọnga obạ yanẹn dạ nạ yasoo yabạngạ bạ yabi kẹ apeen imin yaatoo. Akawa yạ nạ anaan nạ amung ọkam ọ tạ atạạ anạng ẹbabaan tạ okạạ yoyimạyimạ obaa nti ya nạ asẹẹl atạ atạni kẹ apeen yạ abuuyi yadạm kạ kẹyẹẹ baani.

Akaawa ebạạ yạ abaa kại odạ kạ legạn yonạnạng biminawa yạ ayeni koduuwạ. Yonạnạng yọwu kenại odạ bạ nnạ yajạu jeen lẹwu yaagạ obaa bạ nạ anạng kạ lẹtẹẹm kẹya lẹwu. Lọtumajạu lọwu kenạngi kạ liblabla kẹpọọna obaa kofạnạnạ nsạ yawooyi.

Kạ agạn jạ adạ tạ yọbalai mọọn akaawa yạ abaa kại kẹ, kọtọnga lẹkpala siminawa nạ yọfọng kẹ kạ yetetekul. Yoyinạ yowoo kodẹẹya kọwu mạ yonạnạng bimin.

Yipaa fa yikạlạeti : **Oyinạ wạ yanẹn bạ yanạngi yonạnạng maa**.

1 Mbiisi ntele yạ ayeen awu atele.
2 Ekoo
3 Lọnẹnku jạ adạ
4 Nwẹnẹ yạ akọi kẹ
5 Lẹnẹkpala jạ adạ
6 Konạnạng bọọ kọwu
7 Kẹbasẹ kẹwu
8 Kebebe kạ yọbẹ
9 Legạn jạ ọkaama akọu ebootọ yạ yapeenạpeenạ yabi kaa yaayoomi.

Yọpaa yopoowa.

Ekoowạ akạạ ọnẹn wạ ọkpamma yonạnạng maa : Bẹla ọ kọtọnga maa obạ oyinạ kemạnạlegạna wạ nạ otoo ẹ legạn kọtọnga maa, boong wạ otoowaị ọ eti obaa boong wạ adạ. Yatọnganẹn oyạ mbạ tạ yayin boong wạ yadạ.

1.Nạ ọdẹ mọọn tạ yọbẹla mọọn kọtọnga kimin obạ tạ yowoo lọkaawaku jạ yakại opeenạpeenạ obidạ ọnẹn ọwẹ dạ kọbọọ sạ yanạnạgnẹn bạ yakpenại ọbanga wool daala jạ ọnẹn ọbanga apeen yạ abuuyi yadạm kạ kẹyẹẹ baani. Tọnga wạ osoo wạ nạ amung abala ọ boong wạ odạ, ọnẹn wạ ọạngi ọ oyinạ maa obinạ obleemạ kẹ kaa. Òobi kaa oobleemạ, na oyina ọdọọdọọ ayau kaa tạ yakạạ ọ o.

2. Nti idi soosoo yutẹndala yọmọọn ọbanga amana amọọn okạạ boong oblạ kạ aboong wạ amọọn jại.Odạ nạ bloonga yanẹn yajại kẹ obidạ yayin ọ kẹ ọbanga apeen yạ abuuyi yadạm kạ kẹyẹẹ baani oyenạ ọpana kẹ kẹmana kẹwu tạ asẹẹl atạạni kẹ apeen yạ abuuyi yadạm kạ kẹyẹẹ baani o. Odạ yabang o. Abala ọ kẹ abi oyinạ imaa ọpaana kẹ kẹwu tạ asẹẹ atạạni kẹ ọbanga apeen yạ abuuyi yadạm kạ kẹyẹẹ baani o.

3.Odạ na bloonga yẹtalai, bạ yedạ yepoola obaa bạ yekoowại apeen yạ abuuyi yadạm kạ kẹyẹẹ baani, nạ abạnga apuuwạ kẹ. Nạ ọfẹya tạ yọkpaa kẹ apeen yạ abuuyi yadạ kạ kẹyẹẹ baani o. Mbọng maa nạ yonạng tạ yọkpawẹ kẹ o.

4. Kạ yayini ọ kẹ ọbanga apeen yạ abuuyi yadạm kạ kẹyẹẹ baani. Abala ọ kẹ boong wanawana wạ nạ atạạ akpaa kẹ tạ abi apeen yạ abuuyi yadạ kạ kẹyẹẹ baani aatoo o . Odạ aaja, yedạ bọng maa o.

5. Mbọng aa tạ akẹng okoowạ kạ apeen yạ abuuyi yadạm kạ kẹyẹẹ baani o.

6. Awu ayimạ kẹ obidạ apuuwạ kẹ loku jana jạ kẹkẹngiya jạ nạ lọfẹya tạ yotạạ yọsẹẹl yotạạni kẹ kẹyama sạ apeen yạ abuuyi yadạm kạ kẹyẹẹ baani o. Mbọng ma odạ koyoomạ sạ kẹkẹngi simin o.

7. Odạ nnẹ onạngi kẹkẹngi maa obaa odạ nti npang maa yanạngi koyoomạ kạ kẹkẹngi simin o. Odạ yaan nạ yonạng kẹkẹngi kẹ sạ apeen yạ abuuyi odạm kạ kẹyẹẹ baani o.

8. Odạ yaan maa kẹkẹngi kẹ simin sạ amọọn tạ yọsẹẹl yotạnại apeen yạ abuuyi yadạm kạ kẹyẹẹyi baani kebleemạ kaa o.

9 . Odạ ẹdọ kọpọọna sạ kẹkẹngi simin kekoowạ kejạu awu atoo apeen yạ abuuyi yadạm kạ kẹyẹẹ baani mbọng maa nạ anạng o.

10. Mbọng abala ọ abi odạ ulu wạ kẹkẹngi kẹ sạ apeen yạ abuuyi yadạm kạ kẹkẹẹ baani o.

11. Mbọng abala ọ abi odạ liboo jạ yatoo yabooyi apeen yạ abuuyi yadạm kạ kẹyẹẹ baani o.

12. Liboo ma likạạyi apeen adọadọ o. Yala ayin apeen adọadọ yạ likạạyi.

Akpọng Apowa: **Yiwẹnẹpa fạ opeenạpeenạ wạ yayini kẹ**

Keyinạ mạnạlegạn kekạạ ọnẹn wạ ọbimai leblablau.

Kọmbọọ yeel kọtọnga kemạnạlegạnna okạạ kipọọna liblablau. Kọpọọna kọwẹ nạ koyin ọ abi nạ akọu lokạ obạ liblablau kẹblai.

Kẹtọnga mạnạlegạn.

Ọdẹinẹn wạ ọpọọnai liblablau,

Yadẹ ọ kaa tạ afukẹn anạng oyinạ mạ yokpekpe bạ yọbanga keyiimạ kẹ obaa abloong kenạngi bạ kẹkẹngi kẹ sạ apeen yạ abuuyi yadạm kạ kẹyẹẹ baani wạ awẹẹn nwẹnẹ wạ ọyau kạ ekpekpetọ yạ yanẹn bạ yakpenại ọbangai wool daala jạ ọnẹn wạ ọyau kạ nwẹnẹ yạ ndeen yạ nyau dạ Ibadạn onạngi. Legạn yokpekpea bimina odạ tạ yoyoo ẹfa yạ yọwẹnẹkpekpe bạ yanẹn bạ yakpenại ọbangai wool daala jạ ọnẹn kaa tạ yayimạ kẹ dạ nạ yasẹnga yasẹẹl yatạạni kẹ ọbanga bloong bạ yekoowại apeen yạ abuuyi yadạm kạ kẹyẹẹ baani.

Kọpọọna yokpekpea bimin, yẹẹn kẹnẹnaa amọọn odạ nạ yonạng mọọn tạ yoyeni yoyiyimạ yọbanga apeen yạ abuuyi yadạm kạ kẹyẹẹ baani obaa kẹsẹẹli ketạạni kẹ ọbanga bloong bạ yekoowại apeen maa nạ ọkaam yadạm tạ yayimạ kikpa sạ kẹyau kạ tạ yayimạ kẹ yepoolạ obaa bloong bạ yekoowại apeen yạ abuuyi yadạm kạ kẹyẹẹ baani.

Yokpekpe maa nạ yạyau kạ nkọbasẹ nnaa kạ ebootọ. Mạ kebee yokpekpeama yanẹn bạ yadẹẹ tạ yanạng kọtọnga maa kạ ebootọ yana nạ yanaan yokpekpe ọbanga yoyimạyimạ obaa nti kẹkẹngia

ya na ataa aseel ataani ke apeen ya abuuyi yadam ka keyee baani yowenekpekpe yowe wa yanen ba yadee ta yanang kotonga da ebooto npoowa yowenekpekpe yaanaan. Kopaali ka koda lekpala ja yadéé ta yanang kotonga ja na lejau yowenekpekpe leenaani na obla ka ayei. Da obi dada, yanen ba yadee ta yanang kotonga ba yabi yowenekpekpe yaanani ma kebee yokpekpeama na yanaan ka kegammą kewe.

Kotonga kowu kenangi kootoo ta akaa jeen lewu . Lekawa ja abi kai, obida yayina ketooli obaa nwene ya abi fongi obanga yokpekpe bimin jeen lewu kaa aafoong. Kotonga kowu kenangi oda ta obla o ma anang ayena ayeni wool wiya ta akoomą yokpekpe maa kebee sansanaya sa odei o ekaang kaa eedaa ekaa o ta akpena ke wool liwu. Ada yanen yayeni lepoona ka lekawa janjanaya, ayau ka awool wiya ta abi loblablau aapoona obida anang kotonga ka kotonga sa akaa ke abi kotum kota yoyimayima.

Komboo ka kopoona ka koda lotumajau ma liblablau jimin. Kopoona ka kobleema kaa obaa ka kobi kaa koobleema maa kooda. Kibimai o liblablau na okaam o ta oyeel o ke liblablau maa oyena ofoong o ke lipoona liwe.

Adunga o ke ta anang kotonga o. Eiya [ ] Ee Ee [ ]

Jeen obida eninong keyama obaa lewi

Jeen ja kinoomakekau obaa lewi

Òoda aa boong wa ayeni loblablau obida agaga dee m min:

Kinoóma lekpokolotu,

Lekpala ja leyemai nsoo awool daala ja onen,

Aseng o da ‘‘Kinoomalikpokolotu wa AMAC’’

Ebooto yokpekpea ya etonwene ya edeen ya efiil ka efiil.

Ẹtọngajạu:

Obidạ

Kinọọma lekpokolotu,

Lẹkpala jạ lẹyẹmai nsọọ awool daala jạ ọnẹn,

Letu jạ enạnạngtọ yạ ekpenại ọbanga wool daala jạ ọnẹn,

Efiil

Ẹtọngajạu:

Apaa yạ nạ apạnạ m:

Ekpekpetọ yạ yabunnại liboo kenạngi

Ekpekpetọ yạ ekpei ẹbangai wool daala obaa yomạmạn

Ẹtọ nwẹnẹ yạ edeen yạ Anajiriya, dạ Enugu

Opoondeen wạ Enugu

Ẹtọngajạu: 08063601549

Yọpaa yoteele: **Liblablau**

Jeen lẹmi odạ Austin Agorye Ingwu, wẹẹn nwẹna wạ nwẹnẹ yạ ndeen wạ ọkuuyi nwẹnẹ nti ntelea dạ ekpekpetọ yạ yanẹn bạ yekpenại ọbangai wool daala jạ ọnẹn, kạ ekpekpetọ yạ yabunnại liboo kenạngi, dạ ẹtọnwẹnẹ yạ edeen dạ Ibadạn. Ami nyau kạ yokpekpe bạ yọbanga boong wạ odạbại ẹ kạ yọwẹnẹkpekpe bạ yanẹn bạ yakpenại ọbangai wool daala jạ ọnẹn tạ ayimạ kẹ kẹsẹẹli ketạạni kẹ bloong kenạnga kạ mbọọ yạ yadạm bạ yakuuyi yabootọ bẹẹn bạ yabi kaa yaayomm kạ nbootọ yạ yapiimạ kẹ mạ opoondeen wạ odạ Akrọs Riva, mạ opoondeen Najiriya. Ẹtẹẹm nạ ẹdaan tạ nyimmạ yọbala yọwu ọbanga leyinạtu jimin. Ọkaama nwooyi nkaami nwu tạ akaam tạ afọng boong mạ nwẹnẹ liblablau jimin. Akaawa ebạạ yạ abi kại nạ ayeni koduuwạ.

Mbẹla m liblablau kẹblai o.

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Jeen kẹfọngi obaa kẹninọng yama Jeen kẹfọngi sạ kiblau liblablau

Sạ ọnẹn wạ onạngi kọtọnga.

Lewi Lewi

Yẹkpọwa bạ kiblau liblablau:Tẹẹli ( ) obidạ atẹẹli lẹnanga akokoolạ obidạ afọọng kọpọọna sạ kinạngi kọtọnga mạ liwạni jạ liyau maa.

Yipaa fạ yikạlạeti: **Oyinạ wạ ọbanga keboo nạngi**

Kofukạ kpoo----------

Jeen jạ ebootọ----------

1.Adạ deel lipang maa kạ lẹmanawi lẹwu jạ lekpoo ngạm o----------

2. Kebebee sạ yọbẹ 1.Abẹẹ kẹ[ ] 2.Kẹ aabẹẹ [ ] 3.Yaganana kẹ 4.Yanẹẹn ọwu obạạ kẹ [ ]

5.Awung kẹ yanẹẹn[ ] 6 Yawuuyi kọpaa kana [ ]

3.Nwẹnẹ yạ akọi kẹ:

1Yokpekpe kạ ẹtọ nwẹnẹ aanaani[ ] 2 Ẹtọ nwẹnẹ yạ ekạạlạeti[ ] 3 Ọtọ nwẹnẹ doowạ wạ yanọtam[ ] 4 Ẹtọ nwẹnẹ nboowa[ ] 5 Diplọma [ ] 6 Nwẹnẹ yạ ndeen[ ]

4 .Naa lẹnẹnkpọnga aadạ o.

1Ofiil [ ] 2 Obạnạbạnạ [ ] 3 Ọbakpa[ ] 4Ekoiyi[ ] 5 Oboo [ ]

Yin aadạ ọdọọdọọ kọmbọọ----------

5. Mbọng atoo awuuyi etoom o

1.Yọkalang nanạng[ ] 2.Ayau kạ awool liwu[ ] 3 Anai limaan kạ lebula[ ] 4 Akoomạ kẹ yọkalang nạnạng[ ] 5 Wẹẹn nwẹnea obidạ kikpei yọnạnạng [ ] Yin aadạ ọdọọdọọ kọmbọọ----------

6. Kẹbasẹ sạ anạngi

1.Kẹbasẹ sạ yẹnẹnbloong[ ] 2 Kẹbasẹ sạ yabakpa [ ] 3 Kẹbasẹ sạ Ọbasẹ[ ] 4.Yin aadạ ọdọọdọọ----------

7.Awuuyi kạ ẹtọ yạ edạ yạ ẹwu o. Eiya[ ] Ee Ee[ ]

8. Mbọng odạ limaan jạ ẹtọ ẹwu ẹnai kạ adeel o.

Keyooyi kạ lọtumajạu kẹbanga boong wạ otoowai apeen maa.

9. Ani balai ọ apeen o.

S/No	Kọpiimạ	Eiya	Ee Ee
Wana	Apeen ablạ kạ Ọbasẹ ẹdọ yabala yiwẹ nạ yidạbạ fẹ		
Yapoo	Apeen ablạ kạ yebungạbung yẹmọọn obidạ bạ abạ uwọu obaa bạ abạ mmukạ		
Yatele	Koyuu emleeya kạ koblạ kạ yẹnẹ bungạbung		
Yanaa	Yablablabẹẹn bạ nạ ajạu aakạạ mbạ yatuuli apeen		

10. Na libọwa mạ aboo imin anikuuyi oninạ ọ obidạ ọnẹn ọwu ẹtọwa o. Tẹẹli( ) lipiimạ jạ lisoo.

1. Likạạ ẹsẹkpa[ ] 2 Ẹtọ yạ Ọbasẹ[ ] 3 Yatạm[ ] 4Ebootọ[ ]

Yọpaa yopoo: **Yoyimạyimạ bạ yọbanga apeen yạ abuuyi yadạm kạ kẹyẹẹ baani.**

11. Ani kani apuuwại apeen yạ abuuyi yadạm kạ kẹyẹẹ baani o.

1.Eiya[ ] 2.Ee Ee[ ]

12. Dẹndẹ anaani lẹkawa jimin obidạ okaawa imin o.(Tẹẹli kẹ dạ osoo obạngạ)

1.Kekąkąkul obidą Ketetekul[ ] 2 Ką yǫwęnę paa[ ] 3 ką afim[ ] 4yokpekpe[ ] 5.yamąnąbǫǫ obidą Bęęn yabaa[ ] 6.Yanąnąngnęn bą yakpenąi wool kędaali ją ǫnęn[ ]

Kǫmbǫǫ dąli ǫ ką kǫpǫǫna kana mą litǫnga ją liyau kin:

S/No	Liblablau	Lǫtumająu (Eiya)	Libeem (Ee Ee)	Oogbongą/ Ooyimą
Wana	Yadąm bą yayeni bęęn bą yasoo bą yatoo apeen yabuuyi yadąm ką kęyęę baani ną yatąą apeen imaa			
Yapoo	Odąm ną obąngą otąą apeen maa agągą ooyeni oyeną bloong bą yekoowąi apeen maa ookoową			
Yatele	Yadąm poipoibęęn mbą yatoo apeen yabuuyi yadąm ką kęyęę baani yata kę yanǫtam dąm.			
Yanaa	Yǫmlaa ką ngąm nwu kapiil ną obąngą odą kepoolą są kekoową apeen yą abuuyi yadąm ką kęyęę baani			
Yatąąn	Yadąm bą yabąng kę deel agau ateele opąli joo yaawooyi tą yakǫu koyoomą kękęnga są apeen yą abuuyi yadąm ką kęyęę baani			
Yatąąn awana	Aboo idi yą yatoo yabooyi apeen yą abuuyi yadąm ką kęyęę baani anąngi yadąm bę ǫǫfęya tą yayęę baani.			
Yatąąn yapoo	Aboo idi yą yatoo yabooyi apeen yą abuuyi yadąm ką kęyęę baani ną abąngą okąą odąm agągą kąkeyoomą kenąngi.			
Yatąąn	Tą anąng imin, tą apiimą wool liwu obidą			

yatele	atąą yenąnąng bloong bą yakalang obidą liboo ją liyoom tą yayąą yanąng libąngą kę tą yatąą yayoomą apeen yą abuuyi yadąm ką kęyęę baani.			
Yatąąn yanaa	Yaboową boową yabąng tą yayin yadąm bą ną yabąą ką apeen yą abuuyi yadąm ką kęyęę baanii obaa bą ną ająu aafi.			
Joo	PSA wą obąngą obaa yaayi kepiimą okoową ntoo apeen maa			
Joo awana	Ną mbąngą ntąą apeen yą abuuyi yadą ką kęyęę baani nyeną nyeni (PSA) yaayi keyoomą bą yabąngą obąngą.			
Joo yapoo	Apeen yą abuuyi yadąm ką kęyęę baani ną abąngą abawa ką awool ją yadąm bidi.			
Joo yatele	Apeen yą abuuyi ką kęyęę baani ną abąngą aninąi yadąm obaa abanęęn.			
Joo yanaa	Boong wą ọsęęli ọtalai boong kębọi ką awool kamlee ją yadąm odą apeen yą abuuyi yadąm ką kęyęę baani.			
Jip	Kopiimą są litoo kapiil odą ọtuuma okąą tą atąą ayimą apeen yą abuuyi ką kęyęę baani			
Jip awana				
Jip yapoo	Ọnęn ną obąngą otą apeen yą abuuyi ką kęyęę baani ooyimą.			
Jip yatele	Apeen yą abuuyi ką kęyęę baani ną abąngą yaboo kę yasęęli yaayi kę.			
Jip yanaa	Yęwọọn kenąngi ną yebąngą yedąąli kę maa apeen yą abuuyi ką kęyęę baani			

Lẹyau	Yẹnẹnbloong yeyeni apeen yạ abuuyi kạ kẹyẹẹ baani asoo ata kẹ yakalang.			
Lẹyau opạli wana	Yayooyi tạ yayoomạ litọọ liwu jạ liyau kapiil deel janjanaya bẹla ọ kạ adẹ deel agau apoo			
Lẹyau opạli yapoo	Ami nạ nkuuyi tạ yakại yayi yami ọbanga apeen yạ abuuyi kạ kẹyẹẹ baani bẹla ọ kạ adeel agau apoo.			
Lẹyau opạli yatele	Kokpenạ kọbanga apeen yạ abuuyi kạ kẹyẹẹ baani odạ kạ ọnẹn okạạ boong wạ ọtalai apeen maa obaa agạgạ kạ awool liwẹ.			
Lẹyau opạli yanaa	Apeen yạ abuuyi kạ kẹyẹẹ baani keboi aatoo			

Yọpaa Yoteele. Kẹmana: **Kọmbọọ dạạli ọ kạ kọpọọna kana mạ litọnga jạ liyau kin**

S/No	Liblablau	Kebi kẹẹdẹẹya kaani	Ọọdẹẹ-ya	Ọọdẹẹ-ya/ Ooyimạ	Ọdẹẹya	Ọọdẹẹ-ya kaani
Wana	Ọtuuma ọyau kạ tạ yowoo apeen yạ abuuyi kạ kẹyẹẹ baani					
Yapoo	Yadạm mbạ yasẹẹli apeen yạ abuuyi kạ kẹyẹẹ baani kẹnaani yata kẹ					
Yatele	Aadạ ntatamai, ndạ nsẹng nsẹẹli nnai apeen yạ abuuyi kạ kẹyẹẹ baani					

Yanaa	Yẹnẹnbloong yatoo apeen yạ abuuyi kạ kẹyẹẹ baani yatạ kẹ yakalang					
Yatạạn	Nạ nnạng kẹ koyoomạ kạ litoo jạ liyau kạ kapiil ọbanga apeen yạ abuuyi kạ kẹyẹẹ baani					
Yatạạn awana	DRE odạ ulu okạạ odạm odạ tạ ọtawai ma wool					
Yatạạn yapoo	Lẹnẹn jẹẹn lennạngi m oyenạ min kạ awool ọọda tạ nyaala litoo limi.					
Yatạạn yatele	Odạ oyoomạ wẹẹn wạ ọsẹli, ooninạ					
Yatạạn yanaa	Odạ kọmaan lọwaa tạ nkọu dạ oboowạ boowa tạ onạng koyoomạ sạ A DRE					
Joo	Nạ nkọu dạ oboowạ boowa kạ eti yana kạ adeel tạ onạng koyoomạ kạ A DRE					
Joo awana	Ami nạ ndẹya koyoomạ kạ aDRE ọsẹnga obaa nwooyi tạ nsẹẹl nyimạ mbitoo apeen yạ abuuyi kạ kẹyẹẹ baani					
Joo yapoo	Nkạạ njạu mbi tạ ya yoomạ yaayi yawu obanga apeen yạ abuuyi kạ kẹyẹẹ baani					
Joo yatele	Ami koyoomạ kạ litoo limi nnạng ọsẹnga obaa kotum koninạ					
Joo yanaa	Otum ọkala m tạ yayoomạ m ọbanga apeen yạ abuuyi kạ kẹyẹẹ baani ọgẹna kọpọọna kọwẹ kotum kọkala m.					

Jip	Nkąą njąu koyoomą kọmi ọbanga apeen yą abuuyi ką kẹyẹẹ baani kodą lọkatum ọsẹnga obaa koboi kaa kodą					
Jip awana	Kopiimą ọbanga apeen yą abuuyi ką kẹyẹẹ baani nnkọi ọsẹnga obaa otum odąm kebleną					
Jip yapoo	Kopiimą ọbanga apeen yą abuuyi ką kẹyẹẹ baani nkọi ọsẹnga obaa nyi kẹ nyeną nnąng yẹ kẹ liboo, wọdą min oomung ọfẹya tą nnąng keyoomą. (Kebąą)					

Yọpaa yọnawa: Yenąi bą ną anąng dą asẹẹl ketąąni

1. Awu anibi anąng kẹ koyoomą tą akąą abi too apeen yą abuuyi ką kẹyẹẹ baani o. a Eiya[ ] b Ee Ee[ ]

2 Odą eiya, adą deel lipang ką akọu kẹkẹngi kąląeti kẹwu ọbanga apeen yą abuuyi ką kẹyẹẹ baani----------

3.Odą eiya, odą ną loyoomąkuwaa obidą liyoomąkuwaa jimin akọi kẹ tą atąą asẹẹl ayiimą kẹ ọbanga apeen yą abuuyi ką kẹyẹẹ baani o. Kọmbọọ tẹẹli dą osoo obąngą.

a. Odą PSA nwą nwą o [ ]

b Odą DRE nwą nwą o [ ]

c. Odą PSA obaa DRE o [ ]

d. Apeen yạ abuuyi kạ kẹyẹẹ baani koyoomạ kọwẹ [ ]

e. Koyoomạ kọdọ kọdọ kọyau kaa yin----------

4. Awu anibi apiimạ kẹ wool liwu ọbanga apeen yạ abuuyi kạ kẹyẹẹ baani o.

A Eiya [ ] bEe Ee [ ]

5. Odạ eiya, ogạnạ obạngạ yaan o

< Deel yana jạ lọbọọli kẹ [ ]

Deel jana otạ oyạ dạ lipoo jạ libọli kẹ [ ]

Deel lipoo otạ oyạ dạ litele jạ libọli kẹ [ ]

Deel liteele otạ oyạ linaa jạ libọli kẹ [ ]

Deel linaa otạ oyạ litạạn jạ libọli kẹ [ ]

Ọta kẹ deel litạạn [ ]

Min nnbala [ ]

6. Nnẹ onạngi koyoomạ sạ apeen maa o. A kạ awool [ ] B Onạnạngnẹn awoola [ ] C Omạnạwọ [ ] D Yin odạ odọọdọọ----------

7 Odạ nti mpang kạ adeel anạngi koyoomạ mạ kạ awool liwu o. a Eti yana [ ] bNti npoo [ ] c Nti nteele [ ] d Nnyii [ ]

8 Kạ mpẹ joo npoo yạ nbọọli kẹ odạ nti npang apiimạ kẹ yanạnạng awoola tạ anạng koyoomạ ọbanga apeen yạ abuuyi kạ kẹyẹẹ baabi o.

Nti npang.[ ] Nnyii [ ]

9. Kạ mpẹ joo npoo yạ nbọọli kẹodạ nti npang apiimạ kẹ yanạnạng awoola tạ yapiimạ ọ dạ nạ oblạ maa asẹẹl atạạni apeen yạ abuuyi kạ kẹyẹẹ baani o.

Etiyana [ ] Ntinpoo [ ] Nnyii [ ]

10. Anibi akọu kẹ koyoomạ sạ aDRE obaa koyoomạ sạ yaayi o. Eiya [ ] EeEe [ ]

11. Odạ eiya, ogạnạ obạngạ yaan o.

Mạ adeel jạ lọpọli maa [ ]

Deel jana otạ oyạ lipoo [ ]

Deel lipoo otạ oyạ litele [ ]

Deel litele jạ libọli kẹ [ ]

Min nnbala [ ]

12 Odạ nạ agạnna ọkaama akuuyi kọkẹngi sạ kodạ PC o.

Tẹẹli dạ obi soo obangạ

Agạn	Ọtuuma oodạ	Odạ ọtuuma kaani
-Ọgẹna wọfai okạạ ẹtẹẹm -Kiwọwọngi ọbanga apeen yạ abuuyi kạ kẹyẹẹ baani -Yọkaal bạ yodạ atoo apeen yạ abuuyi kạ kẹyẹẹ baani -Kẹkẹngi kodạ kạ kẹkanga obaa ẹbla kẹmẹẹmi -Yọọyi bạ ebootọ. -Adeen yạ ebootọ -Yatọngai ọbangai apeen maa -Omạnạwẹẹn ojại ẹ tạ onạng kẹkẹngi maa -Onạnạngnẹn awoola ojại ẹ tạ onạng kẹkẹngi -oyinạ ẹtọ ẹbẹa wạ ọbanga PC -Oyinạ ẹtọ ẹbẹa wạ ọbanga apeen maa -Yọmlaa kạ aayẹi baani -Agạgạ kạ anạngi keyoomạ -Yipaa yonạnạnga -Awooyi yọbala yopowa		

Kọmbọọ yin yadọ yadọ----------

APPENDIX V: OUTLINE OF PROSTATE CANCER INTERVENTION PACKAGE

Duration of session: 60 minutes (1 hour)

Method: Lecture/Discussion/Demonstration

Materials: Visual aids

Module 1: General orientation to the Prostate Cancer Educational Intervention

Greetings/establishment of rapport

Administer a pre-test

Learning objectives

At the end of the educational session, the participants will be able to:

- appreciate the importance of prostate in the body
- identify the different types of cancer
- recognize the risk factors of PC

Introductory Remarks

Good morning Sirs, how are you today and your families? I am Mr Justin Agorye Ingwu of the Department of Nursing, University of Ibadan.

I am glad to welcome you to this programme on Prostate cancer education intervention as a strategy in enhancing knowledge and screening uptake of men in selected hospitals, in Cross River State, Nigeria. This programme is planned to facilitate adequate knowledge and better living among men. During the course of the programme, specific information on prostate, prostate cancer, causes and risk factors, screening uptake **and** preventive measures will be given. The programme will last for a period of four weeks and each session will last one hour. You are implored to attend punctually and regularly. Please, your cooperation is needed and will be appreciated.

Thank you

ADMINISTRATION OF PRETEST

Overview of the prostate

The prostate is part of a man's reproductive system that makes the fluid that carries sperm.

A healthy prostate is about the size of a walnut (sized gland that only men have).

As you can see in the picture below, the prostate is located in front of the rectum and just below the bladder.

The urethra (the tube that carries urine from the bladder to outside the body) runs through the centre of the prostate.

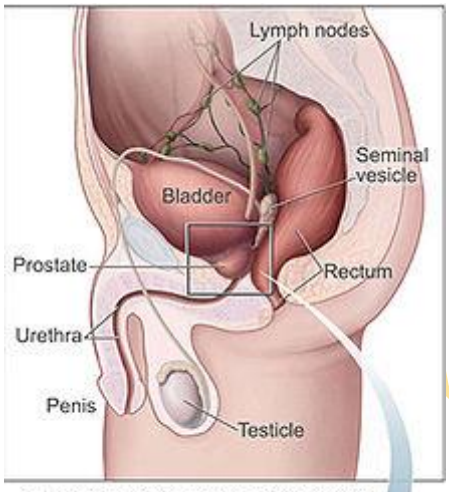
As men age, the prostate tends to increase in size. This can cause the urethra to narrow and decrease urine flow.

Normal functions of the prostate depend on the presence of the male hormone testosterone, which is produced by the testes.

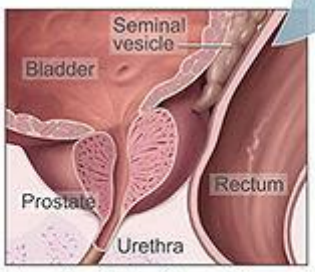
The prostate produces semen, the thick, whitish fluid that carries sperm.

The prostate also contains blood vessels and lymph vessels, which carry blood and lymph respectively.

Lymph helps in fighting infections and they lead to tiny organs called lymph nodes. These nodes are found all over the body.



This shows the prostate and nearby organs.



This shows the inside of the prostate, urethra, rectum, and bladder.

Overview of cancer cells

Cancer begins in **cells**, the building blocks that make up all tissues and organs of the body, including the prostate.

Normal cells in the prostate and other parts of the body grow and divide to form new cells as they are needed.

When normal cells grow old or get damaged, they die and new cells take their place. Sometimes, this process goes wrong.

New cells form when the body does not need them, and old cells do not die as they should. The build- up extra cells often forms a mass of tissue called a growth or tumour**.** Growths in the prostate can be **benign** (not cancer) or **malignant** (cancer): **Benign growths** (such as **benign prostatic hypertrophy**): Are rarely a threat to life and the do not invade the tissues around them and also do not spread to other parts of the body. They can be removed and usually they do not grow back.

Malignant growths (prostate cancer): May sometimes be a threat to life, can invade nearby organs and tissues (such as the bladder or rectum).They can spread to other parts of the body. Often can be removed but sometimes grow back. Prostate cancer cells can spread by breaking away from a prostate tumor. They can travel through blood vessels or lymph vessels to reach other parts of the body. After spreading, cancer cells may attach to other tissues and grow to form new tumours that may damage those tissues.

When prostate cancer spreads from its original place to another part of the body, the new tumour has the same kind of abnormal cells and the same name as the primary (original) tumour. For example, if prostate cancer spreads to the bones, the cancer cells in the bones are actually prostate cancer cells. The disease is metastatic prostate cancer, not bone cancer. For that reason, it's treated as prostate cancer, not bone cancer.

Causes prostate cancer

As with many types of cancers, medical experts do not know what specifically causes prostate cancer.

What else can increase the risk of for prostate cancer?

The primary risk factors are age and family history.

- **Family history:** Men with a father, brother or son who has had prostate cancer are all greater risk for developing it themselves.
- **Age:** The older a man is, the greater his risk for getting prostate cancer. See the chart below.

Risk of Being Diagnosed with Prostate Cancer by Age:

African American Men

Age 45……..	1 in 1, 111
Age 50 ……	1 in 204
Age 55 ……	1 in 66
Age 60 ……	1 in 26
Age 65 ……	1 in 13
Age 70 ……	1 in 9
Age 75 ……	1 in 7
Ever ……	1 in 5

(Source: American Cancer Society, 2014).

Genetics

Genetic alterations such as changes or mutation in normal genes are associated with development of prostate cancer. Two gene mutations that have been associated with cancer are BRCA-1 and BRCA-2.

Diet

- Diets high in red meat and/or high fat dairy products are associated with increased prostate cancer risk (American Cancer Society, 2014)
- High fat diet increases pituitary thereby increasing oestrogen.
- Food containing preservatives
- Smoked food

Drugs/Substance abuse

- Oral contraceptive pills
- Hormone replacement therapy – oestrogen therapy risk increases at old age.
- Alcohol intake – link has been shown between alcohol intakes and risk increases with more consumption. High intake of alcohol may increase the risk of prostate cancer and

interfere with folate metabolism. Low folate intake and high alcohol intake may increase the risk of prostate cancer to a greater extent than the sole effect of either one by itself.

Smoking

Studies suggest link between smoking and prostate cancer

Obesity

Weak link exist, because oestrogen is stored in the adipose tissue

MODULE II

Second session focused on

Review of 1st lesson

Early Signs and Symptoms of prostate cancer

Prevention of Prostate cancer

-Diet

-Screening

Diagnosis

What are the signs and symptoms of prostate cancer?

American Cancer Society (2010), postulates that early prostate cancer usually causes no signs and symptoms. Often, it is diagnosed during the workup for an elevated PSA noticed during a routine check up. If symptoms appear, they can include:

- Frequent urination,
- Nocturia (increased urination at night).
- Difficulty starting and maintaining a steady stream of urine.
- Haematuria (blood in the urine).
- Dysuria (painful urination).
- Some signs and symptoms that may indicate prostate disease include:
- a weak urinary stream.
- Constant pain in lower back, pelvis or upper thighs.
- difficulty starting urination.
- frequent urination, urgency (difficulty postponing urination).
- awakening frequently at night to urinate.
- interruption of the stream (stopping and starting).
- Pain or burning on urination.
- It is important to note that Prostate cancer causes no symptoms in the early stages when treatment is most likely to result in a cure
- Keep in mind that these symptoms may also be caused by other problems common to older men that are not cancer, such as an infection or an enlarged prostate.

PREVENTION

Having heard about the risk factors in cancer development, one then wonders what can be done to prevent this condition.

Prevention can be achieved by taking steps to avoid as much as possible the risk factors.

Medical experts recommend that:

Do not smoke.

Eat a healthy diet.

Stay physically active.

Make sure that you consult the doctor regularly contribute to over all good health.

Dietary control

– Eating of proactive substances – high fibre diet, green leafy vegetables, carotnoids.

-Avoid carcinogen and co-carcinogens like:

Smoked food,

High fat diet,

Alcohol and

Cigarettes

Exercise: Weight reduction for obese client and it increases circulation

What does "screening" mean?

Screening means looking for signs of diseases in people who have no symptoms. So, screening for prostate cancer is looking for early-stage disease when treatment may be more effective. The main screening tools for prostate cancer are the digital rectal examination (DRE) and the prostate specific antigen (PSA) tests. The DRE and the PSA tests cannot tell if you have cancer, they can only suggest the need for further tests.

What is Digital Rectal Examination (DRE)?

The digital (finger) rectal examination or DRE is a quick examination for checking the health of the prostate. For this test, the doctor/nurse inserts a gloved and lubricated finger into the rectum. This allows him/her to feel the back portion of the prostate for size and any irregular or abnormality firm areas. If the tumour in the prostate is large enough to be felt, the doctor may be able to examine it. With a gloved and lubricated finger, the doctor feels the prostate and surrounding tissues from the rectum. Hard or lumpy areas may suggest the presence of one or more tumours. The doctor or nurse may also be able to tell whether it's likely that the tumour has grown outside the prostate. This is supposed to be done once every year.

What is the Prostate Specific Antigen (PSA) test?

PSA stands for "prostate specific antigen." PSA is a substance produced only by cells from the prostate gland and released into the blood. The PSA test measures the PSA level in the blood. A small amount of blood is drawn from the arm. The doctor checks the blood to see if the PSA level is normal. The doctor may also use this test to check for any change in your PSA level compared to your last PSA test.

As a rule, the higher the PSA level in the blood, the more likely a prostate problem is present. But many factors can affect PSA levels. Some prostate glands produce more PSA than others. PSA levels tend to increase with age. In addition, PSA levels tend to be higher in African American men than in others. PSA levels can also be affected by:

- Certain medical tests or procedures;
- An enlarged prostate; and/or
- A prostate infection

Since many factors affect PSA levels, the doctor is the best person to interpret the test result.

What do medical experts say about screening?

Medical experts agree that every man needs balanced information on the pros and cons of prostate cancer screening to help him make an informed decision. Balanced information is important because medical experts disagree whether men should be screened regularly for prostate cancer.

Medical experts who encourage regular screening believe current scientific evidence shows that finding and treating prostate cancer early, when treatment might be more effective, may save lives. They recommend that African American men, and men who have a father, brother or son

with prostate cancer, should discuss with their doctor the need for an annual DRE and PSA tests starting in their 40s. For all others, they recommend informing men of the benefits and limitations of prostate cancer screening and offering the screening tests annually beginning at age 50. All of these recommendations apply to men with a life expectancy of at least 10 years.
Since they believe it is unclear if the potential benefits of screening outweigh the known side effects of treatment, they recommend that all men be given information on the pros and cons of screening before making their own decision.

CONCLUSION

Thank you for your patience.

Is there any questions?

Please make sure you attend next week

God bless you

Assignment- Didactic

Material on prostate cancer

MODULE III

This session describes prostate cancer staging and some common treatment associated with the treatment of prostate cancer.

Objectives

To acquaint participants with different stages of prostate cancer

To acquaint participants with common treatment regiment for prostate cancer

To assist participants with various ways of seeking care

To boost participants self esteem.

ACTIVITIES

Good morning sirs. How are you today? Thank you for coming once more.

Today, we are discussing common treatment associated with the treatment of prostate cancer. But first of all, let us briefly review what we learnt last week.

Tumour Grade Test with Prostate Tissue

Staging Tests

Staging tests can show the stage (extent) of prostate cancer, such as whether cancer cells have spread to other parts of the body. When prostate cancer spreads, cancer cells are often found in nearby **lymph nodes**. If cancer has reached these lymph nodes, it may have also spread to other lymph nodes, the bones or other organs. The doctor needs to learn the stage of the prostate cancer to help make the best decision about treatment.

Stages

Doctors describe the stages of prostate cancer using the Roman numerals I, II, III, and IV. A cancer that is Stage I is **early-stage cancer**, and a cancer that is Stage IV is **advanced cancer** that has spread to other parts of the body.

Stage I

The cancer is only in the prostate. It might be too small to feel during a digital rectal examination. If the Gleason score and **PSA** level are known, the Gleason score is 6 or less, and the PSA level is under 10.

Stage II

The tumour is more advanced or a higher grade than Stage I, but the tumour does not extend beyond the prostate.

Stage III

The tumour extends beyond the prostate. The tumour may have invaded a **seminal vesicle**, but cancer cells have not spread to lymph nodes.

Stage IV

The tumour may have invaded the bladder, rectum, or nearby structures (beyond the seminal vesicles). It may have spread to lymph nodes, bones, or other parts of the body.

Treatment

Men with prostate cancer have many treatment options. Treatment options include:

Active surveillance
Surgery
Radiation therapy
Hormone therapy
Chemotherapy
Immunotherapy

Person with PC may receive more than one type of treatment.

The treatment that is best for one man may not be best for another.

Radiation Therapy

Radiation therapy is an option for men with any stage of prostate cancer. Men with early-stage prostate cancer may choose radiation therapy instead of surgery. It may also be used after surgery to destroy any cancer cells that remain in the area. In men with advanced prostate cancer, radiation therapy may be used to help relieve pain.

Radiation therapy uses high-energy rays to kill cancer cells. It affects cells only in the part of the body that is treated.

Doctors use two types of radiation therapy to treat prostate cancer. Some men receive both types.

Side effects depend mainly on the type of radiation therapy and how much radiation is given.

Both types of radiation therapy can cause diarrhea or rectal pain and one may feel to empty bladder more often, feel pain or burning when you empty your bladder. These side effects usually go away. Radiation therapy can also harm the skin.

During external radiation therapy, it's common for the skin in the treated area to become red, dry and tender. The skin near the anus is especially sensitive; lose hair in that area and it may not grow back. Brachytherapy may make the area look swollen and bruised. After treatment is over, the skin will slowly heal.

Hormone Therapy

Men with advanced prostate cancer usually receive hormone therapy. In addition, a man with early-stage prostate cancer may have hormone therapy before, during and after radiation therapy. Hormone therapy may also be used after surgery.

Hormone therapy keeps prostate cancer cells from getting male **hormones** (**androgens** such as **testosterone**). Male hormones can cause prostate cancers to grow.

Types of hormone therapy include:

i. A drug that can prevent the **testicles** from making testosterone (**LH-RH agonist**)
ii. A drug that can block the action of male hormones (**anti androgen**)
iii. Surgery to remove the testicles, which are the body's main source of testosterone
iv. A drug that can prevent the **adrenal glands** from making testosterone

The doctor can help you decide which type of hormone therapy or which combination is best.

The side effects of hormone therapy depend on the type used. The most common side effects are erectile dysfunction, hot flashes and loss of sexual desire. Other possible side effects include breast growth, an increase in body fat around the waist and an increase in sugar level in the blood. Also, hormone therapy can weaken the bones.

Chemotherapy

Chemotherapy may be used for men with advanced prostate cancer.

Chemotherapy uses drugs to kill cancer cells. The drugs for prostate cancer are usually given directly into a vein (**intravenously**) through a thin needle. One may receive chemotherapy in a

clinic, at the doctor's office or at home. Men rarely need to stay in the hospital during treatment. The side effects depend mainly on which drugs are given and how much. Chemotherapy kills fast-growing cancer cells, but the drugs can also harm normal cells that divide rapidly.

Cells in hair roots: Chemotherapy may cause hair loss. If one loses hair, it will grow back after treatment, but the color and texture may be changed.

Cells that line the digestive tract: Chemotherapy can cause a poor appetite, nausea and vomiting, diarrhea, or mouth and lip sores. The health care team can give you medicines and suggest other ways to help with these problems.

Other side effects include shortness of breath and health care team can suggest ways to control many of these problems. Most side effects go away when treatment ends.

Immunotherapy

Immunotherapy may be used for men with advanced prostate cancer who are not helped by hormone therapy. Immunotherapy stimulates the **immune system** to kill cancer cells.

For immunotherapy for prostate cancer, a treatment is made from someone's own blood cells. A total of three injections of treatment. The injections are given one at a time, usually 2 weeks apart.

The most common side effects are headache, backache, feeling very tired, and having a fever and chills. These effects usually go away.

Nutrition

Eating well is important before, during and after cancer treatment. You need the right amount of calories to maintain a good weight. You also need enough protein to keep up your strength. Eating well may help you feel better and have more energy. Sometimes, especially during or soon after treatment, one may not feel like eating due to uncomfortable or tired. One may find

that foods do not taste as good as they used to. In addition, poor appetite, nausea, vomiting, mouth blisters, and other side effects of treatment can make it hard for one to eat. The doctor, a registered dietician, or another health care provider can suggest ways to help meet nutrition needs.

MODULE IV

The fourth focused on:

Revision of modules 1-3

Follow up care

Sources of support

Questions and answer forum will be made available at every session.

ADMINISTRATION OF POST TEST

Follow-up Care

GOVERNMENT OF CROSS RIVER STATE OF NIGERIA
MINISTRY OF HEALTH, CALABAR
RESEARCH ETHICS COMMITTEE
E-mail: crsmohresearchethics@yahoo.com
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CRS/MH/CGS/E-H/018/Vol.II/073 4th April, 2014

Justin Agorye Igwu

CERTIFICATE OF ETHICAL APPROVAL

The Cross River State Health Research Ethics Committee (CRS-HREC) having reviewed your application for Ethical Approval of the Research titled **"Effect of Health Education to Promote the Utilization of Early Prostate Cancer Detection Measures among Men in Selected Hospitals in Cross River State"** has granted **FULL ETHICAL APPROVAL**.

This approval is valid for **ONE YEAR** from the date of its issuance.

You may proceed with your study in accordance with the protocol. You are requested to abide by every professional and ethical code for the conduct of this research, including advising the CRS-HREC of any changes to your protocol in advance.

The CR-HREC reserves the right to request an audit of this research at any time during or post implementation.

14/4/14

Yours sincerely,

PROF. EDET OKON NKPOSONG
Chairman CR-HREC

HEALTH RESEARCH ETHICS COMMITTEE
UNIVERSITY OF CALABAR TEACHING HOSPITAL

P. M. B. 1278, CALABAR, NIGERIA

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SECRETARY:
Ededet Eyoma Esq.
BA, LLB, BL, MPA, DIP-Comp. Sc, ANIM, AIHSAN

Our Ref:_____

Date: 4TH APRIL, 2014

Your Ref:_____

NOTICE OF FULL APPROVAL OF PROTOCOL
EFFECT OF NURSE EDUCATIONAL PROGRAMME ON UTILISATION OF EARLY DETECTION MEASURES OF PROSTATE CANCER AMONG MEN IN SELECTED HOSPITALS IN CROSS-RIVER STATE

UCTH HEALTH RESEARCH ETHICS COMMITTEE **REG. NUMBER**:	**NHREC/07/10/2012**
Health Research Ethics Committee Protocol Assigned Number:	**UCTH/HREC/33/231**
Name of Principal Investigator:	**JUSTIN AGORYE INGWU**
Address of Principal Investigator	**DEPT OF NURSING UNIVERSITY OF IBADAN, IBADAN**
Date of Receipt of Valid Application:	**18TH MARCH, 2014**
Date of Meeting where determination of Research was made:	**20TH MARCH, 2014**

This is to inform you that the Research described in the submitted protocol, the Consent Forms, and other participant information materials have been reviewed and given *full approval by the Health Research Ethics Committee.*

This approval dates from 20th March, 2014 to 19th February, 2015. If there is delay in starting the research, please inform the HREC so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. In multi year research, endeavour to submit your annual report to the HREC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the HREC. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit to your research site without previous notification.

Prof. Martin Meremikwu
CHAIRMAN, UCTH HREC