ASSESSMENT OF THE KNOWLEDGE AND ATTITUDE TOWARDS PROSTATE CANCER AND THE UTILIZATION OF SCREENING SERVICES AMONG INTERCITY/INTERSTATE PUBLIC TRANSPORT DRIVERS IN BENIN CITY EDO STATE

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BEING A ONE-YEAR PROJECT PRESENTED TO THE DEPARTMENT OF PUBLIC HEALTH AND COMMUNITY MEDICINE, SCHOOL OF MEDICINE, COLLEGE OF MEDICAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, NIGERIA

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR IN MEDICINE AND BACHELOR OF SURGERY (MBBS) DEGREE IN THE UNIVERSITY OF BENIN, BENIN CITY

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DECLARATION

I hereby declare that this research project titled "ASSESSMENT OF THE KNOWLEDGE AND ATTITUDE TOWARDS PROSTATE CANCER AND THE UTILIZATION OF SCREENING SERVICES AMONG INTERCITY/INTERSTATE PUBLIC TRANSPORT DRIVERS IN BENIN CITY EDO STATE" will be conducted under supervision and has not been submitted in part or in full for any purpose.

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CERTIFICATION

This is to certify that this research study titled "**ASSESSMENT OF THE KNOWLEDGE AND ATTITUDE TOWARDS PROSTATE CANCER AND THE UTILIZATION OF SCREENING SERVICES AMONG INTERCITY/INTERSTATE PUBLIC TRANSPORT DRIVERS IN BENIN CITY EDO STATE**" will be conducted by **NDIFREKE UKO-OWO UMOH** with matriculation number **MED1606145** under the supervision of **DR. ESOHE OGBOGHODO** in the Department of Public Health and Community Medicine, College of Medical Sciences, University of Benin as part of the requirements for the award of Bachelor of Medicine, Bachelor of Surgery (MBBS) degree.

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LIST OF ABBREVIATIONS

CaPTC	Prostate Cancer Transatlantic Consortium
DRE	Digital Rectal Examination
FMoH	Federal Ministry of Health (Nigeria)
GLOBOCAN	Global Cancer Incidence, Mortality, and Prevalence Database
IPSS	International Prostate Symptom score
NGO	Non-Governmental Organization
PCa	Prostate Cancer
PSA	Prostate-Specific Antigen
QoL	Quality of Life
WHO	World Health Organization

DEFINITION OF TERMS

Digital Rectal Examination (DRE): A physical examination in which a healthcare provider inserts a gloved, lubricated finger into the rectum to feel for abnormalities of the prostate gland.

Occupational Group: A category of workers who share similar work characteristics; in this study, it refers specifically to intercity and interstate public transport drivers.

Prostate Cancer (PCa): A malignant tumor that develops in the prostate gland, a small gland in men responsible for producing seminal fluid.

Prostate-Specific Antigen (PSA): A protein produced by the prostate gland; elevated levels in the blood may indicate prostate cancer or other prostate conditions.

Public Transport Drivers: Individuals engaged in transporting passengers via cars, buses, or minibuses along intercity or interstate routes, forming the study population.

Quality of Life (QoL): The overall well-being of individuals, including physical, psychological, and social aspects, which may be affected by prostate cancer diagnosis and treatment.

Screening Services: Preventive health services such as PSA testing and DRE, aimed at detecting prostate cancer at an early stage when treatment outcomes are better.

Utilization: The degree to which public transport drivers make use of available prostate cancer screening services.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Prostate cancer is a major global health issue, particularly affecting men in middle and older age groups. The prostate gland, located just below the bladder, functions as a secondary reproductive organ in males. Its main role is to contribute fluids to semen, which help nourish and protect sperm cells[1]. Prostate cancer presents with both physical and psychological symptoms[2]. In its early stages, it is often without symptoms. As it progresses, symptoms may resemble those of non-cancerous prostate conditions and include weak or interrupted urine flow, difficulty starting urination, frequent urination (especially at night), blood in the urine, and painful urination[2]. In advanced stages, it may spread to the bones, causing pain in areas such as the hips, spine, or ribs[2]. According to data from the Global Cancer Incidence, Mortality, and Prevalence (GLOBOCAN), prostate cancer was the second most commonly diagnosed cancer and the fifth leading cause of cancer-related deaths among men in 2020, with nearly 1.4 million new cases and about 375,000 deaths worldwide[3]. It was also the most frequently diagnosed cancer among men in 112 out of 185 countries[1].

In Nigeria, the number of prostate cancer cases and related deaths has been increasing, with many diagnoses made at advanced stages due to low awareness and late hospital visits[4]. It is currently the most commonly diagnosed cancer among adult Nigerian men, with the number of cases rising each year. Data from the Ibadan Cancer Registry show that the proportion of prostate cancer cases relative to other male cancers rose from 4.45% to 10.5% over the past three decades[5–6]. Most

prostate cancer cases occur in men over the age of 50, with incidence increasing sharply and peaking in the 70s. Globally, about 75% of all prostate cancer cases are in men aged 65 and above. Histological studies from various centres in Nigeria have reported prostate cancer rates ranging from 22.4% to 37.4%. Rates also differ across African countries, with Gambia reporting 2.5 per 100,000, South Africa 30.8 per 100,000, and Uganda 35.5 per 100,000. In comparison, much lower rates are reported in the Asia-Pacific region (3 per 100,000) and North Africa (10.6 per 100,000)[7]. Identified risk factors for prostate cancer include increasing age, family history, genetic background, race, environmental exposures, and lifestyle factors such as diet and physical activity[8]. In Nigeria, the burden of the disease is worsened by the high number of late-stage diagnoses, which contributes to higher death rates compared to more developed countries[9].

Improving public awareness is essential for promoting early detection and better outcomes. Research shows that knowledge and awareness of prostate cancer vary widely among different populations, with many men lacking basic understanding of the disease, its warning signs, and the importance of early screening[10]. In Nigeria, a large number of men remain unaware of the risk factors and available screening options for prostate cancer, which leads to delays in diagnosis and treatment[10]. Screening for prostate cancer—especially through prostate-specific antigen (PSA) testing and digital rectal examination (DRE)—is important for early detection. Finding the disease early increases the chances of successful treatment and survival[10]. However, in Nigeria, the number of men going for screening is still low due to limited awareness, poor access to healthcare, cultural beliefs, and fear of a cancer diagnosis[10].

The effectiveness of early detection depends greatly on proper use of the prostate-specific antigen (PSA) test and the digital rectal examination (DRE). PSA is a protein made by both healthy and cancerous prostate cells. When PSA levels are high in the blood, it may be a sign of prostate cancer

or other prostate problems. While a high PSA level does not always mean cancer, it serves as an important warning signal that further testing may be needed. The DRE involves a doctor gently feeling the prostate through the rectum to check for hard or uneven areas that might suggest cancer. Though each test has its limits, using both together gives a better chance of finding prostate cancer early. Current medical advice recommends that men—especially those at higher risk due to family history or African background—should start regular screening between the ages of 40 and 50, depending on individual risk factors[11]. Finding prostate cancer early is crucial because it improves the chances of successful treatment and long-term survival. When the disease is found while still confined to the prostate, it can often be managed effectively with treatments such as surgery (removal of the prostate), radiation therapy, or even careful monitoring without immediate treatment (known as active surveillance)[12]. Early detection also helps maintain quality of life by preventing problems like cancer spreading to the bones, blockage of the urinary tract, and severe pain. Additionally, treating cancer early generally costs less than treating advanced cancer, which often needs more complex and expensive care.

In Nigeria, several obstacles limit early detection and widespread screening for prostate cancer. Screening services like PSA testing and DRE are mostly available only in large hospitals, some mid-level health centres, and a few private clinics—mainly in cities. This means people in rural areas often have no access to these services because specialist clinics and trained health workers are lacking. Making matters worse, there are fewer than 200 urologists in the entire country, which has a population of over 200 million. This shortage makes it hard to run large-scale screening programs[13]. On top of that, most screening services are not free and must be paid for by the patient, making them too expensive for many, especially those with low incomes[13].

A person's level of education has a big impact on their awareness of prostate cancer and whether they decide to get screened. Studies show that men who have more education are more likely to know about the disease and take steps to get tested. Wealth also plays a role—those who earn more can afford the cost of screening more easily. On the other hand, men with less money may focus on basic needs like food and shelter, leaving no room for preventive health checks. What someone does for a living also matters. Office workers and government employees often have better access to health insurance and regular check-ups, while farmers, tradesmen, and drivers are less likely to get screened[14]. Cultural views and stigma add to the problem. In many places, discussing cancer or male reproductive health is seen as embarrassing or inappropriate, which stops men from seeking help early. Some men also fear rectal exams, think cancer always leads to death, or don't trust the health system—all of which prevent them from getting tested. Public knowledge about prostate cancer remains low, with many men unaware of the risk factors, early signs, or benefits of early detection. This lack of awareness is partly because public health campaigns in Nigeria often focus more on infectious diseases than on cancers like prostate cancer[15].

To tackle these problems, the Nigerian government and various non-governmental organizations (NGOs) have made efforts to increase awareness and promote screening. The National Cancer Control Plan (2018–2022), developed by the Federal Ministry of Health, includes strategies for preventing, detecting early, and treating cancers, including prostate cancer[16]. NGOs like the Prostate Cancer Transatlantic Consortium (CaPTC) and Project PINK BLUE are also working to raise awareness. They hold community events, offer mobile screening services, train health workers, and focus on reaching people in areas that are often left out. However, these programs face challenges like limited funding, sustainability, and how widely they can be carried out. This

highlights the need for stronger government action and broader public education to help lower the number of prostate cancer cases and deaths in Nigeria.

This study aims to assess the knowledge and attitudes of public transport drivers in Benin City, Edo State, toward prostate cancer and their use of available screening services. Public transport drivers form a unique and important part of the city's urban workforce. Many in this group are middle-aged or older, which places them at a higher risk of developing prostate cancer[17]. Some evidence also suggests that the constant whole-body vibrations experienced while driving may increase testosterone levels—an established risk factor for prostate cancer[18]. In fact, studies have shown that drivers diagnosed with prostate cancer are up to four times more likely to have aggressive forms of the disease[18]. Understanding how much these drivers know about the disease, their beliefs, and their health habits is crucial for planning suitable public health interventions.

Several studies have examined people's knowledge and attitudes toward prostate cancer in various parts of Nigeria. For example, research in Lagos found that while some men had heard of prostate cancer, many lacked detailed knowledge and believed common myths[17]. Similar findings were reported in Ilorin, where awareness and attitudes were also found to be poor[19]. However, few studies have focused specifically on public transport drivers, a group that may face special challenges in accessing health information and medical care. By focusing on this group in Benin City, this study aims to collect important data about their awareness of prostate cancer and their screening behaviours. The results will help guide the design of more effective and targeted health education and screening programs. These efforts can promote early detection and help lower the burden of prostate cancer among this at-risk population.

1.2 Statement of the Problem

Prostate cancer remains one of the most pressing health challenges affecting men globally. It is currently the most frequently diagnosed cancer among men in many parts of the world and a leading cause of cancer-related deaths.[20] In Nigeria, prostate cancer ranks as the number one cancer among men and continues to contribute significantly to the cancer burden in the country[20]. Despite improvements in medical knowledge and cancer care, the level of awareness and early detection of prostate cancer among Nigerian men remains unacceptably low. As a result, many men are diagnosed at advanced stages of the disease, when treatment becomes more complex, costly, and less likely to succeed[21].

In Benin City, Edo State, public transport drivers make up a large and important segment of the male working population. These individuals play a vital role in the local economy and daily functioning of the city. Most of them fall within the age group that is most at risk for developing prostate cancer, typically men aged 40 years and above[22]. Their occupational lifestyle is characterized by prolonged sitting, irregular eating patterns, high levels of stress, and minimal time for medical appointments. These factors not only increase their risk of developing prostate cancer but also limit their ability to seek preventive health services such as screening[23]. One of the major challenges surrounding prostate cancer in Nigeria is the lack of adequate knowledge and awareness among the population, especially among men in informal and transport-related occupations[24]. Public transport drivers, who often have limited access to formal health education and resources, may be unaware of the risk factors and early symptoms of prostate cancer[24]. This ignorance can delay diagnosis and result in worse health outcomes. Despite the availability of simple and affordable screening methods, many men do not take advantage of them, either due to lack of awareness, fear, or misconceptions about cancer[24].

Statistical data supports the growing concern surrounding prostate cancer in Nigeria. According to the Global Cancer Observatory (GLOBOCAN) 2020 report, prostate cancer accounts for over 32% of all cancer cases among Nigerian men. In that same year, there were over 15,000 newly diagnosed cases and nearly 6,000 deaths attributed to prostate cancer in the country[25]. These figures highlight the significant public health impact of the disease. The high mortality rate is largely due to late presentation at hospitals, often when the disease has progressed to a metastatic stage[25]. Early-stage prostate cancer is usually asymptomatic and can be managed effectively if detected on time through routine screening. However, low levels of awareness and limited utilization of screening services continue to hamper early detection efforts[25].

Various studies have also shown that the general attitude toward prostate cancer screening among Nigerian men is poor[26]. A study conducted in a tertiary health center in Lagos, Nigeria revealed that only about 8.2% of eligible men had ever undergone prostate cancer screening, despite more than half being aware of the disease[26]. In another study conducted in southwest Nigeria, less than half of the respondents (44.3%) demonstrated good attitudes toward prostatic diseases, likely due to widespread misconceptions, such as the belief that prostatic diseases are caused by sexually transmitted infections—and limited awareness, which together negatively influence their attitudes[17].

Although previous studies have explored prostate cancer awareness among men in Benin City—such as the work by Agbugui et al., which revealed limited understanding of the disease's risk factors, symptoms, treatment, and screening, with only 4.5% of respondents having undergone prostate-specific antigen screening—none have specifically examined public transport drivers[27]. In contrast, research conducted in Akure, Ondo State, indicates that public transport drivers possess poor knowledge and harbor negative attitudes toward prostate cancer screening, with only

a small proportion participating in screening programs[18]. This highlights the urgent need for targeted studies and tailored interventions aimed at improving awareness and screening uptake among this occupational group in Benin City. This concern is particularly pressing because public transport drivers may be at increased risk due to their occupational environment and lifestyle choices[18]. Their demanding work schedules often limit opportunities for routine medical check-ups and participation in health education initiatives[18]. Additionally, the informal nature of their employment means they typically lack health insurance coverage and may encounter financial obstacles when seeking quality healthcare[18]. Consequently, this population is more susceptible to late-stage diagnoses and adverse health outcomes[18].

The consequences of poor knowledge, negative attitudes, and low screening rates among public transport drivers are far-reaching. On an individual level, drivers who are unaware of prostate cancer and the importance of screening are more likely to present late when the disease has advanced[18]. At this stage, treatment options are more invasive, expensive, and less effective, leading to higher morbidity and mortality[18]. Late diagnosis also affects the quality of life, often resulting in chronic pain, urinary complications, and psychological distress. The burden on their families is equally significant, both emotionally and financially[18]. On a broader level, the underutilization of screening services among transport drivers in Benin City poses a serious public health concern. High rates of undiagnosed or late-diagnosed prostate cancer can contribute to the overall increase in cancer-related deaths in the region[18]. This, in turn, places additional strain on an already burdened healthcare system. Managing advanced prostate cancer is resource-intensive, requiring specialized care, hospital admissions, surgery, and long-term treatment. These costs could be significantly reduced through preventive strategies and early detection[28]. Moreover, public transport drivers are visible members of the community. Their health-seeking behavior can

influence others, particularly among their peers and customers. If they lack knowledge or hold negative beliefs about prostate cancer, it may perpetuate misinformation and reinforce harmful attitudes in the wider community. On the other hand, if they are empowered with correct information and encouraged to undergo regular screening, they can become advocates for prostate health and contribute positively to public awareness efforts.

Addressing these issues is crucial. There is an urgent need to assess the level of knowledge and attitude of public transport drivers in Benin City towards prostate cancer and its screening. This will help identify specific gaps and challenges facing this group and inform the design of targeted interventions. Health education programs tailored to their lifestyle, language, and literacy level are essential. Similarly, improving access to affordable and convenient screening services can encourage more men to undergo early testing[27]. Collaborations between healthcare providers, transport unions, and public health agencies may also be effective in reaching this group.

Prostate cancer remains a major public health issue in Nigeria, with increasing incidence and mortality rates. Public transport drivers, due to their age and occupational lifestyle, are at particular risk, yet remain underserved in cancer prevention efforts. Limited knowledge, negative attitudes, and low utilization of screening services contribute to late diagnosis and high mortality. Understanding the specific challenges faced by this group is essential to reducing the burden of prostate cancer in Benin City and promoting better health outcomes for men in the region. This study aims to fill the existing knowledge gap by assessing the awareness, attitudes, and screening practices among public transport drivers, with the goal of informing future health education and policy interventions.

1.3 Justification and Significance of Study

The significant burden of prostate cancer in Nigeria, marked by its high incidence and mortality rates, underscores an urgent need for improved early detection and targeted intervention strategies.[4] Despite growing global awareness about prostate cancer, the level of awareness and engagement with screening services in many Nigerian communities remains alarmingly low. This situation necessitates context-specific research, particularly focusing on populations that may be disproportionately affected or underserved.

Public transport drivers in Benin City, Edo State, constitute a significant and often overlooked segment of the male population. Their occupational demands, characterized by long hours, irregular schedules, and high stress, may contribute to increased vulnerability to various health challenges, including prostate cancer. The nature of their work may also hinder their ability to access healthcare facilities or engage in routine health checks, including prostate cancer screening. Consequently, they are at risk of late-stage diagnosis, which is often associated with poorer outcomes.

This study is therefore important for several reasons. First, it addresses a key public health gap by assessing knowledge, attitudes, and screening practices related to prostate cancer in this high-risk occupational group. The information generated will serve as a baseline for future research and program development aimed at improving prostate cancer awareness and screening uptake in similar populations. Second, the study will contribute to filling the current literature gap by providing empirical evidence on the level of awareness and health-seeking behavior among public transport drivers in Nigeria. By focusing on this specific group, the study brings visibility to a demographic that is often marginalized in health planning and resource allocation.

Moreover, the findings from this study are expected to inform the design of targeted educational interventions. Understanding what public transport drivers know about prostate cancer, how they

perceive it, and what barriers they face to screening will provide critical insights for developing tailored awareness programs. These programs can be incorporated into workplace health promotion initiatives or community outreach campaigns to improve early detection efforts.

Importantly, by identifying barriers, whether structural, psychological, or informational—that prevent drivers from accessing screening services, the study will offer evidence-based recommendations for improving service delivery and accessibility. This could include policy suggestions such as the establishment of mobile screening units at motor parks, health education campaigns specific to transport workers, or subsidized screening services for low-income earners.

Beyond the immediate target population, the study holds broader public health relevance. Public transport drivers, by virtue of their daily contact with diverse members of the public, can become vital agents of change in their communities. Equipping them with the right knowledge may empower them to disseminate information, challenge misconceptions, and encourage their peers and families to seek preventive healthcare. This ripple effect can extend the impact of the study far beyond the initial sample.

Additionally, the study will contribute to the broader discourse on men's health in Nigeria by highlighting the occupational and social determinants that influence prostate health outcomes. It emphasizes the need for inclusive health strategies that account for occupational exposures, lifestyle factors, and access disparities. In doing so, the study not only responds to a pressing health concern but also contributes to more equitable healthcare planning and delivery.

Addressing the problem of low prostate cancer awareness and screening uptake among public transport drivers can therefore lead to substantial public health benefits.[6] By identifying and mitigating the barriers to healthcare access in this group, the study has the potential to support

early diagnosis, improve treatment outcomes, and reduce prostate cancer-related morbidity and mortality in Edo State and similar urban settings across Nigeria.

1.4 Research Question

1 What is the level of knowledge about prostate cancer among intercity/interstate public transport divers in Benin City, Edo State?

2 What are their attitudes towards prostate cancer screening?

3 What is the rate of utilization of prostate cancer screening services?

4 What barriers prevent them from accessing screening?

1.5 Objectives of Study

General Objective:

To assess the knowledge and attitude towards prostate cancer and the utilization of screening services among intercity/interstate public transport drivers in Benin City, Edo state.

Specific Objectives

1. To assess the level of knowledge about prostate cancer among intercity/interstate public transport drivers in Benin City, Edo state
2. To assess the attitudes of intercity/interstate public transport drivers in Benin City, Edo state. towards prostate cancer screening

3. To assess the utilization rate of prostate cancer screening services among intercity/interstate public transport drivers in Benin City, Edo state
4. To Identify Barriers to Prostate Cancer Screening Among intercity/interstate public transport drivers in Benin City, Edo state.

CHAPTER TWO

LITERATURE REVIEW

2.1 OVERVIEW

Prostate cancer is a major global health concern, particularly affecting men in middle and older age groups. The prostate gland, located just below the bladder, functions as a secondary reproductive organ in males, producing fluids that nourish and protect sperm cells.[1] Prostate cancer often begins without symptoms but, as it progresses, can cause urinary difficulties, blood in the urine, and pain, especially if it spreads to the bones.[2] According to GLOBOCAN data, prostate cancer was the second most commonly diagnosed cancer and the fifth leading cause of cancer-related deaths among men worldwide in 2020, with nearly 1.4 million new cases and about 375,000 deaths[3]. It was the most frequently diagnosed cancer in men in 112 out of 185 countries.[1]

In Nigeria, prostate cancer is the most commonly diagnosed cancer among adult men, with incidence and mortality increasing steadily.[4] Many cases are detected at advanced stages due to low awareness and delayed hospital visits.[4] Data from the Ibadan Cancer Registry show that the proportion of prostate cancer cases among male cancers rose from 4.45% to 10.5% over the past three decades.[5,6] Risk factors for prostate cancer include increasing age, family history, genetic background, race, environmental exposures, and lifestyle factors such as diet and physical activity.[8] The burden is worsened in Nigeria by late-stage diagnoses, contributing to higher death rates compared to developed countries.[9]

Early detection through prostate-specific antigen (PSA) testing and digital rectal examination (DRE) plays a critical role in improving treatment success and survival.[10] However, in Nigeria, the uptake of screening remains low due to poor awareness, limited access to healthcare, cultural

beliefs, cost, and fear of cancer diagnosis.[10] Screening services are mostly concentrated in urban centres, and with fewer than 200 urologists for a population of over 200 million, large-scale screening programs face significant challenges.[13]

Educational level, income, and occupation strongly influence knowledge and screening practices. Men with higher education and better income are more likely to access screening, while those with low income or in informal occupations often face barriers.[14] Cultural stigma, fear of diagnosis, and mistrust of the health system also discourage screening.[14] Public health campaigns in Nigeria have historically focused more on infectious diseases than on cancers like prostate cancer, contributing to low awareness.[15]

Government and non-governmental efforts, such as the National Cancer Control Plan (2018–2022) and programs by groups like Project PINK BLUE and the Prostate Cancer Transatlantic Consortium (CaPTC), aim to improve awareness and screening uptake.[16] However, these initiatives face challenges related to funding, sustainability, and reach.

This study focuses on public transport drivers in Benin City, Edo State, a group at higher risk for prostate cancer due to their age profile and possible occupational exposures such as whole-body vibrations, which may increase testosterone levels and prostate cancer risk.[17,18] Understanding their knowledge, attitudes, and screening behaviors is crucial for designing targeted interventions to promote early detection and reduce the disease burden in this vulnerable group.

2.2 KNOWLEDGE OF PROSTATE CANCER

In 2024, a cross-sectional study was conducted in Najran, Saudi Arabia to assess prostate cancer awareness, knowledge, and screening practices among men. The study involved 341 male participants, who were selected through voluntary response sampling via an online questionnaire

distributed between June and September 2024. Data were collected using a self-administered online questionnaire, and the results revealed that 70.4% of participants had adequate knowledge of prostate cancer, including risk factors and screening. However, awareness of specific screening tests was limited: only 30.5% were aware of the prostate-specific antigen (PSA) test, and a mere 3.2% had ever visited a specialist regarding prostate cancer. The study concluded that although general awareness was relatively high, targeted efforts are needed to improve specific knowledge about screening tests and to encourage proactive health-seeking behavior.[29]

In 2015, a population-based cross-sectional study was published on research conducted in Riyadh, Saudi Arabia, to assess the knowledge of men over 40 years regarding prostate cancer and its screening. The study involved 400 men, selected through population-based sampling, and data was collected using a structured questionnaire. The findings showed that knowledge of prostate cancer was poor, with a mean knowledge score of 10.25 ± 2.5 (51.25%). The study identified knowledge as the only significant predictor of attitude toward screening, emphasizing that improving prostate cancer knowledge is essential for promoting positive screening behaviors.[30]

In 2022, a community-based cross-sectional study was conducted in northern Tanzania to assess prostate cancer knowledge and barriers to screening among at-risk men. The study took place in various communities across northern Tanzania and involved 6,205 men aged 40 years and above. Participants were recruited using a voluntary sampling technique, with invitations announced in local churches, mosques, brochures, and social media groups. Data was collected through a survey questionnaire administered at nearby health facilities. The study found that only 20.4% of participants demonstrated good knowledge of prostate cancer, defined as a score of 50% or higher on a Likert scale. The majority of men had poor knowledge of prostate cancer and its screening. Importantly, having good knowledge was significantly associated with having undergone prostate

cancer screening. The study concluded that poor knowledge, alongside false beliefs about the seriousness of the disease and misconceptions about digital rectal examination, contributed to low screening uptake, highlighting the need for enhanced community education efforts. [31]

In 2021, a cross-sectional study was conducted at Tikur Anbessa Specialized Hospital in Addis Ababa, to assess awareness of prostate cancer among male patients attending care in the urology unit. The study involved 241 male patients, selected through consecutive sampling of patients presenting during the study period. Data were collected using an interviewer-administered questionnaire adapted from published cancer awareness measurement tools. The findings revealed generally low levels of knowledge about prostate cancer. The mean awareness scores were 41.2% for risk factors, 43.8% for symptoms, 44.7% for screening, and 49.5% for prevention. Higher awareness was significantly associated with higher family income, having heard about prostate cancer previously, having a regular source of medical care, prior hospitalisation, and healthcare providers as the main source of information. The study concluded that targeted health education and improved communication by healthcare providers could enhance prostate cancer awareness and promote early detection efforts.[32]

In 2023, a hospital-based cross-sectional study was conducted at Mbeya Zonal Referral Hospital in Southwest Tanzania. The study's objective was to assess men's knowledge of prostate cancer and its screening. Data was collected using a structured questionnaire, and participants were selected through random sampling. The sample size was 132 male adults, aged between 18 and 75 years. It was found that 72% of the participants had heard of prostate cancer, but only 43.9% had adequate knowledge of prostate cancer screening methods. Knowledge was significantly associated with age; older men were more likely to be aware of screening options (COR = 1.03, 95% CI: 1.01–1.54, $p < 0.001$). The study concluded that while general awareness of prostate

cancer was relatively high, knowledge of screening was low. This pointed to the need for focused health education to promote early detection and screening in Tanzania.[33]

In 2023, a cross-sectional study was conducted in motor parks in Akure, Ondo State, Nigeria, to assess the knowledge of prostate cancer among public transport drivers. The study involved 234 participants, selected through convenience sampling. Data was collected using a self-structured questionnaire available in Yoruba and Igbo languages. The findings showed that the majority of public transport drivers had poor knowledge of prostate cancer and its screening. The low knowledge levels were linked to the generally low educational attainment of the participants. The study concluded that targeted health education programs, especially for people with lower levels of education and demanding work schedules, are needed to improve knowledge and encourage early detection through screening.[18]

In 2021, a descriptive cross-sectional qualitative study was conducted in the Ijebu culture cluster of Ogun State, Nigeria, to assess community stakeholders' knowledge of prostate cancer and its implications for seeking screening. The study involved 21 purposively selected community stakeholders, including 14 key informants (traditional healers and medical doctors) and 7 traditional leaders. Data was collected through in-depth and key informant interviews using a structured guide framed by Rosenstock's Health Belief Model. The study found that scientific knowledge of prostate cancer was limited among traditional healers and leaders. Most stakeholders' understanding of prostate cancer was shaped by folk beliefs rather than biomedical concepts. Although all stakeholders acknowledged that prostate cancer poses a threat to men's health, their knowledge of its causes, risk factors, and screening was inadequate. The study concluded that improving knowledge through targeted education and culturally sensitive

community engagement is essential to encourage prostate cancer screening in rural Nigerian settings.[34]

In 2017, a cross-sectional descriptive study was conducted at the University of Nigeria to assess the knowledge of prostate cancer among male staff. The study involved 655 male staff members, recruited through voluntary participation with oral consent. Data was collected using a self-administered questionnaire written in English. The findings showed that the mean knowledge score was 71.2%, with 57.8% of respondents classified as having a high level of knowledge about prostate cancer. Despite this generally good knowledge level, the study also highlighted that a significant proportion of staff still had poor knowledge in certain areas related to screening and treatment. The study concluded that while prostate cancer knowledge among male staff was appreciable overall, there remains a need for continuous education to address specific knowledge gaps and encourage proactive screening behaviors.[10]

2.3 ATTITUDE TOWARDS PROSTATE CANCER SCREENING

In 2024, a cross-sectional study was conducted in Najran, Saudi Arabia, to assess prostate cancer awareness, knowledge, and attitudes towards screening among men. The study, which involved 341 male participants recruited through voluntary response sampling via an online questionnaire, revealed that while general awareness of prostate cancer risk factors was relatively high, attitudes towards screening were less positive. Only 30.5% of participants were aware of the prostate-specific antigen (PSA) test, and just 3.2% had ever visited a specialist regarding prostate cancer, indicating a low level of engagement with screening practices despite awareness. The findings reflect a gap between knowledge and action, with many men showing limited motivation or intent to pursue screening. The study recommended targeted public health campaigns to encourage positive attitudes towards prostate cancer screening and proactive health-seeking behavior.[29]

A cross-sectional study conducted between December 2022 and March 2023 assessed the knowledge, attitudes, and screening practices related to prostate cancer (PCa) among men aged 40 years and above in the Jazan region of Saudi Arabia. The findings revealed that 60.3% of participants exhibited a positive attitude towards prostate cancer screening. Despite this generally positive disposition, actual engagement with screening services was limited: only 35.7% had consulted a urologist for screening purposes, and 25.6% had undergone a prostate-specific antigen (PSA) test, primarily following medical advice. The study highlights that, while attitudes towards screening were relatively encouraging, there remains a gap between positive attitudes and actual screening practices, underscoring the need for enhanced education and targeted interventions to translate positive attitudes into action.[35]

In 2017, a hospital-based cross-sectional study was conducted at Mbeya Zonal Referral Hospital in Tanzania to assess knowledge, attitude, and practice towards prostate cancer screening among men. The study included 132 male participants selected through random sampling. While 72% of respondents had heard of prostate cancer, only 29.5% demonstrated a positive attitude towards prostate cancer screening. Despite this, 89.4% expressed willingness to undergo screening in the future, indicating openness to screening if given appropriate encouragement or opportunity. The study highlighted that although some men showed interest in screening, overall attitudes remained modest, suggesting a need for targeted interventions to improve perceptions and promote uptake of screening services.[36]

In 2025, a quantitative cross-sectional study was conducted at Intermediate Hospital Oshakati, Namibia, to assess knowledge and attitudes towards prostate cancer screening among men over 50 years of age. The study employed census sampling and gathered data using a structured self-administered questionnaire. The findings revealed that the majority of respondents exhibited

positive attitudes towards prostate cancer screening, with percentages of positive responses ranging from 80% to 95% across all attitude-related questionnaire items. Importantly, no significant association was found between participants' attitudes and their socio-demographic characteristics, including age, level of education, marital status, and religion ($p > 0.05$). The study concluded that while the overall attitude towards prostate cancer screening was favourable, gaps remain in understanding specific aspects of prostate cancer, which could impact the motivation for early screening.[37]

In a cross-sectional descriptive study of 120 men attending services at Imo State University Teaching Hospital, Orlu in 2023, the attitude of participants toward prostate cancer screening was evaluated alongside their knowledge. Data were collected using both interviewer-administered and self-administered questionnaires. The study found that the majority of respondents exhibited a positive attitude towards prostate cancer screening. This was reflected in their mean attitude score of 44.6, with an average mean score of 2.8, indicating general acceptance of screening practices. Most participants (90%) identified the prostate-specific antigen (PSA) test as their preferred screening method. However, despite this positive attitude toward screening, their knowledge of prostate cancer risk factors was low, with a mean knowledge score of 21.6. The study concluded that, while attitudes towards screening were encouraging, more targeted health education is needed to improve understanding of risk factors and further promote screening uptake.[38]

In 2023, a descriptive cross-sectional study was carried out among 270 men in an urban community in Lagos, Nigeria, to assess knowledge, attitude, and screening practices for prostate cancer. Participants were selected using a multistage sampling technique, and data were collected using a pretested interviewer-administered questionnaire. The study revealed that while only 15.2% of respondents demonstrated good knowledge of prostate cancer, a majority (58.4%) displayed a

positive attitude towards prostate cancer screening. Despite this positive attitude, actual screening practice was low, with just 11% of respondents having ever undergone screening. The study emphasized that although attitudes towards screening were generally favorable, this did not translate into good screening uptake, highlighting the need for enhanced public awareness initiatives to bridge the gap between attitude and practice.[39]

2.4 RATE OF UTILIZATION OF PROSTATE CANCER SCREENING SERVICES

In a 2018 observational study conducted in an urban underserved population in the United States, researchers examined trends in the utilization of prostate cancer screening, specifically prostate-specific antigen (PSA) testing, from 2008 to 2014 in relation to the United States Preventative Services Task Force (USPSTF) recommendations against routine screening. The data revealed a marked decline in PSA screening rates, with the most significant drop occurring in 2012. This decline was most pronounced among men aged 55–69 years. A concurrent reduction in the number of prostate biopsies was also observed. The 2018 study highlighted a substantial decrease in prostate cancer screening utilization following the guideline changes, particularly within vulnerable populations.[40]

In 2024 a large cross-sectional study involving 5616 men in Saudi Arabia was carried out to assess the uptake of prostate cancer (Pca) screening and related factors. Data were collected via structured questionnaires. The study revealed that the overall rate of prostate cancer screening was low, partly due to misconceptions about digital rectal examination (DRE), which was considered embarrassing by 64.7% (n = 3634) and harmful by 54.3% (n = 3047) of participants. Key factors associated with increased screening uptake included having prostate cancer knowledge, possessing health insurance, and receiving information from hospital sources. Conversely, false beliefs about

DRE and underestimating the seriousness of prostate cancer negatively influenced screening behavior. The study recommended enhancing community knowledge and achieving universal health coverage to improve screening uptake.[41]

In 2018, a population-based cross-sectional study was conducted among 388 men aged 40 years and above in Dar es Salaam, Tanzania, to assess the utilization of prostate cancer screening services. Participants were selected through multistage random sampling, and data were gathered using structured face-to-face interviews. The study found that the rate of utilization of prostate cancer screening services was low, with only 7.7% of respondents having ever been screened. The low utilization was linked to factors such as younger age, low income, poor knowledge of prostate cancer, and low perceived risk of developing the disease. The findings highlighted the need for targeted educational interventions and improved access to affordable screening services to enhance utilization rates and promote early detection.[42]

In 2023, a cross-sectional study was conducted in Lira City, Uganda, to assess the uptake of prostate cancer screening and its associated factors among men aged 50 years and above. A total of 400 participants were selected using multistage cluster sampling, and data were collected through interviews. The study found that only 18.5% of the men had undergone prostate cancer screening within the past year, indicating low uptake of screening services. Despite this, 70.7% expressed willingness to screen or rescreen if given the opportunity. Factors significantly associated with screening uptake included being aged 70 years or older (AOR = 3.29, 95% CI: 1.20–9.00) and having a family history of prostate cancer (AOR = 2.48, 95% CI: 1.32–4.65). The study highlighted the need for policies to improve the availability and accessibility of prostate cancer screening services in Uganda to promote early detection and treatment.[43]

In 2023, a descriptive cross-sectional study was conducted among 270 men in an urban community in Lagos, Nigeria, to assess knowledge, attitude, and the rate of utilization of prostate cancer screening services. The study employed a multistage sampling technique, and data were gathered using a pretested interviewer-administered questionnaire. Findings revealed that despite a generally positive attitude towards prostate cancer screening (58.4% of participants), the actual utilization of screening services was very low, with only 11% of respondents having ever undergone any form of prostate cancer screening. The major reason cited for non-utilization was a lack of knowledge about the disease. The study concluded that, although attitudes were encouraging, the low screening uptake underscores the urgent need for more robust public health education and targeted interventions to promote the use of prostate cancer screening services in the community.[44]

In 2019, a situation analysis was carried out among men aged 40 years and above in the Niger Delta region of Nigeria to assess the rate of utilization of prostate cancer screening (PCS) services. The study employed a cross-sectional design and gathered data through structured questionnaires. This study revealed that the rate of utilization of PCS services was very low, with only a small fraction of respondents having ever undergone screening despite a significant number being aware of prostate cancer. The low uptake was influenced by factors such as knowledge of screening services, marital status, education level, occupation, income, and place of residence. The findings emphasized the need for targeted public health interventions to improve the rate of screening utilization and promote early detection of prostate cancer in the region.[45]

2.5 BARRIERS TO PROSTATE CANCER SCREENING

In 2018, an observational study in an urban underserved population in the United States assessed barriers to prostate cancer screening following the United States Preventative Services Task Force (USPSTF) recommendation against routine screening. Data collected from 2008 to 2014 revealed a significant decline in prostate-specific antigen (PSA) testing, especially among men aged 55–69 years. The study identified several key barriers contributing to this decline. These included the impact of national screening guidelines discouraging routine PSA testing, limited access to healthcare services in underserved communities, and possible fear or misconceptions about prostate cancer screening procedures. The reduced frequency of prostate biopsies during this period further reflected these barriers. The study emphasized that decreased screening rates were influenced by both policy changes and structural obstacles within vulnerable populations, highlighting the need for targeted interventions to address access, education, and trust in prostate cancer screening.[40]

A 2011 cross-sectional study in Brazil investigated psychological and demographic barriers to prostate cancer screening among 345 men undergoing digital rectal examination (DRE) for the first time. The study recruited participants consecutively from an outpatient clinic and assessed their emotional reactions and perceptions through structured interviews. Findings showed that 40.94% of the men reported fear (15.94% due to the examination itself and 25% due to fear of diagnosis), while 26.45% experienced shame. Although 85.47% had prior knowledge of the procedure, 80.81% felt they gained further clarification afterward. There was no significant association between age, educational level, and emotional reactions. Despite initial concerns, 96.8% indicated willingness to undergo DRE again, and 52.35% found the experience better than expected. The study concluded that fear, shame, and inadequate awareness, especially among men

with lower education, were key barriers to screening, highlighting the importance of educational strategies to enhance prostate cancer screening uptake.[46]

A 2025 qualitative exploratory study conducted at a tertiary hospital in Gauteng, South Africa, examined barriers to prostate cancer screening and sources of information among 19 men attending a urology clinic. Participants were conveniently sampled, and data were collected through interviews and analyzed thematically. The study identified key barriers including lack of privacy during screening, inadequate pain control, fear of the procedure, embarrassment, and failure of healthcare providers to recommend screening when appropriate. Sources of information about prostate cancer were primarily the media and educational pamphlets. The study emphasized the need for healthcare practitioners to proactively recommend screening, maintain privacy, and ensure men are well-informed about the screening process to enhance acceptance and uptake of prostate cancer screening services.[47]

A 2019 integrative review aimed at synthesizing evidence on barriers to prostate cancer screening among men in sub-Saharan Africa analyzed 17 studies published between 2008 and 2018 across seven countries, including Nigeria, South Africa, Kenya, and Ghana. Using Cooper's five-step methodology, the review identified lack of knowledge as the most common barrier to screening uptake. Additional barriers included negative perceptions, attitudes, and beliefs about prostate cancer and its screening procedures. Low levels of education and poor socio-economic status were strongly associated with poor understanding, mistrust, and reduced screening participation. The review emphasized the need for targeted educational interventions and strategies to improve awareness and trust, particularly among men of low socio-economic status, to enhance screening rates across the region.[48]

In 2023, a cross-sectional study was conducted in Ile-Ife, Nigeria, to assess the determinants of willingness to uptake prostate cancer screening among men. The study identified key factors influencing screening willingness, including awareness of prostate cancer, perceived susceptibility to the disease, and encouragement from healthcare providers. Barriers to willingness included low knowledge about screening procedures, fear of diagnosis, and cultural beliefs that discouraged participation in preventive health services. The authors recommended targeted health education campaigns and improved communication by healthcare professionals to address misconceptions and enhance men's willingness to undergo prostate cancer screening. [49]

In 2022, a review study in Nigeria explored the perceived barriers to prostate cancer screening among men aged 40 years and above. The study synthesized evidence from existing literature to identify key factors hindering screening uptake. It highlighted that fatalistic beliefs, poor knowledge of prostate cancer and its risk factors, misconceptions about screening methods (such as digital rectal examination and PSA testing), and lack of encouragement from healthcare providers were major barriers preventing men from utilizing screening services. The authors recommended the development of institutional frameworks and national policy guidelines to support awareness campaigns on prostate cancer and promote the benefits of early screening to sssssimprove uptake and reduce mortality. [50]

CHAPTER THREE

METHODOLOGY

3.1. STUDY AREA

This study was conducted in Benin City, the capital of Edo State in southern Nigeria. Benin City is one of the oldest and most historically significant urban centers in West Africa, known for its rich cultural heritage and central role in the ancient Benin Kingdom. Geographically, the city lies within the tropical rainforest zone, with coordinates approximately 6.34°N latitude and 5.62°E longitude. It is bounded by several local government areas, including Orhionmwon, Ovia South-West, Egor, and Ikpoba-Okha.

Benin City originally, spans three major local government areas: Oredo, Egor and Ikpoba-Okha. These LGAs together form the Benin Metropolitan Area. But with urbanization, Ovia North East LGA, is gradually becoming a part of the township. According to projections based on the 2006 National Population Census, the city has an estimated population exceeding 1.5 million people. The population is ethnically diverse, although the Benin ethnic group predominates. Other ethnicities such as Igbo, Yoruba, Hausa, Urhobo, and Esan are also well represented, reflecting the city's cosmopolitan nature and its role as a hub for economic migration and commerce.

Benin City experiences a tropical climate marked by a distinct rainy season from April to October and a dry season from November to March. Annual rainfall averages between 2,000 to 2,500 mm, while temperatures range between 25°C and 35°C throughout the year. These climatic and environmental features influence not only health conditions but also transportation and public services in the area.

Benin's road network radiates from Kings Square in a spider-web pattern: major radial arteries—Benin–Lagos/Sapele Road (A121), Benin–Agbor/Asaba Road (A232), Benin–Auchi/Okene Road (A124), Ekenwan Road, Airport/Akpakpava, feed into and out of the Ring Road, with concentric 1st–3rd East Circular and West Circular roads distributing flows across neighbourhoods. These corridors structure public-transport operations and the siting of motor parks/terminals.

As a major commercial center in southern Nigeria, Benin City has a vibrant transportation system. Urban mobility is dominated by informal/formal road-based services: intercity buses; minibuses/shuttle buses; shared taxis; tricycles ("keke"). Motorcycles ("okada") have had changing policy status, a ban in 2013 within the three metropolitan LGAs, later set aside by the Court of Appeal in May 2021, followed by renewed state-level restrictions/clarifications in subsequent years. Such policy flux shapes the composition of active driver populations and park usage.

Public transport plays a vital role in the city's economy, with a significant number of residents working as commercial drivers. Driver organization traditionally involves NURTW (National Union of Road Transport Workers) and RTEAN (Road Transport Employers Association of Nigeria), which influence loading practices, queues, and fee collection at parks. In August 2025, the Edo State Government banned revenue collection activities by transport unions/private consultants and directed unions to vacate parks/major roads, an important context for field access and recruitment protocols during the study period.

According to the Edo state Transport Service Commission, there are 11,019 registered intra city public transport drivers operating across the Benin metropolis in various public motor parks. Furthermore, there are 1,350 registered intercity and interstate public transport drivers operating from 60 registered motor parks across Benin city and this is the population of focus in this study.

Across the three main local governments that makes up the Benin metropolis, these intercity and interstate public transport parks are situated based on the axis they operate through. Oredo LGA has a total of 18 registered parks, Egor LGA has a total of 20 registered parks, with Ikpoba okha LGA making up the remainder 21 registered motor parks and these will serve as the sampling locations for this study. Notable among them includes, God is Good motors, Iyare motors, Muyi line, Uselu parks, Edegbe line, etc.

Benin City also harbors various health and educational institutions, including the federal-owned University of Benin Teaching Hospital (UBTH) and the University of Benin (UNIBEN). UBTH, a tertiary health care facility, provides primary care, referral and emergency healthcare services to the public and neighbouring states. It also plays a role in public health education and cancer screening initiatives. The city also hosts other numerous widespread public primary healthcare centres, private hospitals and diagnostic laboratories. The University of Benin, renowned for its role in training skilled medical professionals, also engages in regular community outreach programmes aimed at improving public health. These initiatives include free medical check-ups; and health education and disease prevention campaigns, a notable screening point among others. These institutes boast also of mini parks for students, staffs as well as patients.

3.2. STUDY DESIGN

A descriptive cross-sectional study design will be used for the study.

3.3. STUDY POPULATION

The study population consisted of public transport drivers in selected motor parks in Benin City.

Inclusion criteria

Public transport drivers were included in the study if they met the following conditions:

- Actively working as an intercity/interstate public transport driver in Benin City at the time of the study.
- Present at the selected motor parks during the data collection period.
- Willing and able to provide informed consent.

Exclusion criteria

- Public transport drivers who are not able to understand English or Pidgin English.

3.4. DURATION OF STUDY

The study was conducted from September 2024 through September 2025.

3.5. SAMPLE SIZE DETERMINATION

The sample size was calculated using Cochran's formula for descriptive studies.[51] The sample size will be determined based on previous research which puts the prevalence of the knowledge of prostate cancer among public transport drivers in Ondo state, Nigeria at 28.0%.[52] A 5% margin of error and 95% confidence level (Cl) was adopted.

$$n = \frac{Z^2\, p\,(1-p)}{d^2}$$

n = sample size

Z = Z score corresponding to 95% Cl (1.96)

P = prevalence of the knowledge of prostate cancer among public transport drivers[11].

d = absolute precision (5%)

Therefore, using the above formula;

$$n = \frac{1.96^2 \times 0.28 (1-0.28)}{0.05^2} = 309.79$$

n = 310

Applying a design effect of 1.5,

n= 309.79 ×1.5= 464.68

Assuming a non-response rate of 10%,

To account for a 10% non-response rate:

$$n\_adjusted = \frac{465}{1-0.1}$$

= 520

A sample size of 520 was used for this study

3.6. SAMPLING TECHNIQUE

A multi-stage probability sampling procedure comprising of three stages was employed to select the study participants. The study population comprised all registered intercity/interstate public transport drivers in Benin City, Edo State, totaling 1,350 drivers distributed across 60 registered motor parks.

Stage One: Selection of Local Government Areas (LGAs)

Benin City is made up of three main urban LGAs: Oredo, Egor, and Ikpoba-Okha. Using the simple random sampling (SRS) technique by balloting, two LGAs were selected from the three. Oredo and Egor were drawn. This ensured that every LGA had a known and equal probability of selection (2/3).

Stage Two: Selection of Parks

All registered motor parks within the selected LGAs were listed along with their corresponding number of registered drivers. Thereafter, using simple random sampling by balloting, approximately 50% of the parks in each selected LGA were chosen. 9 parks were selected from Oredo (out of 18), while 10 parks were selected from Egor (out of 20). This stage ensured that each park in the chosen LGAs had equal probability of selection.

Stage Three: Selection of Drivers

From the 19 selected parks using stratified sampling method, the study sample size was distributed proportionally to the number of drivers in each park using the formula:

$n_h = (N_h / \Sigma N_h) \times n$

where N_h represented the number of registered drivers in each park, ΣN_h was the total number of drivers across all selected parks, and n was the total sample size required for the study.

From a total of 722 drivers in the 19 selected parks, a sample size of 520 was proportionally allocated.

Within each selected park, drivers were then chosen using the systematic random sampling method. An updated list of all eligible drivers (those who had been active for at least three months) was obtained. The sampling interval for each park was determined by dividing the total number of drivers in the park by the allocated sample size:

$k_h = N_h / n_h$

A random starting point between 1 and k_h was chosen, after which every k_h-th driver on the list was selected until the required number of drivers for that park was achieved.

3.7. DATA MANAGEMENT

This study employed a quantitative method of data collection using a structured questionnaire.

3.7.1. DATA COLLECTION TOOL

The questionnaire was standardized and modified from the Cancer Awareness Measure (CAM) tool kit[53] in line with the study objectives and as well as from questionnaire used in existing

literature of similar studies. The Cancer Awareness Measure (CAM) tool kit is a well-developed and validated instrument designed to systematically assess public awareness, beliefs, and attitudes regarding cancer. Developed through a collaboration between Cancer Research UK, University College London, and the University of Oxford, the toolkit provides a standardized framework for evaluating knowledge of cancer warning signs, risk factors, barriers to seeking medical help, and screening behaviors. The CAM questionnaire encompasses both open-ended and closed-ended items, allowing for insight into both spontaneous and cued knowledge. It has been widely utilized in national surveys and community-based interventions, and its standardized format facilitates comparability across studies and populations. The domains of the tool include; awareness of common cancer symptoms, knowledge of cancer risk factors, attitudes toward early detection and screening, perceived barriers to help-seeking, confidence in recognizing symptoms, and anticipated time to seek medical help. In addition, the CAM Toolkit includes modular extensions to include specific cancers (e.g., bowel, breast, lung, cervical cancers), enabling adaptation and modification to several research contexts.

The questionnaire design for this study consisted of five sections which are as follows;

Section A: Socio-demographic data (age, marital status, education, income, duration of driving, etc.)

Section B: Knowledge of prostate cancer (risk factors, symptoms, prevention, and screening methods)

Section C: Attitudes towards prostate cancer screening services

Section D: Past medical history and Lower urinary tract symptoms

Section F: Screening practices and utilization history

Section E: Barriers to accessing prostate cancer screening

The questionnaire was developed in English and translated into Pidgin English verbally for better comprehension by drivers with limited formal education.

3.7.2. METHOD OF DATA COLLECTION

An interviewer-administered questionnaire was used to collect data from participants. This because previous studies revealed a majority of public transport drivers have no formal education or are usually unable to read.[18]

3.7.3. PRETESTING

This was done among drivers at Ekpoma main motor park located in Ekpoma town, Edo State. Only drivers who meet the inclusion criteria for the study will be recruited. The sample size for pretesting was determined using ten percent (10%) of the calculated sample size of the study.

3.8. SCORING SYSTEM

Awareness and knowledge score

Each correct answer was scored one point, incorrect responses was scored zero. The maximum and minimum total scores attainable was ‘13’ and ‘0’ respectively. Total scores was converted into percentages and participants with results of 50% and above was categorized as having good knowledge while those with results less than 50% was categorized as having poor knowledge.

Attitude score

Each closed ended question on attitude was allocated a score of one for a 'Strongly agree and Agree' response and zero for 'Neutral , Diasagree or Strongly disagree' responses with a maximum score of 7 and a minimum score of zero . Total scores was be converted into percentages and participants with results of 50% and above was categorized as having positive attitude while those with results less than 50% was categorized as having negative attitude.

Risk assessment score

Each of the IPSS lower urinary tract symptoms was given a score from 1 to 5 depending on the rate of occurrence (with the lowest occurrence given a score of 1 and highest a score of 5), while the other core symptoms including Hematuria (blood in urine), Hematospermia (blood in semen), Weight loss (last 3 months), New/progressive bone pain, Acute urinary retention was given a score of 2 if present and 0 if absent. Fatigue or loss of appetite was given a score of 1 if present and 0 if absent. Maximum attainable score was 46, and minimum was 0. Respondents with scores between 0 and 7 was classified as low risk. Those between 8-19 was classified as moderate risk, while those with a score of 20 and above was classified as high risk.

Utilization score

Participants who have had at least one cancer screening test was scored '1' while those who have not was scored zero. The maximum score was '1' and the minimum score zero. A score of one classified participants into '*utilisers*' and a score of zero, *'non-utiisers*'.[2]

3.9. DATA ANALYSIS

Data was cleaned, coded and analyzed using IBM SPSS® version 27.0 software. This was conducted in phases using a combination of descriptive statistics including univariate analysis; and bivariate statistical techniques to comprehensively explore and interpret the data collected in relation to the study objectives.

Descriptive Statistics

Descriptive statistical techniques were used to summarize the distribution of key variables. Univariate analysis was conducted to describe the socio-demographic characteristics of respondents, as well as their responses to knowledge, attitude, and utilization items related to prostate cancer screening services. Graphical representations such as bar charts, pie charts, and histograms will be used to visually summarize the distribution of variables.

Bivariate Analysis

To examine potential relationships and test hypotheses regarding associations between selected variables, bivariate analysis was conducted using the Chi-square test of independence (χ^2). This test was applied to assess statistically significant associations between respondents' socio-demographic characteristics (e.g., age group, education level, income bracket) and their levels of; knowledge about prostate cancer and prostate cancer screening services; attitudes towards prostate cancer screening; and utilization of prostate cancer screening services. In instances where the expected cell count in the contingency table is less than five (5), the Chi-square Test was applied to ensure statistical validity, with the level of statistical significance set at $p < 0.05$

Multivariate Analysis

To identify independent predictors of good knowledge, positive attitudes, and utilization of prostate cancer screening services, binary logistic regression analyses was conducted. Each of the three outcome variables was modeled separately. Variables found to be statistically significant at the bivariate level was entered into the initial regression model. A stepwise backward elimination method (likelihood ratio) was employed to refine the model and control for potential confounding. The results were presented as Adjusted Odds Ratios (AORs) with 95% Confidence Intervals (CI), and the level of statistical significance will be set at $p < 0.05$

3.10. ETHICAL CONSIDERATION

Ethical approval for the study was obtained from the Ethics and Research Committee of UBTH. Formal permission was be secured from the drivers' union chairperson from each park. Prior to the commencement of data collection, the nature of the study was explained to the participants, and informed verbal consent was duly obtained. The participants were assured of confidentiality of all information provided in accordance with the established principles of medical ethics.

3.11. LIMITATION OF STUDY

This study had some limitations. First, it focuses only on drivers in selected motor parks, so the results may not reflect all drivers in the city. To reduce this, drivers were selected from different parks to improve representativeness. Second, the study relies on self-reported information about knowledge and screening, which may be affected by memory or the desire to give socially acceptable answers. Neutral questions and assurances of anonymity were used to encourage honest

responses. Another limitation is that some drivers may be unwilling to share accurate information if they doubt confidentiality; this was addressed by clearly explaining privacy measures.

CHAPTER FOUR

RESULT

A total of 520 intercity/interstate drivers operating in Benin City, Edo State, participated in this study. The response rate was 100%.

The results are divided into the following sections:

Section A: Socio-demographic data

Section B: Knowledge of prostate cancer

Section C: Attitudes towards prostate cancer screening services

Section D: Past medical history, symptoms and risk assessment of prostate cancer

Section E: Utilization of Screening services

Section F: Barriers to accessing prostate cancer screening

Section A: Socio-demographic characteristics

Table 4.1a Socio-Demographic Characteristics of Respondents

Variable	Frequency(n=520)	Percent (%)
Age group (years)		
<40	56	10.8
40-49	229	44.0
50-59	179	34.4
60-69	53	10.2
70 and above	3	0.6
Marital status		
Single	160	30.8
Married	342	65.8
Divorced	8	1.5
Widowed	6	1.2
Co-habiting	4	0.8
Level of Education		
No formal education	33	6.3
Primary	163	31.3
Secondary	264	50.8
Tertiary	60	11.5
Religion		
Christianity	473	91.0
Islam	34	6.5
African traditional religion	9	1.7
Others*	4	0.8
Ethnic group		
Benin	279	53.7
Esan	77	14.8
Etsako	27	5.2
Owan	22	4.2
Igbo	54	10.4
Yoruba	24	4.6
Hausa	16	3.1
Urhobo	11	2.1
Others#	10	1.9

Mean age (±SD) = 48.96 (±7.94)
Other*- Elkankar, Green Word, Atheist Others# - Akwa ibom, Itsekiri, Boma, Atte, Tiv

Table 4.1b Sociodemographic Characteristics of Respondents

Variable	Frequency(n=520)	Percent (%)
Average daily income		
<₦5000	103	19.8
₦5000–10000	305	58.7
>₦10000	112	21.5
Monthly income band		
<₦50000	53	10.2
₦50000–₦99999	157	30.2
₦100000-₦199999	192	36.9
≥₦200000	80	15.4
Prefer not to say	38	7.3
Residence		
Urban	409	78.7
Peri-urban	87	16.7
Rural	18	3.5
Others##	6	1.1
Health insurance		
None	437	84.1
NHIA	51	9.8
Private	23	4.4
Others**	9	1.7
Grouped years as driver		
<5	34	6.5
5-10	292	56.2
>10	194	37.3

Other**- Church, Driver union cooperative Others## - Outside state

The mean age of respondents was 48.96 years (±7.94). A total of 229 (44.0%) were aged 40–49 years, 179 (34.4%) were aged 50–59 years, 56 (10.8%) were younger than 40 years, 53 (10.2%) were aged 60–69 years, and 3 (0.6%) were 70 years and above. Most respondents were married 342 (65.8%), while 160 (30.8%) were single, 8 (1.5%) divorced, 6 (1.2%) widowed, and 4 (0.8%) cohabiting.

Educational attainment varied across the sample. A total of 33 (6.3%) had no formal education, 163 (31.3%) had completed primary education, 264 (50.8%) secondary education, and 60 (11.5%) tertiary education. Christianity was the predominant religion 473 (91.0%), followed by Islam 34

(6.5%), African traditional religion 9 (1.7%), and other faiths such as Elkankar, Green Word, and atheism 4 (0.8%). The largest ethnic group was Benin 279 (53.7%), followed by Esan 77 (14.8%), Igbo 54 (10.4%), Etsako 27 (5.2%), Owan 22 (4.2%), Yoruba 24 (4.6%), Hausa 16 (3.1%), and Urhobo 11 (2.1%), while 10 (1.9%) belonged to other ethnic groups.

Daily income was below ₦5,000 for 103 (19.8%), between ₦5,000 and ₦10,000 for 305 (58.7%), and above ₦10,000 for 112 (21.5%). Monthly income was less than ₦50,000 for 53 (10.2%), ₦50,000–₦99,999 for 157 (30.2%), ₦100,000–₦199,999 for 192 (36.9%), and at least ₦200,000 for 80 (15.4%), while 38 (7.3%) preferred not to disclose their monthly earnings.

The majority resided in urban areas 409 (78.7%), followed by peri-urban areas 87 (16.7%), rural areas 18 (3.5%), and 6 (1.1%) living outside the state. Health insurance coverage was low, as 437 (84.1%) had no insurance, 51 (9.8%) were enrolled in the National Health Insurance Authority (NHIA), 23 (4.4%) had private insurance, and 9 (1.7%) reported other forms such as church or drivers' union cooperative schemes.

Years of driving experience varied, with 34 (6.5%) having driven for less than five years, 292 (56.2%) for five to ten years, and 194 (37.3%) for more than ten years.

Section B: Knowledge of prostate cancer

Table 4.2 Awareness of Prostate Cancer among Respondents and their source of information

Domains	Frequency (n=520)	Percent (%)
Awareness of prostate/ Prostate cancer		
Heard about prostate cancer before	284	54.6
Source of information*		
TV/Radio	181	34.8
Newspaper/Print media	36	6.9
Social media/Internet	69	13.3
Family/Friends	91	17.5
Health workers	101	19.4
Other	19	3.7
Prostate secretes fluid that carries sperm	204	39.2
Prostate cancer occurs in the prostate gland	226	43.5
Prostate cancer is a common disease	172	33.1

*Multiple responses

Out of 520 respondents, 284 (54.6%) reported having heard about prostate cancer. The most frequently reported sources of information were TV/Radio 181 (34.8%), health workers 101 (19.4%), and family or friends 91 (17.5%). Fewer respondents mentioned social media or Internet 69 (13.3%), newspapers or print media 36 (6.9%), and other sources 19 (3.7%). Knowledge of the prostate and prostate cancer was limited, as 204 (39.2%) stated that the prostate secretes fluid that carries sperm, 226 (43.5%) identified that prostate cancer occurs in the prostate gland, and 172 (33.1%) recognized prostate cancer as a common disease. General awareness was higher than knowledge of specific functions and disease-related facts, suggesting a gap between exposure to information and depth of understanding.

Table 4.3 Knowledge of Prostate Cancer Risk factors, Symptoms, and Screening services among Respondents

Domains	Frequency (n=284)	Percent (%)
Knowledge of Prostate cancer risk factors		
Risk increases with age	215	75.7
Prostate cancer only affects men older than 70	65	22.9
Family history increases risk	210	73.9
Knowledge of Prostate cancer symptoms		
Early-stage prostate cancer usually shows no symptoms	181	63.7
Common symptoms include difficulty urinating and blood in urine	193	68.0
All prostate cancers are life-threatening and need immediate treatment	94	33.1
Knowledge of Prostate cancer screening services		
PSA blood test can detect prostate problems	169	59.5
Digital rectal exam can detect prostate abnormalities	156	54.9
Screening can detect prostate cancer early when treatment is effective	188	66.2
No need for screening if no urinary symptoms	89	31.3

Among the 284 respondents who reported awareness, 215 (75.7%) indicated that risk increases with age and 210 (73.9%) reported that family history increases risk, while 65 (22.9%) stated that prostate cancer affects men older than 70 years. A total of 181 (63.7%) indicated that early-stage prostate cancer usually has no symptoms and 193 (68.0%) reported difficulty urinating and blood in urine as common symptoms. Misconceptions were observed, as 94 (33.1%) believed that all prostate cancers are life-threatening and require immediate treatment. Awareness of screening services varied: 169 (59.5%) identified the PSA blood test as useful for detecting prostate problems, 156 (54.9%) indicated that digital rectal examination can detect abnormalities, and 188 (66.2%) recognized the effectiveness of early screening. In contrast, 89 (31.3%) stated that screening is unnecessary in the absence of urinary symptoms. Overall, knowledge of established risk factors and common symptoms was relatively high, although misconceptions persisted about age-specific vulnerability and disease severity. Screening awareness was moderate, with some inaccurate beliefs that could discourage preventive practices.

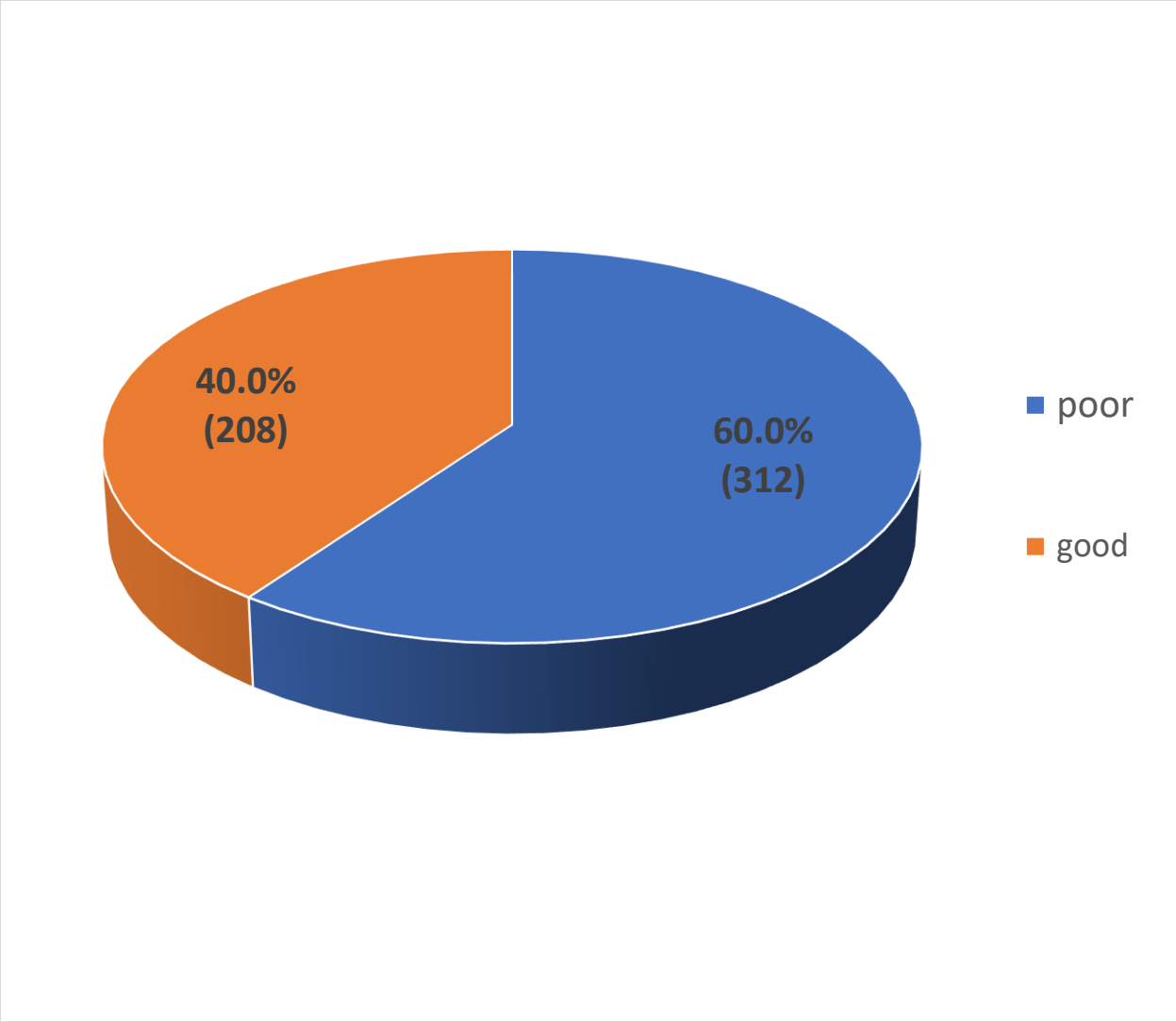

Figure 4.1 Overall level of knowledge of Prostate cancer

Overall knowledge was classified as poor; 60.0 % (312) of respondents, or good; 40.0 % (208).

Table 4.4 Association between Knowledge of prostate cancer and Sociodemographic Characteristics

Category	Knowledge of prostate cancer (n=520)		χ^2	p-value
	Good (n=208) Freq (%)	Poor (n=312) Freq (%)		
Age group (years)				
<40	18 (32.1%)	38 (67.9%)	11.235	**0.024***
40-49	88 (38.4%)	141 (61.6%)		
50-59	71 (39.7%)	108 (60.3%)		
60-69	31 (58.5%)	22 (41.5%)		
70 and above	0 (0.0%)	3 (100.0%)		
Marital status				
Married	138 (40.4%)	204 (59.6%)	0.051	0.821
Unmarried	70 (39.3%)	108 (60.7%)		
Education				
Not educated	4 (12.5)	28 (87.5)	10.745	**0.001***
Educated	204 (41.8)	284 (58.2)		
Monthly income				
< ₦50,000	22 (41.5)	31 (58.5)	0.056	0.813
> ₦50,000	186 (39.8)	281 (60.2)		
Daily income				
< ₦5,000	42 (40.8)	61 (59.2)	0.032	0.857
> ₦5,000	166 (39.8)	251 (60.2)		
Health insurance				
No	175 (40.0)	262 (60.0)	0.002	0.961
Yes	33 (39.8)	50 (60.2)		
Years driving				
< 5	42 (40.4)	62 (59.6)	0.008	0.929
> 5	166 (39.9)	250 (60.1)		
Residence				
Urban	162 (39.6)	247 (60.4)	0.122	0.727
Rural	46 (41.4)	1 58.6)		

**Statistically significant (p<0.05)*

Out of 520 respondents, 208 (40.0%) demonstrated good knowledge of prostate cancer, while 312 (60.0%) demonstrated poor knowledge. Knowledge was significantly associated with age group (χ^2=11.235, p=0.024). Good knowledge was reported by 31 (58.5%) of respondents aged 60–69 years, 71 (39.7%) of those aged 50–59 years, 88 (38.4%) of those aged 40–49 years, and 18 (32.1%) of those younger than 40 years. None of the three respondents aged 70 years and above demonstrated good knowledge.

Educational status was also significantly associated with knowledge (χ^2=10.745, p=0.001). Good knowledge was reported by 204 (41.8%) of respondents with some level of education compared with 4 (12.5%) of those with no formal education.

No statistically significant associations were found between knowledge and marital status (χ^2=0.051, p=0.821), monthly income (χ^2=0.056, p=0.813), daily income (χ^2=0.032, p=0.857), health insurance coverage (χ^2=0.002, p=0.961), years of driving experience (χ^2=0.008, p=0.929), or place of residence (χ^2=0.122, p=0.727). Knowledge levels were similar across most of these subgroups.

The findings indicate that knowledge of prostate cancer was significantly higher among respondents aged 60–69 years and among those with some formal education, while other sociodemographic factors did not demonstrate significant associations.

Table 4.5 logistic regression of predictors of knowledge level of prostate cancer

Variable	B (Coefficient)	Odds Ratio (Exp(B))	95% CI Lower	95% CI Upper	p-value
Age group (years)	0.031	1.031	1.008	1.055	**0.007***
Marital status					
Married		1			
Unmarried	-0.032	0.968	0.665	1.409	0.866
Education					
Educated		1			
Not educated	-1.619	0.198	0.068	0.576	0.003
Years driving					
≤5		1			
>5	0.000	1.000	0.641	1.561	1.000
Monthly income					
≤₦50,000		1			
>₦50,000	-0.128	0.880	0.397	1.950	0.753
Residence					
Urban		1			
Rural	0.031	1.032	0.669	1.592	0.887
Health insurance					
No		1			
Yes	0.005	1.005	0.617	1.639	0.983
Daily income					
≤₦5,000		1			
>₦5,000	0.076	1.079	0.591	1.968	0.804

Statistically significant (p<0.05)

A binary logistic regression was performed to determine the predictors of knowledge of prostate cancer. The model showed that age group and educational status were significant independent predictors, while other sociodemographic factors were not.

With respect to age, increasing age was significantly associated with higher odds of having good knowledge (B = 0.031, OR = 1.031, 95% CI: 1.008–1.055, p = 0.007). This implies that for each additional year of age, the likelihood of having good knowledge increased by about 3.1%.

Education was also a strong determinant. Respondents without formal education were significantly less likely to have good knowledge compared to those with some level of education (B = –1.619, OR = 0.198, 95% CI: 0.068–0.576, p = 0.003). In practical terms, the odds of good knowledge were reduced by about 80% among the uneducated.

Other factors—including marital status (p = 0.866), years of driving experience (p = 1.000), monthly income (p = 0.753), residence (p = 0.887), health insurance coverage (p = 0.983), and daily income (p = 0.804)—did not show statistically significant associations with knowledge.

Section C: Attitudes towards prostate cancer screening services

Table 4.6 Attitude Toward Prostate Cancer Screening

Variable	S Freq (%)	A Freq (%)	N Freq (%)	D Freq (%)	SD Freq (%)
I believe screening for prostate cancer is important even if I feel healthy	177 (34.0)	233 (44.8)	93 (17.9)	17 (3.3)	0 (0)
If screening is free and convenient, I would go for it	179 (34.4)	221 (42.5)	95 (18.3)	24 (4.6)	1 (0.2)
I think prostate cancer is a disease that mostly affects the elderly, so I don't need screening	133 (25.6)	36 (6.9)	193 (37.1)	118 (22.7)	40 (7.7)
I believe prayer or faith can replace medical checkups	77 (14.8)	12 (2.3)	168 (32.3)	156 (30.0)	107 (20.6)
Health workers are approachable and supportive in offering prostate cancer screening	181 (34.8)	120 (23.1)	163 (31.3)	50 (9.6)	6 (1.2)
I believe prostate cancer is a serious disease that can cause death	189 (36.3)	237 (45.6)	75 (14.4)	18 (3.5)	1 (0.2)
I am embarrassed by the idea of a doctor performing a rectal examination	204 (39.2)	127 (24.4)	143 (27.5)	41 (7.9)	5 (1.0)
I believe the PSA blood test is reliable for detecting prostate cancer	161 (31.0)	116 (22.3)	177 (34.0)	60 (11.5)	6 (1.2)
I am afraid that a positive screening result will ruin my life or work	167 (32.1)	65 (12.5)	179 (34.4)	96 (18.5)	13 (2.5)
I would prefer to avoid screening to not know whether I have cancer	123 (23.7)	34 (6.5)	194 (37.3)	119 (22.9)	50 (9.6)
I believe treatment for prostate cancer can be successful if discovered early	203 (39.0%)	163 (31.3%)	122 (23.5%)	30 (5.8%)	2 (0.4%)
I believe men of my age should be routinely screened for prostate cancer	220 (42.3%)	120 (23.1%)	129 (24.8%)	46 (8.8%)	5 (1.0%)
If a prostate cancer screening test was positive, I would want to know the result	203 (39.0%)	160 (30.8%)	121 (23.3%)	30 (5.8%)	6 (1.2%)
I would accept treatment (surgery, radiotherapy, hormonal therapy) if diagnosed	192 (36.9%)	162 (31.2%)	135 (26.0%)	27 (5.2%)	4 (0.8%)
Fear of sexual dysfunction after treatment would discourage me from screening	156 (30.0%)	87 (16.7%)	192 (36.9%)	72 (13.8%)	13 (2.5%)

S= Strongly Agree, A= Agree, N= Neutral, D=Disagree, SD= Strongly Disagree

Among respondents, a majority expressed positive attitudes toward prostate cancer screening. A total of 410 (78.8%) agreed that screening is important even when feeling healthy, while 41 (7.9%) disagreed and none strongly disagreed. Similarly, 400 (76.9%) stated that they would undergo screening if it were free and convenient, while 25 (4.8%) disagreed.

Perceptions of personal risk varied. While 169 (32.5%) agreed that prostate cancer mostly affects the elderly and therefore screening was unnecessary, a larger group of 193 (37.1%) were neutral and 158 (30.4%) disagreed. Belief in faith-based alternatives to screening was less common, as 89 (17.1%) agreed that prayer or faith could replace medical checkups, whereas 263 (50.6%) disagreed and 168 (32.3%) were neutral.

Attitudes toward health workers were generally favorable, with 301 (57.9%) describing them as approachable and supportive, while 56 (10.8%) disagreed. The seriousness of prostate cancer was widely acknowledged, as 426 (81.9%) agreed that it is a life-threatening disease, while only 19 (3.7%) disagreed.

Barriers to screening were evident. A total of 331 (63.6%) expressed embarrassment about rectal examination, while 46 (8.9%) disagreed. Confidence in screening methods was mixed: 277 (53.3%) considered the PSA blood test reliable, 177 (34.0%) were neutral, and 66 (12.7%) disagreed. Fear of negative consequences was also observed, with 232 (44.6%) agreeing that a positive result could disrupt life or work, while 109 (21.0%) disagreed and 179 (34.4%) were neutral. Additionally, 157 (30.2%) indicated they would prefer to avoid screening to not know their cancer status, whereas 169 (32.5%) disagreed and 194 (37.3%) were neutral.

Optimism toward treatment outcomes was more common. A total of 366 (70.3%) believed treatment can be successful if prostate cancer is detected early, and 382 (73.5%) agreed that men of their age should be routinely screened. Similarly, 363 (69.8%) would want to know their results

if tested positive, and 354 (68.1%) reported willingness to accept treatment if diagnosed. Fear of treatment side effects was present, as 243 (46.7%) indicated that the possibility of sexual dysfunction could discourage them from screening, while 85 (16.3%) disagreed and 192 (36.9%) were neutral.

Overall, attitudes were characterized by high recognition of the seriousness of prostate cancer, the importance of early detection, and willingness to participate in screening and treatment. At the same time, notable barriers were identified, including embarrassment about rectal examination, fear of adverse outcomes, doubts about test reliability, and concerns about treatment-related sexual dysfunction.

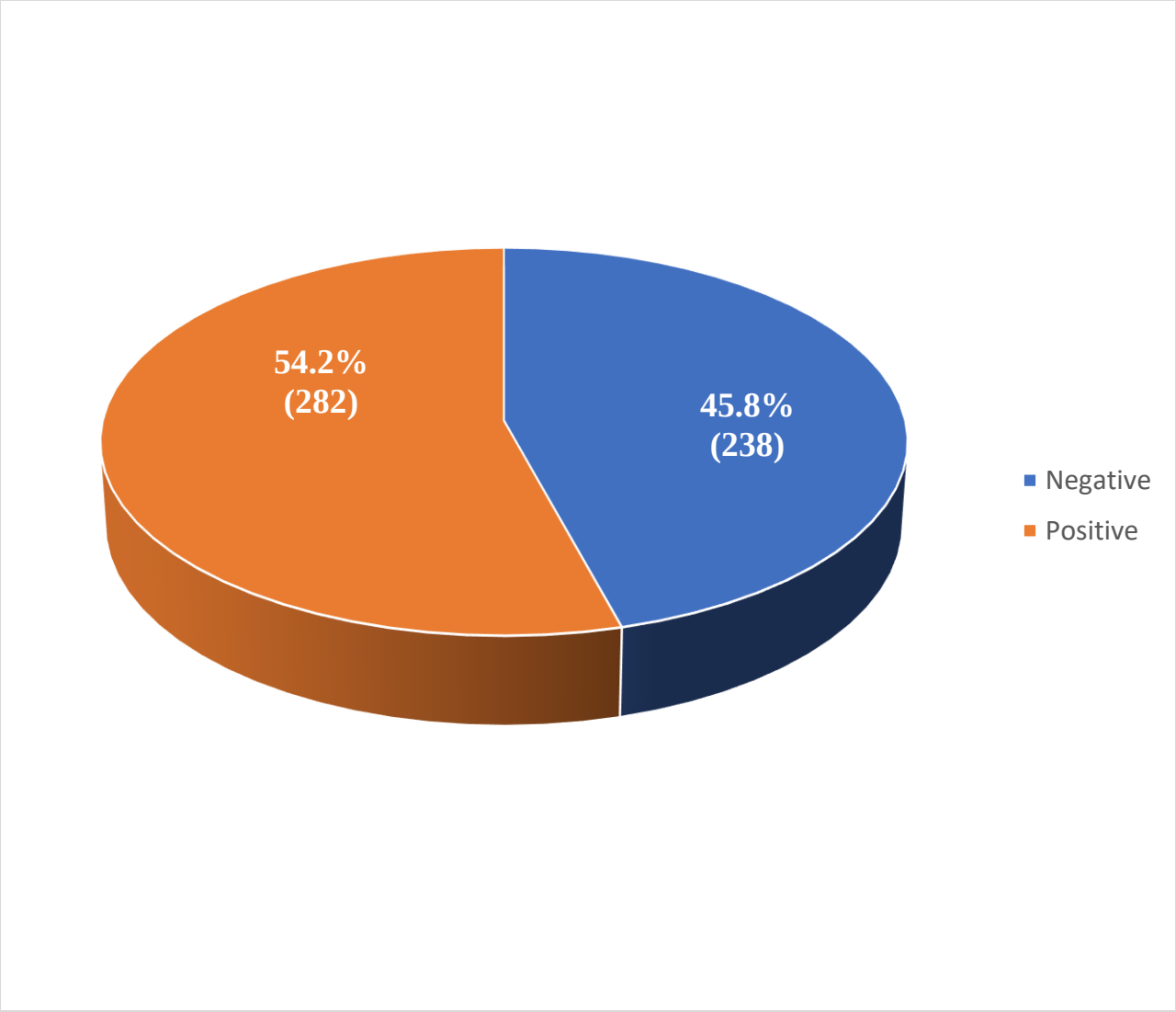

Figure 4.2 Overall level Attitude towards prostate cancer screening services

Overall attitude was classified as Positive; 54.2% (282) of respondents, or good; 45.8 % (238).

Table 4.7 Association between Attitude towards of prostate cancer and Sociodemographic Characteristics

Variable	Attitude towards prostate cancer (n=520)		χ^2	p-value
	Positive (n=282) Freq (%)	Negative (n=238) Freq (%)		
Age group (years)				
<40	28 (50.0)	28 (50.0)	4.511	0.341
40-49	127 (55.5)	102 (44.5)		
50-59	96 (53.6)	83 (46.4)		
60-69	31 (58.5)	22 (41.5)		
70 and above	0 (0.0)	3 (100.0)		
Marital status				
Married	184 (53.8)	158 (46.2)	0.074	0.785
Unmarried	98 (55.1)	80 (44.9)		
Education				
Not educated	13 (40.6%)	19 (59.4%)	2.543	0.111
Educated	269 (55.1%)	219 (44.9%)		
Monthly income				
< ₦50,000	29 (54.7%)	24 (45.3%)	0.006	0.940
> ₦50,000	253 (54.2%)	214 (45.8%)		
Daily income				
< ₦5,000	60 (58.3%)	43 (41.7%)	0.837	0.360
> ₦5,000	222 (53.2%)	195 (46.8%)		
Health insurance				
No	244 (55.8%)	193 (44.2%)	2.840	0.092
Yes	38 (45.8%)	45 (54.2%)		
Years driving				
< 5	59 (56.7%)	45 (43.3%)	0.327	0.567
> 5	223 (53.6%)	193 (46.4%)		
Residence				
Urban	222 (54.3%)	187 (45.7%)	0.002	0.966
Rural	60 (54.1%)	51 (45.9%)		

Out of 520 respondents, 282 (54.2%) expressed positive attitudes toward prostate cancer, while 238 (45.8%) expressed negative attitudes. Attitude was not significantly associated with age group (χ^2=4.511, p=0.341). Positive attitudes were reported by 31 (58.5%) of those aged 60–69 years, 96 (53.6%) of those aged 50–59 years, 127 (55.5%) of those aged 40–49 years, and 28 (50.0%) of those below 40 years, while all three respondents aged 70 years and above reported negative attitudes.

No significant association was observed between attitude and marital status (χ^2=0.074, p=0.785). Among married respondents, 184 (53.8%) reported positive attitudes compared with 98 (55.1%) among unmarried respondents. Educational status was not significantly associated with attitude (χ^2=2.543, p=0.111). Positive attitudes were expressed by 13 (40.6%) of those without formal education and 269 (55.1%) of those with some level of education.

Income was also not significantly associated with attitude. Among respondents earning less than ₦50,000 per month, 29 (54.7%) reported positive attitudes compared with 253 (54.2%) among those earning above ₦50,000 (χ^2=0.006, p=0.940). Similarly, 60 (58.3%) of those earning less than ₦5,000 daily reported positive attitudes compared with 222 (53.2%) of those earning more than ₦5,000 (χ^2=0.837, p=0.360).

Health insurance status did not show a statistically significant association with attitude (χ^2=2.840, p=0.092). Positive attitudes were reported by 38 (45.8%) of respondents with health insurance and 244 (55.8%) of those without. Years of driving experience was also not significantly associated with attitude (χ^2=0.327, p=0.567), with 59 (56.7%) of those driving for less than five years and 223 (53.6%) of those driving for more than five years reporting positive attitudes.

Place of residence showed no significant association (χ^2=0.002, p=0.966). Positive attitudes were expressed by 222 (54.3%) of urban residents and 60 (54.1%) of rural residents.

Overall, no sociodemographic characteristic demonstrated a statistically significant association with attitude toward prostate cancer, although positive attitudes were more frequently reported across most subgroups except for respondents aged 70 years and above and those with health insurance.

Table 4.8 logistic regression of Attitude Predictors

Variable	B (Coefficient)	Odds Ratio (Exp(B))	95% CI Lower	95% CI Upper	p-value
Age group (years)	-0.001	0.999	0.977	1.021	0.898
Marital status					
Married		1			
Unmarried	0.053	1.055	0.730	1.523	0.777
Education					
Educated		1			
Not educated	-0.538	0.584	0.280	1.218	0.151
Years driving					
≤5		1			
>5	-0.134	0.874	0.564	1.356	0.548
Monthly income					
≤₦50,000		1			
>₦50,000	0.301	1.351	0.610	2.993	0.458
Residence					
Urban		1			
Rural	0.005	1.005	0.656	1.540	0.982
Health insurance					
No		1			
Yes	-0.420	0.657	0.408	1.058	0.084
Daily income					
≤₦5,000		1			
>₦5,000	-0.343	0.710	0.387	1.303	0.268

A multivariable logistic regression was conducted to identify predictors of respondents' attitudes toward prostate cancer. The model included age, marital status, education, years of driving, monthly and daily income, residence, and health insurance status.

Age was not a significant predictor of attitude (OR = 0.999, 95% CI: 0.977–1.021, p = 0.898). Similarly, marital status did not influence attitude; unmarried respondents had slightly higher odds of a positive attitude compared to married respondents, but this was not statistically significant (OR = 1.055, 95% CI: 0.730–1.523, p = 0.777).

Respondents without formal education were less likely to have a positive attitude compared to those with some level of education (OR = 0.584, 95% CI: 0.280–1.218), although this association did not reach statistical significance (p = 0.151). Other variables, including years of driving (OR = 0.874, 95% CI: 0.564–1.356, p = 0.548), monthly income above ₦50,000 (OR = 1.351, 95% CI: 0.610–2.993, p = 0.458), residence in rural areas (OR = 1.005, 95% CI: 0.656–1.540, p = 0.982), and daily income above ₦5,000 (OR = 0.710, 95% CI: 0.387–1.303, p = 0.268), also showed no significant associations with attitude. However, health insurance showed a borderline effect. Respondents with health insurance were less likely to have a positive attitude compared to those without (OR = 0.657, 95% CI: 0.408–1.058, p = 0.084), though this was not statistically significant. Overall, the logistic regression results suggest that none of the sociodemographic or economic factors examined were statistically significant predictors of attitude toward prostate cancer.

Section D:
Past medical history, symptoms and risk assessment of prostate cancer

Table 4.9 Past medical history

Variable	Frequency(n=520)	Percent (%)
Any chronic medical condition		
Yes	331	63.7
No	189	36.3
If yes, type of chronic condition* (n=331)		
Hypertension	110	21.2
Diabetes mellitus	40	7.7
Heart disease	22	4.2
Chronic kidney disease	11	2.1
Other chronic condition#	34	6.5
Family history of prostate cancer		
Yes	40	7.7
No	406	78.1
Don't know	74	14.2
History of prostate condition (BPH/prostatitis/other)		
Yes	52	10.0
No	468	90.0
Specific prostate diagnosis (n=52)		
BPH	34	6.5
Prostatitis	14	2.7
Other**	4	0.8
Smoking status		
Yes	205	39.4
No	315	60.6
Alcohol use		
Yes	406	78.1
No	114	21.9

*Multiple response Other** - Prostate abscess Other chronic condition# - Asthma, Osteoarthritis, Sickle cell, Glaucoma, Cataract

Among the respondents, 331 (63.7%) reported having at least one chronic medical condition, while 189 (36.3%) reported none. Among those with chronic conditions, hypertension was most frequently reported 110 (21.2%), followed by diabetes mellitus 40 (7.7%), heart disease 22 (4.2%), chronic kidney disease 11 (2.1%), and other chronic conditions such as asthma, osteoarthritis, sickle cell disease, glaucoma, and cataract 34 (6.5%).

A total of 40 (7.7%) respondents reported a family history of prostate cancer, while 406 (78.1%) reported no such history, and 74 (14.2%) were unsure. History of prostate-related conditions was uncommon, with 52 (10.0%) reporting a diagnosis and 468 (90.0%) reporting none. Among those diagnosed, benign prostatic hyperplasia was most frequently reported 34 (6.5%), followed by prostatitis 14 (2.7%) and other conditions such as prostate abscess 4 (0.8%).

Smoking was reported by 205 (39.4%), while 315 (60.6%) reported no history of smoking. Alcohol use was reported by 406 (78.1%) compared with 114 (21.9%) who reported abstinence.

A substantial proportion of respondents reported chronic conditions, with hypertension being the most common. Family history of prostate cancer and history of prostate conditions were less frequently reported. Lifestyle practices such as alcohol use and smoking were common among respondents.

Table 4.10 Lower Urinary Tract Symptoms (last 1 month) (n=520)

Response	None Freq (%)	<1 in 5 Freq (%)	< half Freq (%)	About half Freq (%)	> half Freq (%)	Almost always Freq (%)
Incomplete emptying	311 (59.8)	119 (22.9)	63 (12.1)	20 (3.8)	6 (1.2)	1 (0.2)
Re-urge <2 hours	315 (60.6)	121 (23.3)	61 (11.7)	17 (3.3)	5 (1.0)	1 (0.2)
Stream starts/stops	361 (69.4)	92 (17.7)	48 (9.2)	13 (2.5)	6 (1.2)	0 (0.0)
Difficulty postponing urination (urgency)	347 (66.7)	112 (21.5)	45 (8.7)	13 (2.5)	3 (0.6)	0 (0.0)
Weak urinary stream	286 (55.0)	136 (26.2)	63 (12.1)	28 (5.4)	7 (1.3)	0 (0.0)
Push/strain to begin	335 (64.4)	112 (21.5)	49 (9.4)	21 (4.0)	3 (0.6)	0 (0.0)
	None Freq (%)	**Once Freq (%)**	**Twice Freq (%)**	**Three times Freq (%)**	**Four times Freq (%)**	**Five or more Freq (%)**
Nocturia	101 (19.4)	146 (28.1)	123 (23.7)	79 (15.2)	42 (8.1)	29 (5.6)

< 1 in 5: Symptom occurred occasionally (less than 1 out of every 5 urinations; about once in 10 times).
< half: Symptom present sometimes, but in less than half of daily urinations.
About half: Symptom occurred in approximately half of daily urinations.
> half: Symptom occurred in more than half of daily urinations.
Almost always: Symptom occurred nearly every time (almost all urinations).

Among the respondents, 311 (59.8%) reported no experience of incomplete bladder emptying, while 119 (22.9%) experienced it less than one in five times, 63 (12.1%) less than half of the time, 20 (3.8%) about half of the time, 6 (1.2%) more than half of the time, and 1 (0.2%) almost always.

A total of 315 (60.6%) reported no episodes of needing to urinate again within two hours, while 121 (23.3%) experienced it less than one in five times, 61 (11.7%) less than half of the time, 17 (3.3%) about half of the time, 5 (1.0%) more than half of the time, and 1 (0.2%) almost always.

A majority of respondents 361 (69.4%) reported no interruption of urinary stream, while 92 (17.7%) experienced it less than one in five times, 48 (9.2%) less than half of the time, 13 (2.5%) about half of the time, and 6 (1.2%) more than half of the time. No respondent reported this symptom occurring almost always. Urinary urgency was absent in 347 (66.7%), while 112 (21.5%) experienced it less than one in five times, 45 (8.7%) less than half of the time, 13 (2.5%) about half of the time, and 3 (0.6%) more than half of the time.

Weak urinary stream was reported by 286 (55.0%) as absent, while 136 (26.2%) experienced it less than one in five times, 63 (12.1%) less than half of the time, 28 (5.4%) about half of the time, and 7 (1.3%) more than half of the time. None reported it occurring almost always. A total of 335 (64.4%) reported no straining to initiate urination, while 112 (21.5%) experienced it less than one in five times, 49 (9.4%) less than half of the time, 21 (4.0%) about half of the time, and 3 (0.6%) more than half of the time.

For nocturia, 101 (19.4%) reported no episodes of waking at night to urinate. A total of 146 (28.1%) reported waking once, 123 (23.7%) reported twice, 79 (15.2%) reported three times, 42 (8.1%) reported four times, and 29 (5.6%) reported five times or more.

Overall, most respondents did not report lower urinary tract symptoms, although occasional or intermittent experiences of weak stream, urgency, and nocturia were observed in notable proportions.

Table 4.11 Key Prostate Cancer Symptoms (last 3 months)

Variable	Frequency (n=520)	Percent (%)
Hematuria (blood in urine)	18	3.5
Hematospermia (blood in semen)	10	1.9
Weight loss (last 3 months)	28	5.4
New/progressive bone pain	25	4.8
Fatigue or loss of appetite	94	18.1
Acute urinary retention (last 12 months)	18	3.5

Among the respondents, 18 (3.5%) reported hematuria, while 10 (1.9%) reported hematospermia. Weight loss within the last three months was reported by 28 (5.4%), and new or progressive bone pain by 25 (4.8%). Fatigue or loss of appetite was more frequently reported, with 94 (18.1%) indicating this symptom. Acute urinary retention within the last 12 months was reported by 18 (3.5%).

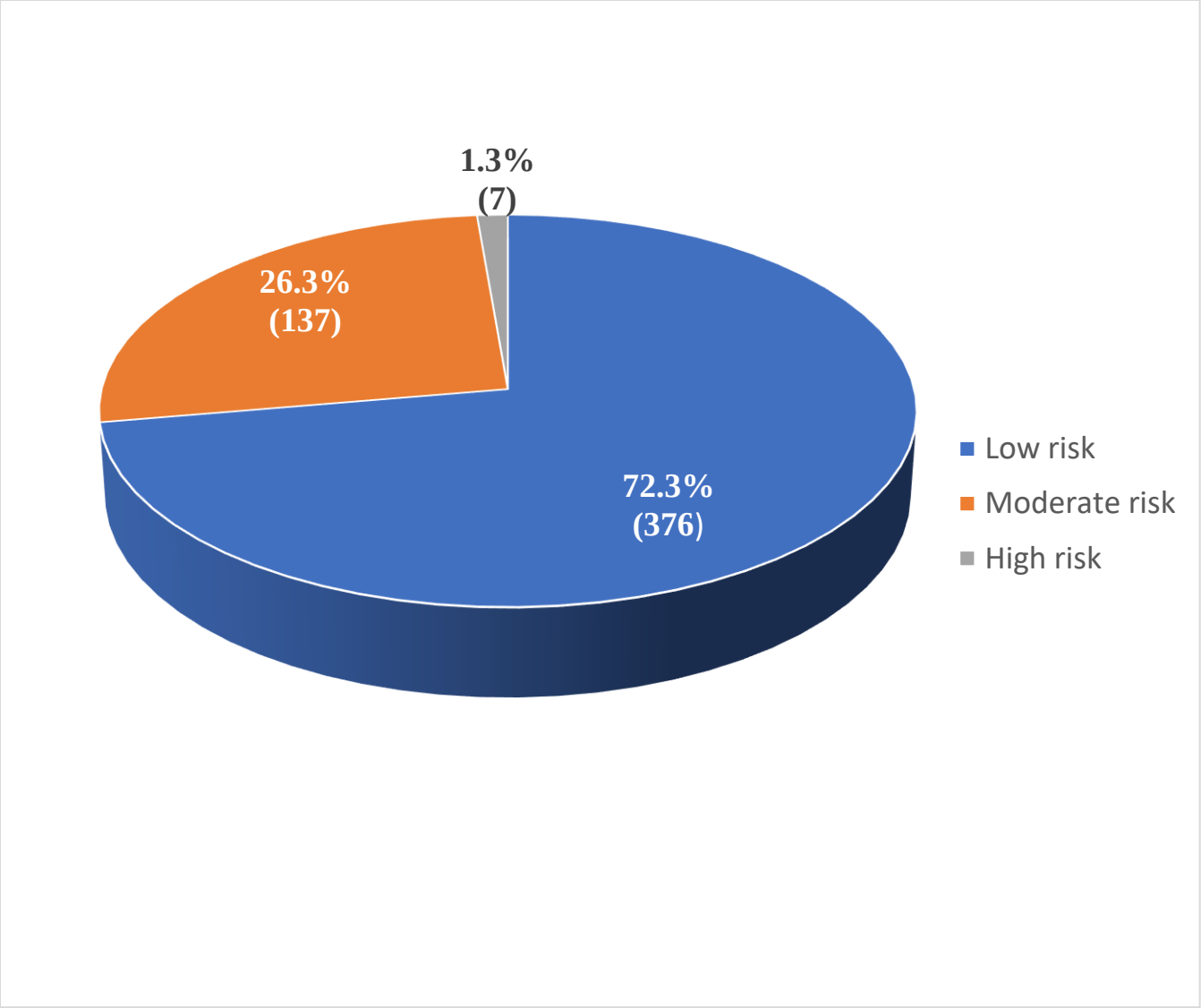

Figure 4.3: Overall Prostate Cancer Risk Assessment

Out of the 520 drivers assessed, the majority 376 (72.3%) were classified as low risk for prostate cancer symptoms. A total of 137 (26.3%) respondents fell into the moderate risk category, while 7 (1.3%) were categorized as high risk.

Section E: Utilization of Screening practices

Table 4.12a Utilization of Prostate Cancer Screening Services

Variable	Frequency	Percent (%)
Heard of prostate cancer screening (n=520)		
Yes	275	52.9
No	245	47.1
Have you ever utilized cancer screening services (n=520)		
Yes	91	17.5
No	429	82.5
When last screened (n=91)		
<1 year	48	52.7
1–2 years	17	18.7
3–5 years	11	12.1
>5 years	11	12.1
Don't know	4	4.4
Screening method used (n=91)		
PSA	66	72.5
DRE	16	17.6
Transrectal Ultrasound	2	2.2
Don't know	4	4.4
Others*	3	3.3
What prompted screening (n=91)		
Own decision	7	7.7
Routine check	14	15.4
Symptoms	22	24.1
Doctor’s advice	32	35.2
Friend	8	8.8
Community outreach	5	5.5
Employer requirement	3	3.3

*Multiple response *Others: MRI, Prostate biopsy

Out of 520 respondents, 275 (52.9%) had heard of prostate cancer screening, while 245 (47.1%) had not. A total of 91 (17.5%) reported having ever utilized prostate cancer screening services,

while 429 (82.5%) had never been screened. Among those who had undergone screening, 48 (52.7%) reported being screened within the last year, 17 (18.7%) within one to two years, 11 (12.1%) within three to five years, 11 (12.1%) more than five years ago, and 4 (4.4%) could not recall when they were last screened.

The most frequently reported screening method was prostate-specific antigen testing 66 (72.5%), followed by digital rectal examination 16 (17.6%), other methods such as MRI or prostate biopsy 3 (3.3%), transrectal ultrasound 2 (2.2%), and 4 (4.4%) who could not specify the method. Screening was most often prompted by doctor's advice 32 (35.2%), followed by symptoms 22 (24.1%), routine check 14 (15.4%), recommendation from a friend 8 (8.8%), own decision 7 (7.7%), community outreach 5 (5.5%), and employer requirement 3 (3.3%).

Table 4.12b Utilization of Prostate Cancer Screening Services

Variable	Frequency	Percent (%)
Reason for not screening* (n=429)		
Never heard of the test	180	34.6
felt not at risk	135	26.0
cost too high	178	34.2
fear of procedure	156	30.0
distrust of tests/doctors	71	13.7
no nearby services	89	17.1
Willingness to have screening in future (n=520)		
Yes	303	58.3
Not sure	125	24.0
No	92	17.7
Ever advised by a health professional to screen (n=520)		
Yes	117	22.5
No	403	77.5
Who advised (if yes) (n=117)		
Doctor	67	57.3
Nurse	25	21.4
Pharmacist	6	5.1
Community health worker	13	11.1
Friend/Relative	4	3.4
Others#	2	1.7
Would recommend screening to other drivers(n=520)		
Yes	371	71.3
No	149	28.7
Knows where to get screened in Benin City (n=520)		
Yes	246	47.3
No	274	52.7

#Others: Manager

Among the 429 respondents who had never undergone prostate cancer screening, 180 (34.6%) stated that they had never heard of the test, 178 (34.2%) cited high cost, 156 (30.0%) reported fear of the procedure, 135 (26.0%) felt not at risk, 89 (17.1%) reported lack of nearby services, and 71 (13.7%) expressed distrust of the tests or doctors.

Out of all respondents, 303 (58.3%) expressed willingness to undergo screening in the future, 125 (24.0%) were unsure, and 92 (17.7%) were unwilling. Only 117 (22.5%) reported ever being advised by a health professional to undergo screening, while 403 (77.5%) had never received such advice. Among those who had been advised, doctors accounted for 67 (57.3%), nurses for 25 (21.4%), community health workers for 13 (11.1%), pharmacists for 6 (5.1%), friends or relatives for 4 (3.4%), and others such as managers for 2 (1.7%).

Most respondents 371 (71.3%) indicated that they would recommend screening to other drivers, while 149 (28.7%) stated they would not. Knowledge of where to access screening in Benin City was limited, as 246 (47.3%) reported awareness of screening locations and 274 (52.7%) did not.

Table 4.12c Utilization of Prostate Cancer Screening Services

Variable	Frequency	Percent (%)
Distance to nearest facility (520)		
<1 km	78	15.0
1–5 km	293	56.3
6–10 km	71	13.7
>10 km	34	6.5
PSA cost (n=520)		
Don't know	44	8.5
Knows	59	11.3
Don't know	461	88.7
Estimated PSA cost (n=59)		
₦5,000–₦10,000	15	25.4
>₦10,000–₦20,000	39	66.1
>₦20,000	5	8.5
Are screening services available on weekends? (n=520)		
Yes	145	27.9
No	171	32.9
Don't know	204	39.2
Ever turned away due to inability to pay (n=520)		
Yes	53	10.2
No	467	89.8

Among respondents, 78 (15.0%) reported that the nearest prostate cancer screening facility was located within one kilometre, 293 (56.3%) within one to five kilometres, 71 (13.7%) within six to ten kilometres, and 34 (6.5%) more than ten kilometres away.

Awareness of prostate-specific antigen (PSA) test cost was limited. A total of 461 (88.7%) did not know the cost, while 59 (11.3%) reported knowing. Among those who knew, 15 (25.4%) estimated the cost between ₦5,000 and ₦10,000, 39 (66.1%) estimated between ₦10,000 and ₦20,000, and 5 (8.5%) reported more than ₦20,000.

Screening service availability on weekends was reported by 145 (27.9%), while 171 (32.9%) stated that services were not available, and 204 (39.2%) did not know. A total of 53 (10.2%) reported having been turned away from screening due to inability to pay, while 467 (89.8%) had not experienced this.

Table 4.13 Association between utilization of prostate cancer screening services and Sociodemographic Characteristics

Variable	Screening Utilization (n=520)		χ^2	p-value
	Yes (n=91) Freq (%)	No (n=429) Freq (%)		
Age group (years)				
<40	3 (5.4)	53 (94.6)	18.003	**0.001***
40-49	30 (13.1)	199 (86.9)		
50-59	42 (23.5)	137 (76.5)		
60-69	15 (28.3)	38 (71.7)		
70 and above	1 (33.3)	2 (66.7)		
Marital status				
Married	67 (19.6)	275 (80.4)	3.025	0.082
Unmarried	24 (13.5)	154 (86.5)		
Education				
Not educated	8 (25.0%)	24 (75.0%)	1.329	0.249
Educated	83 (17.0%)	405 (83.0%)		
Monthly income				
< ₦50,000	12 (22.6%)	41 (77.4%)	1.081	0.299
> ₦50,000	79 (16.9%)	388 (83.1%)		
Daily income				
< ₦5,000	21 (20.4%)	82 (79.6%)	0.742	0.389
> ₦5,000	70 (16.8%)	347 (83.2%)		
Health insurance				
No	73 (16.7%)	364 (83.3%)	1.199	0.273
Yes	18 (21.7%)	65 (78.3%)		
Years driving				
< 5	12 (11.5%)	92 (88.5%)	3.200	0.074
> 5	79 (19.0%)	337 (81.0%)		
Residence				
Urban	71 (17.4%)	338 (82.6%)	0.026	0.871
Rural	20 (18.0%)	91 (82.0%)		

****Statistically significant (p<0.05)***

Utilization of prostate cancer screening services was significantly associated with age (χ^2=18.003, p=0.001). Screening uptake increased with age, with the highest utilization observed among respondents aged 60–69 years 15 (28.3%) and 50–59 years 42 (23.5%), compared with lower uptake among those below 40 years 3 (5.4%) and 40–49 years 30 (13.1%). Respondents aged 70 years and above also reported screening utilization 1 (33.3%), although the small number in this group limits interpretation.

No statistically significant associations were found between screening utilization and marital status (χ^2=3.025, p=0.082), educational status (χ^2=1.329, p=0.249), monthly income (χ^2=1.081, p=0.299), daily income (χ^2=0.742, p=0.389), health insurance coverage (χ^2=1.199, p=0.273), years of driving experience (χ^2=3.200, p=0.074), or place of residence (χ^2=0.026, p=0.871). Although not statistically significant, screening uptake was slightly higher among those with no formal education 8 (25.0%) compared with those who were educated 83 (17.0%), among those with monthly income below ₦50,000 12 (22.6%) compared with higher income earners 79 (16.9%), and among those with health insurance 18 (21.7%) compared with those without 73 (16.7%).

The results indicate that age was the only sociodemographic factor significantly associated with prostate cancer screening utilization, with higher uptake among older respondents. Other demographic and socioeconomic factors did not demonstrate significant associations.

Table 4.14 Logistic regression of Utilization of Prostate cancer screening services Predictors

Variable	B (Coefficient)	Odds Ratio (Exp(B))	95% CI Lower	95% CI Upper	p-value
Age group (years)	0.067	1.069	1.038	1.101	**<0.001***
Marital status					
Married		1			
Unmarried	-0.413	0.661	0.397	1.102	0.112
Education					
Educated		1			
Not educated	0.468	1.597	0.679	3.758	0.284
Years driving					
≤5		1			
>5	0.574	1.776	0.921	3.425	0.087
Monthly income					
≤₦50,000		1			
>₦50,000	-0.294	0.745	0.279	1.990	0.558
Residence					
Urban		1			
Rural	0.008	1.008	0.577	1.761	0.977
Health insurance					
No		1			
Yes	0.351	1.420	0.788	2.561	0.244
Daily income					
≤₦5,000		1			
>₦5,000	-0.115	0.891	0.411	1.934	0.770

**Statistically significant (p<0.05)*

Binary logistic regression analysis was conducted to identify predictors of utilization of prostate cancer screening services. The model revealed that age group was the only significant independent predictor of screening utilization, while other sociodemographic and economic variables were not statistically significant.

Specifically, age was positively associated with screening uptake (B = 0.067, OR = 1.069, 95% CI: 1.038–1.101, $p < 0.001$). This indicates that with each additional year of age, the odds of utilizing screening increased by approximately 6.9%.

Other variables—including marital status (OR = 0.661, p = 0.112), education (OR = 1.597, p = 0.284), years of driving experience (OR = 1.776, p = 0.087), monthly income (OR = 0.745, p = 0.558), daily income (OR = 0.891, p = 0.770), residence (OR = 1.008, p = 0.977), and health insurance coverage (OR = 1.420, p = 0.244) did not significantly predict utilization of screening services.

Section F: Barriers to accessing prostate cancer screening

Table 4.15 Barriers to Screening (n=520)

Barrier	None Freq (%)	Small Freq (%)	Moderate Freq (%)	Large Freq (%)	Very Large Freq (%)
Cost of screening	1 (0.2)	23 (4.4)	112 (21.5)	168 (32.3)	216 (41.5)
Time required (waiting/travel)	2 (0.4)	42 (8.1)	151 (29.0)	174 (33.5)	151 (29.0)
Fear of diagnosis/treatment	3 (0.6)	50 (9.6)	166 (31.9)	182 (35.0)	119 (22.9)
Lack of privacy at clinic	33 (6.3)	106 (20.4)	199 (38.3)	144 (27.7)	38 (7.3)
Perceived low quality of local services	11 (2.1)	80 (15.4)	187 (36.0)	188 (36.2)	54 (10.4)
Cultural/religious beliefs opposing screening	39 (7.5)	140 (26.9)	205 (39.4)	107 (20.6)	29 (5.6)
Fear of stigma if found to have prostate cancer	18 (3.5)	70 (13.5)	198 (38.1)	162 (31.2)	72 (13.8)

Cost of screening was identified as a major barrier, with 216 (41.5%) rating it as a very large barrier and 168 (32.3%) as a large barrier, while 112 (21.5%) considered it moderate. Only 1 (0.2%) reported no barrier from cost. Time-related factors, including travel and waiting, were also widely reported, with 151 (29.0%) considering this a very large barrier and 174 (33.5%) a large barrier. A further 151 (29.0%) described it as moderate, while very few 2 (0.4%) reported no barrier.

Fear of diagnosis or treatment was another important factor, as 119 (22.9%) considered it a very large barrier, 182 (35.0%) a large barrier, and 166 (31.9%) moderate. Lack of privacy at clinics

was less prominent, with 38 (7.3%) describing it as a very large barrier, 144 (27.7%) as large, and 199 (38.3%) as moderate.

Perceived low quality of local services was reported as a very large barrier by 54 (10.4%) and a large barrier by 188 (36.2%), while 187 (36.0%) considered it moderate. Cultural or religious beliefs opposing screening were described as a very large barrier by 29 (5.6%) and a large barrier by 107 (20.6%), while 205 (39.4%) rated them as moderate. Fear of stigma associated with a prostate cancer diagnosis was reported as a very large barrier by 72 (13.8%) and a large barrier by 162 (31.2%), with 198 (38.1%) describing it as moderate.

Overall, cost and time requirements emerged as the most significant barriers, followed by fear of diagnosis and treatment. Privacy, cultural beliefs, service quality, and stigma were also reported but to a lesser extent.

Table 4.16 Facilitators to Screening

Facilitator	Frequency (520)	Percent (%)
Free screening day at the motor park	344	66.2
Mobile screening unit near work	323	62.1
Health education by peers/union leaders	266	51.2
Recommendation from doctor/trusted health worker	311	59.8
Partner/family encouragement	275	52.9
Reduced waiting times / weekend screening	325	62.5

Among the respondents, 344 (66.2%) indicated that a free screening day at the motor park would encourage them to undergo screening, while 323 (62.1%) reported that availability of a mobile screening unit near their workplace would facilitate uptake. Reduced waiting times and weekend screening were also frequently reported, with 325 (62.5%) identifying this as a facilitator. Recommendation from a doctor or other trusted health worker was endorsed by 311 (59.8%). Partner or family encouragement was reported by 275 (52.9%), while 266 (51.2%) indicated that health education by peers or union leaders would support their decision to screen.

CHAPTER FIVE

DISCUSSION

5.1 DISCUSSION

Prostate cancer remains a leading cause of cancer morbidity and mortality among men worldwide, with the heaviest burden increasingly concentrated in low- and middle-income countries where late presentation is common and early detection services are limited.[54] In Nigeria, prostate cancer is the most frequently diagnosed cancer in men and a top cause of cancer deaths, underscoring a critical need for accessible risk communication and screening pathways.[54] Despite policy acknowledgement of early detection as a strategic priority, routine, population-level screening for prostate cancer is not implemented nationally, and opportunistic testing predominates within a health system characterised by high out-of-pocket spending and low insurance coverage.[55]

Across sub-Saharan Africa, persistent gaps in knowledge, masculine norms, cancer stigma, fear of procedures, cost, and limited-service availability have been repeatedly documented as barriers to screening uptake.[56] Occupationally mobile and time-pressured groups—such as public transport drivers—may face amplified constraints due to long working hours, income insecurity, and competing livelihood demands, yet they remain under-studied in Nigeria. Emerging evidence from West and Southern Africa suggests that commercial driver populations often have low awareness and poor screening engagement, with occupation-specific barriers intersecting with broader sociocultural and health-system constraints. [57, 58]

Against this backdrop, our study assessed knowledge, attitudes, utilisation, and barriers to prostate cancer screening among public transport drivers in Benin City, Edo State. By focusing on a high-mobility workforce concentrated in the age groups most at risk, this work provides context-specific

evidence to inform tailored health promotion, workplace outreach, and feasible pathways to early detection in an urban Nigerian setting.

A total of 520 drivers participated, the mean age of drivers was 48.96 years (±7.94)), with 88.4% aged 40–69 years, placing the vast majority within age bands where prostate cancer incidence and mortality rise steeply.[59] This age profile heightens the salience of screening and symptom awareness for this cohort. Nearly two-thirds were married (65.8%), a factor that can facilitate health-seeking through spousal encouragement, though evidence from SSA shows that sociocultural norms and fear can still suppress screening behaviors despite potential social support.[58]

Educational attainment clustered at secondary level (50.8%), with 6.3% reporting no formal education and 11.5% tertiary education. Prior Nigerian and regional studies show that lower educational attainment is associated with poorer prostate cancer knowledge and reduced screening uptake, partly via limited health literacy and reduced exposure to targeted messaging.[60]

Economically, most respondents reported daily earnings of ₦5,000–10,000 (58.7%) and monthly income of ₦100,000–199,999 (36.9%), yet 84.0% had no health insurance. Low coverage and high out-of-pocket spending are well-documented system features in Nigeria and are linked to foregone care for cancer services, including screening and follow-up.[60] Given that prostate cancer testing and subsequent pathways (confirmatory tests, specialist review) incur direct costs, the insurance gap likely contributes to low utilization in this group.

Most respondents lived in urban areas (78.7%), which theoretically offers better geographic access to services; however, long working hours and the opportunity costs of time away from income-generating activity are established occupational barriers for drivers and can negate the advantages of proximity.[61] Finally, 5–10 years of driving experience was most common (56.2%), reflecting a

relatively stable, mid-career group for whom sustained, workplace-based or mobile outreach could be both efficient and impactful.

Together, these sociodemographic features—age concentration in higher-risk bands, moderate education, low insurance coverage, and occupational constraints—form a coherent explanatory backdrop for the patterns we observe in knowledge, attitudes, screening utilization, and reported barriers in the subsequent sections.

Awareness of prostate cancer among respondents in this study was moderate, with just over half of drivers (54.6%) having any form of awareness regarding prostate cancer. This reflects persistent gaps in awareness and understanding of prostate cancer among Nigerian men, despite the increasing burden of the disease nationally.[54] This finding was just a little better than reports from Sokoto, Lagos, and Ibadan, where only between 30-45% of men were found to have adequate knowledge of prostate cancer.[60, 62] Such widespread deficits in knowledge remain a public health concern, as awareness strongly predicts willingness to screen and the likelihood of early detection.[63]

The leading sources of information in this study were television and radio (63.7%), followed by health workers (35.6%) and family/friends (32.0%). Similar reliance on mass media has been documented in Lagos and Accra, where television was the dominant source of health information.[62,64] However, the limited role of health workers in this study is notable, as direct counselling by providers has been shown to deliver more accurate knowledge and positively influence screening behaviors.[61] The underrepresentation of health worker engagement may therefore contribute to the persistence of misconceptions identified in this population.

Respondents demonstrated modest knowledge of risk factors, with more than half recognizing age and family history as a risk factor. This aligns with findings from Ghana, where just over half of

respondents knew that age and genetics increase risk.[65] However, misconceptions were evident: less than one-third of drivers who were aware of prostate cancer wrongly believed prostate cancer only affects men over 70 years, despite evidence that it commonly presents in men aged 40–69 in African populations.[54] Such misconceptions may delay health-seeking in younger at-risk men and contribute to the late-stage diagnoses frequently reported in Nigeria.[54] The role of occupational and social contexts must also be considered; many drivers may associate prostate cancer only with advanced age due to anecdotal reports of illness among older peers, thereby reinforcing inaccurate age thresholds.

Understanding of symptoms was similarly limited. Fewer than half of the entire respondents recognised that early prostate cancer is often asymptomatic, and that typical symptoms included haematuria and urinary difficulty. These results are consistent with studies in South Africa and Ghana, where less than 50% of men correctly identified common signs of prostate cancer.[58, 65] Misconceptions were also evident: 43.1% believed that all prostate cancers are immediately life-threatening and require urgent treatment. This lack of nuance around disease progression may reflect a deficit in exposure to accurate medical information, and may exacerbate fatalistic attitudes that discourage screening. [66]

Knowledge of prostate cancer screening services was poor overall. Awareness of the PSA test and DRE (about one third) was limited, and less than half of entire respondents recognized that early detection improves treatment outcomes. Furthermore, one-fifth believed screening is unnecessary in the absence of urinary symptoms, a misconception also reported in Sokoto.[67] This symptomatic-only approach to health-seeking is widespread in sub-Saharan Africa, where preventive screening is often undervalued.[66] Such gaps are concerning, as they reinforce late presentation, with most Nigerian men diagnosed at advanced stages when treatment options are limited.[54]

Sociodemographic analysis revealed that knowledge of prostate cancer was significantly associated with age and education. Knowledge improved with age as logistic regression confirmed that each additional year of age increased the odds of good knowledge by 3.1%. This is consistent with findings from Sokoto and Ghana, where older men demonstrated better awareness, possibly due to greater personal concern and exposure through peers or relatives diagnosed with prostate cancer. [67,68]

Education was also a strong predictor. Drivers without formal education were 80% less likely to have good knowledge compared to their educated counterparts. This pattern has been widely reported in Nigeria and beyond highlighting the role of educational attainment in health literacy and information uptake. [54, 57] Conversely, other sociodemographic factors—including income, marital status, residence, and insurance coverage—did not significantly predict knowledge in this study, diverging from some prior Nigerian studies where income and urban residence were influential. [57, 64] This suggests that for this occupational group, structural and occupational constraints may override some of the sociodemographic gradients observed in general populations. Taken together, these findings demonstrate that while more than half of respondents have at least heard of prostate cancer, detailed knowledge of risk factors, symptoms, and screening remains poor. Misconceptions about age thresholds, symptom onset, and the necessity of screening in asymptomatic individuals are particularly concerning, as they directly discourage early detection. The fact that age and education emerged as the only significant predictors highlights the need for tailored, age-sensitive, and literacy-appropriate health education strategies. Public health interventions targeting transport drivers should prioritise community-based education, use of mass media channels that drivers already rely on, and greater involvement of health workers in direct

outreach. Without addressing these knowledge gaps, efforts to increase screening uptake in this high-risk occupational group are unlikely to succeed.

This study showed that respondents generally had positive attitudes toward prostate cancer screening, with just over half (54.2%) expressing favourable attitudes. A large majority agreed that screening was important even if they felt healthy (78.8%) and more than three-quarters indicated that they would attend screening if it were free and convenient (76.9%). These findings are in line with reports from Ghana and Uganda, where men also expressed willingness to be screened when services were affordable and accessible. [64, 69]

Despite this overall positivity, some doubts and fears were still present. Around one-third of respondents were unsure about the reliability of the PSA test, and nearly one in three admitted that they would prefer not to know their cancer status. Fear of the consequences of a positive result was also common, with almost half believing that such a diagnosis would "ruin" their lives or work. Similar fatalistic views have been reported in Nigeria and South Africa, where many men see cancer as a death sentence, which discourages them from going for screening. [56, 70]

Embarrassment about the digital rectal examination (DRE) was another major issue, with nearly two-thirds of respondents agreeing that the procedure would make them uncomfortable. This has also been reported in Ghana and South Africa, where men described the DRE as invasive and embarrassing.[68,71] Although most respondents felt health workers were approachable, embarrassment about DRE shows that procedure-specific barriers remain strong. Importantly, research now shows that DRE alone is not a reliable test, and international guidelines increasingly recommend PSA testing first, followed by other investigations if needed. Promoting PSA as a simple blood test could therefore help reduce embarrassment and encourage more men to participate. [72]

Religious beliefs also shaped attitudes. While most rejected the idea that prayer could replace medical check-ups, almost one in five believed that faith alone could serve this role. Previous studies in Nigeria have shown that religion can play both positive and negative roles: in some cases, it delays care, while in others, religious leaders encourage men to seek medical help. [73] This suggests that working with faith leaders could be an effective way to address misconceptions.

Analysis of respondents' background characteristics showed no significant predictors of attitudes. Neither age, education, marital status, income, nor health insurance status influenced whether men expressed positive or negative views. This finding contrasts with studies in Lagos and elsewhere, where higher education and income were linked to more positive attitudes. [62] For drivers in Benin City, however, barriers such as time constraints, embarrassment, and fear appear to cut across all groups.

Overall, these results suggest that while most men recognise the value of screening and are open to participating, strong barriers still exist. Embarrassment about DRE, fear of life disruption, fatalistic beliefs, and concerns about treatment side effects, such as sexual dysfunction, all limit the translation of positive attitudes into action. This pattern is well known in cancer prevention: men may say they support screening but fail to attend because of psychological, cultural, or practical barriers. [74]

Addressing these challenges requires targeted strategies. PSA testing should be promoted as a private, non-invasive first step. Public health campaigns should use survivor stories and statistics to show that early detection leads to successful treatment. Screening services could be taken to the motor parks, offered for free or at reduced cost, and organised at convenient times, with the involvement of transport unions to build trust. Faith leaders and community figures should also be engaged to challenge misconceptions and support medical screening.

The findings of this study revealed a high burden of chronic medical conditions among public transport drivers, with almost two-thirds (63.7%) reporting at least one chronic illness. Hypertension was the most prevalent condition (21.2%), followed by diabetes mellitus (7.7%) and heart disease (4.2%). This pattern reflects the growing prevalence of non-communicable diseases (NCDs) in Nigeria and sub-Saharan Africa, where hypertension and diabetes are now common comorbidities among middle-aged men.[75,76] Lifestyle and occupational factors, including prolonged sedentary work, irregular diets, and stress associated with commercial driving, may contribute to these conditions. [77] The co-existence of such NCDs is of particular concern as they are associated with an increased risk of both prostate cancer incidence and poor treatment outcomes.[78]

A family history of prostate cancer was reported by only 7.7% of respondents, while 14.2% were unsure. The low proportion aligns with studies in Ghana and Nigeria where family history reporting ranged between 5–10%. [57, 64] However, the relatively high proportion of respondents who were uncertain suggests limited family health communication, which has been noted as a barrier to risk recognition in African contexts.[79] Given that family history is one of the strongest risk factors for prostate cancer, poor awareness of familial patterns may hinder preventive screening.

Only 10% of respondents reported a prior prostate condition, most commonly benign prostatic hyperplasia (6.5%). This is lower than expected when compared to hospital-based studies in Nigeria, where prevalence of BPH has been reported as high as 20–30% among men above 40 years. [80] The difference may be due to underdiagnosis in community settings, where men often normalise urinary symptoms or rely on traditional remedies rather than seeking medical evaluation. [56]

Lifestyle-related risk factors were also prominent. Nearly 40% of drivers reported current or past smoking, while more than three-quarters (78.1%) reported alcohol use. These rates are higher than the national adult prevalence of smoking (8.9%) and alcohol use (57%) in Nigeria.[81] Transport drivers may be particularly vulnerable due to occupational stress, peer influence, and easy access to alcohol at motor parks.[81] Both smoking and heavy alcohol use have been implicated in more aggressive prostate cancer and poorer treatment outcomes, suggesting an elevated risk profile in this population. [81]

Lower urinary tract symptoms (LUTS) were reported by a significant proportion of respondents, although most experienced them infrequently. Nocturia was the most common, with more than 80% reporting at least one episode of night-time urination, and nearly one-third waking two or more times per night. Other symptoms such as weak urinary stream, straining, and urgency were less frequent but still notable. Similar findings have been documented in studies of Nigerian and South African men, where nocturia is often the earliest and most bothersome urinary complaint.[62,80]. The presence of LUTS in middle-aged drivers may reflect both benign conditions such as BPH and potential early indicators of prostate malignancy.

More concerning were the small but important proportions reporting "red flag" symptoms: haematuria (3.5%), unexplained weight loss (5.4%), bone pain (4.8%), and acute urinary retention (3.5%). These symptoms may indicate advanced prostate or other urological pathology. Although the percentages appear low, they translate to dozens of men in this study population, suggesting that significant disease may be present but undiagnosed. Similar community-based studies in Nigeria and Ghana have found that 3–6% of middle-aged men report such alarm symptoms, often without medical follow-up due to fatalistic beliefs or financial barriers. [62, 80]

Overall risk stratification for prostate cancer showed that while the majority (72.3%) were classified as low risk, more than a quarter (26.3%) fell into the moderate risk category, and a small but significant minority (1.3%) were classified as high risk. This aligns with evidence that commercial drivers represent an occupational group with multiple overlapping risk factors—ageing, high prevalence of NCDs, lifestyle behaviours, and poor health-seeking practices—that collectively heighten their prostate cancer risk. [82]

The findings underline the importance of integrating prostate health into broader NCD control strategies. Targeted screening and health education should be prioritised for drivers, particularly those with comorbid hypertension or diabetes, who may already be in contact with health services. Addressing modifiable lifestyle risks such as smoking and alcohol use should also form part of prostate cancer prevention strategies. Finally, routine health education should emphasise the significance of LUTS and "red flag" symptoms, to shift help-seeking from reactive to preventive approaches.

This study found that utilisation of prostate cancer screening among public transport drivers in Benin City was low, with only 17.5% of respondents reporting that they had ever undergone a screening test. This finding is consistent with previous studies in Nigeria and other African countries, which have consistently shown low uptake of prostate cancer screening despite rising disease burden. [56, 69] For example, a study in North Central, Nigeria reported uptake rates of 4.4%, while in Ghana fewer than one in four men had ever been screened. [61,64] Low utilisation in this population suggests that awareness and positive attitudes alone are insufficient to drive screening behaviour without addressing structural and psychosocial barriers.

Among those who had been screened, more than half had done so within the last year, suggesting some degree of recent engagement. The majority underwent PSA testing (72.5%), while fewer

reported DRE (17.6%) or other methods such as ultrasound and biopsy. This mirrors global trends where PSA has become the most common entry point for screening due to its non-invasive nature and relative acceptability compared to DRE. [83] In this study, DRE appeared less popular, likely reflecting the embarrassment and discomfort highlighted from their Attitude towards DRE, as well as broader cultural sensitivities around rectal examination. [83]

The main motivators for screening were doctor's advice (35.2%), presence of symptoms (24.1%), and routine checks (15.4%). These findings highlight the strong influence of healthcare providers, consistent with literature showing that physician recommendation is one of the most reliable predictors of cancer screening uptake.[84] However, it is concerning that only 22.5% of respondents in the entire sample had ever been advised by a health professional to screen, indicating a significant missed opportunity for preventive counselling within routine care.

For the majority who had never been screened (82.5%), key barriers included lack of awareness of the test (34.6%), high cost (34.2%), fear of the procedure (30.0%), and perceptions of not being at risk (26.0%). Other obstacles included limited access to services (17.1%) and distrust of tests or doctors (13.7%). These barriers are consistent with reports from across sub-Saharan Africa, where poor knowledge, financial hardship, low perceived susceptibility, and fear of invasive procedures frequently limit men's engagement with screening. [56, 59, 74]

While geographic access did not emerge as a major barrier in this population—since most respondents lived within 5 km of a screening facility—other structural issues were evident. For instance, nearly 40% of respondents did not know if weekend services were available, and 10.2% had previously been turned away due to inability to pay. The lack of weekend availability is particularly relevant for drivers, whose working schedules may not align with weekday clinic

hours. Together, these findings suggest that convenience and affordability are more decisive than physical distance in shaping utilisation.

Multivariable analysis confirmed that age was the only significant predictor of screening utilisation. Older drivers were significantly more likely to have been screened, with uptake rising steadily from 5.4% among those under 40 years to 28.3% among those aged 60–69 years. Logistic regression showed that with each additional year of age, the odds of screening increased by about 7%. This pattern has been consistently documented in Nigeria and other African countries, where age is both a biological risk factor and a psychological motivator that drives health-seeking behaviour.[57, 69] In contrast, education, income, residence, marital status, health insurance, and driving experience were not significantly associated with screening in this population. This differs from findings in Lagos and Accra, where higher education and income were associated with better screening uptake.[62, 64] The absence of these associations in this study suggests that occupational pressures and cultural beliefs may override socioeconomic differences among drivers.

Despite the low rate of past utilisation, more than half of respondents (58.3%) expressed willingness to undergo screening in the future, and over 70% stated they would recommend screening to fellow drivers. These findings reflect a latent demand for services if barriers such as cost, fear, and convenience are addressed. This is consistent with the "intention–action gap" described in African cancer prevention research, where willingness to participate in screening is high but actual uptake is constrained by structural barriers. [64, 74] Peer influence also appears important, as more than two-thirds were prepared to encourage others to screen, suggesting that union-based or peer-led interventions could be effective strategies in this occupational group.

This study highlights significant barriers to the uptake of prostate cancer screening among public transport drivers in Benin City. The most prominent obstacle identified was cost, with nearly three-

quarters of respondents describing it as either a large or very large barrier. Financial constraints are a consistent theme in African literature, where the high out-of-pocket cost of prostate-specific antigen (PSA) testing and diagnostic follow-up prevents men from accessing services.[56,69] In Nigeria, where prostate cancer screening is rarely subsidised and insurance coverage is limited, affordability remains a major bottleneck. [85]

In addition to cost, time-related constraints, such as long waiting periods and travel to facilities, were also widely cited. More than 60% of respondents rated time requirements as a large or very large barrier. This is particularly relevant for transport drivers, whose income depends on time spent at work, meaning clinic visits represent both a direct cost and an opportunity cost. Comparable findings have been reported in South Africa, where men described prolonged waiting times as a deterrent to clinic attendance. [86]

Psychological and social barriers were also evident. Fear of diagnosis or treatment was cited by more than half of respondents, echoing widespread anxieties about cancer as a death sentence and about treatment-related side effects such as sexual dysfunction and incontinence. [62,64] Fear of stigma was similarly prominent, with 45% of respondents reporting it as a large or very large barrier. Stigma surrounding cancer is well documented in African contexts, often linked to cultural beliefs that associate cancer with weakness, contagion, or divine punishment. [74]

Concerns about the quality and privacy of services further limited engagement. Over 70% of drivers rated lack of privacy as a moderate to very large barrier, while two-thirds expressed doubts about the quality of local services. Such perceptions may undermine trust in available care and compound reluctance to undergo screening. A Ghanaian study similarly found that men avoided screening due to poor confidence in local facilities and fear of breaches of confidentiality. [68]

Although cultural and religious beliefs were less pronounced in this population compared with financial and logistical factors, nearly one in four respondents described them as a large barrier. Fatalistic beliefs, reliance on prayer, and scepticism about medical interventions have been noted in Nigerian and Ugandan studies, where they delay men's health-seeking behaviour. [62,87]

Encouragingly, several facilitators were identified that could support improved screening uptake. The most widely endorsed strategies were free screening at motor parks (66.2%), reduced waiting times or weekend services (62.5%), and mobile screening units (62.1%). These practical interventions directly address financial and time-related barriers, making them particularly well-suited for occupational groups like drivers. Similar mobile and workplace-based interventions have shown success in increasing screening for other cancers in low-resource settings. [88]

In addition, recommendations from trusted health professionals were supported by 59.8% of respondents, reinforcing earlier findings that doctor endorsement is one of the strongest predictors of screening uptake. 62, 84 Partner and family encouragement was also influential, consistent with evidence that spousal support enhances men's willingness to participate in preventive health measures.[89] Peer or union-led health education, although less widely endorsed (51.2%), could play an important role given the strong social networks within the transport sector.

Taken together, these findings underscore that barrier to prostate cancer screening among drivers are multifactorial, spanning economic, logistical, psychological, and socio-cultural dimensions. However, the facilitators reported suggest that community-based, low-cost, and convenient interventions, coupled with health professional engagement and family support, could substantially improve uptake in this group. Targeted interventions that combine structural changes (such as subsidised or mobile services) with behavioural and social support mechanisms are therefore likely to be most effective.

5.2 CONCLUSION

This study set out to assess knowledge, attitudes, utilisation, and barriers to prostate cancer screening among public transport drivers in Benin City, Edo State.

Firstly, knowledge of prostate cancer was generally poor. Although just over half of respondents had heard of the disease, only 40% demonstrated good knowledge of its risk factors, symptoms, and screening methods. Misconceptions were common, particularly regarding the age of onset and the role of screening in asymptomatic men. Education level and increasing age were the main predictors of knowledge, highlighting the importance of targeted health education campaigns for younger and less-educated drivers.

Secondly, respondents expressed generally positive attitudes toward screening, with more than half acknowledging its importance even in the absence of symptoms and indicating willingness to participate if screening were accessible and affordable. However, embarrassment about digital rectal examination, fear of diagnosis, and reliance on prayer as an alternative to medical care persisted among some, underscoring the need for culturally sensitive health promotion.

Thirdly, utilisation of prostate cancer screening services was very low, with fewer than one in five drivers ever having been screened. Uptake increased significantly with age, but other sociodemographic factors—including income, marital status, and residence—did not predict screening behaviour. This suggests that while awareness and attitudes are favourable, structural barriers remain the primary deterrents to service uptake.

Finally, the study identified multiple barriers to screening, of which cost, long waiting times, fear of diagnosis and treatment, and lack of privacy at clinics were most prominent. Conversely,

facilitators included free or mobile screening services, weekend availability, and strong recommendations from health professionals and family members.

Taken together, these findings demonstrate that public transport drivers in Benin City represent a vulnerable group with poor knowledge but generally favourable attitudes toward prostate cancer screening. Low utilisation is driven primarily by financial, logistical, and psychosocial barriers. Addressing these through subsidised or mobile screening programmes, coupled with targeted health education and community engagement, is critical to improving early detection and reducing prostate cancer morbidity and mortality in this high-risk occupational group.

5.3 RECOMMENDATION

1. Community-based education and awareness: Prostate cancer awareness programmes should be conducted regularly at motor parks in collaboration with transport unions. These should use clear, culturally appropriate messages to dispel myths, highlight risk factors, and promote the benefits of early detection.

2. Health worker engagement: Health professionals should be encouraged to routinely educate drivers during clinic visits and outreach activities, emphasising that prostate cancer can be detected early and effectively treated.

3. Positive attitude reinforcement: Efforts should be made to address fears, stigma, and misconceptions about prostate cancer. Involving community leaders, respected union executives, and survivors of the disease as advocates can help normalise prostate cancer screening and encourage men to participate without shame.

4. Male-friendly services: Screening centres should be designed to guarantee privacy and confidentiality, while reducing embarrassment around procedures such as digital rectal

examination. Creating welcoming, male-centred environments will make drivers more comfortable seeking services.

5. Accessibility and affordability of services: Screening services should be subsidised or offered free of charge where possible. Mobile screening units deployed directly to motor parks, weekend services, and extended operating hours would ensure drivers with irregular schedules are not excluded.

6. Integration into health insurance and policies: PSA testing and other prostate cancer screening methods should be included in national health insurance schemes. Government health policies should integrate screening into routine male health services to ensure sustainability and equity.

7. Addressing major barriers: High costs, long waiting times, distance to facilities, and fear of diagnosis must be systematically addressed. This can be achieved by decentralising screening centres, reducing financial barriers, and offering pre- and post-test counselling to build trust and reduce stigma.

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APPENDIX I
INFORMED CONSENT FORM

TITLE OF STUDY: ASSESSMENT OF THE KNOWLEDGE AND ATTITUDE TOWARDS PROSTATE CANCER AND THE UTILIZATION OF SCREENING SERVICES AMONG INTERCITY/INTERSTATE PUBLIC TRANSPORT DRIVERS IN BENIN CITY, EDO STATE

INVESTIGATOR: NDIFREKE UKO-OWO UMOH
SUPERVISOR: PROF. E.O. OGBOGHODO
FINANCIAL SPONSORSHIP: This research project is self-sponsored.
PURPOSE OF THE RESEARCH: The purpose of this study is to assess the knowledge and attitude towards prostate cancer and the utilization of screening services among intercity/interstate public transport drivers in Benin city
PROCEDURES AND PROTOCOL INVOLVED IN THE STUDY
You are kindly requested to complete a questionnaire designed to assess the food insecurity status and its associated factors among students of the University of Benin. This questionnaire is for research purposes only.
COMPENSATION
There will be no financial compensation for participating in this study.
VOLUNTARY PARTICIPATION
Your participation in this research is completely voluntary. There will be no discrimination against you if you choose not to participate. You are free to change your mind and withdraw from the study at any time, even if you initially agreed to take part.
SIDE EFFECTS
There is no anticipated adverse effect associated with participating in this study.
BENEFIT
The benefit of this study includes the provision of useful local data on the knowledge and attitude towards prostate cancer and the utilization of screening services among intercity/interstate public transport drivers in Benin city and making recommendations geared towards improving screening services utilization.
CONFIDENTIALITY
All information and data obtained during this study will be kept confidential. Participant names will not be recorded on the questionnaires, and all collected information will be securely stored in a password-protected file on my personal computer. Any physical copies will be stored in a locked personal document cabinet.

CONTACT INFORMATION
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Ethics and Research Committee
University of Benin Teaching Hospital
Benin City.

Phone Number: 07063331337

CERTIFICATE OF CONSENT

I have read the above information (or it has been read to me). I had the opportunity to ask questions about it and the questions were answered to my satisfaction.

(A) I consent voluntarily to take part as a participant in this study

(B) I do not consent to participate in this study.

Name of Participant: ----------

Signature of participant: ----------

Date:----------

APENDIX II

STRATIFIED SAMPLING CALCULATION FOR SELECTION OF DRIVERS

From the 19 selected parks using stratified sampling method, the study sample size was distributed proportionally to the number of drivers in each park using the formula:

$n_h = (N_h / \Sigma N_h) \times n$

where N_h represented the number of registered drivers in each park, ΣN_h was the total number of drivers across all selected parks, and n was the total sample size required for the study.

From a total of 722 drivers in the 19 selected parks, a sample size of 520 was proportionally allocated.

Park	**No. of Drivers (N_h)**	**Allocated Sample (n_h)**
O1	18	13
O2	50	36
O3	10	8
O4	35	26
O5	13	10
O6	25	18
O7	10	8
O8	22	16
O9	80	58
E10	64	47
E11	18	13
E12	25	18
E13	56	41
E14	82	60
E15	65	47
E16	54	39
E17	42	31
E18	33	24
E19	20	15
Total	722	528

O-Oredo LGA E- Egor LGA

APPENDIX III

ASSESSMENT OF THE KNOWLEDGE AND ATTITUDE TOWARDS PROSTATE CANCER AND THE UTILIZATION OF SCREENING SERVICES AMONG PUBLIC TRANSPORT DRIVERS IN BENIN CITY EDO STATE

Dear respondent, I am 600 level medical student of the University of Benin, Benin City and this study aims at assessing the knowledge and attitude towards prostate cancer and the utilization of screening services among public transport drivers in Benin City, Edo state. **All information given will be treated as confidential**. Please mark and fill all sections as appropriate. Thank you for your participation.

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

(Please tick or fill in as appropriate)

1. Age: _____ years
2. Marital Status: ☐ Single ☐ Married ☐ Divorced ☐ Widowed ☐ Cohabiting
3. Educational Level: ☐ No formal education ☐ Primary ☐ Secondary ☐ Tertiary
4. Religion: ☐ Christianity ☐ Islam ☐ Traditional ☐ Others: _____
6. Ethnic group: ☐ Benin ☐ Esan ☐ Etsako ☐Owan ☐ Igbo ☐Yoruba ☐ Hausa ☐Urhobo ☐ Others (specify) _____
7. Average daily income: ☐Less than ₦5,000 ☐₦5,000–₦10,000 ☐More than ₦10,000
8. Monthly income (NGN) — approximate band: ☐₦50,000 ☐₦50,000–₦99,999 ☐₦100,000–₦199,999 ☐₦200,000+ ☐Prefer not to say
9. Number of years as a public transport driver: _____ years
10. Residence: ☐Within Benin City (urban) ☐Peri-urban ☐Rural ☐Other(specify) _____
11. Health insurance status: ☐None ☐NHIS ☐Private ☐Other (specify) _____

SECTION B: KNOWLEDGE OF PROSTATE CANCER

Tick all that apply

1. Have you heard about prostate cancer before? Yes ☐ No ☐
2. If yes, what is your source of information ☐ TV/Radio ☐ Newspaper /print media ☐Social media/ internet ☐ Family and friend ☐ Health workers ☐ Other (specify) _____
3. One of the functions of prostate is to secret fluids that carries sperm Yes ☐ No ☐
4. Prostate cancer is a disease that occurs in the prostate gland Yes ☐ No
5. Is prostate cancer a common disease? Yes ☐ No ☐
6. Risk of prostate cancer increases with age. Yes ☐ No ☐
7. Prostate cancer only affects men older than 70 years Yes ☐ No ☐
8. Having a family history of prostate cancer increases a man's risk. Yes ☐ No ☐
9. Early-stage prostate cancer usually shows no symptoms. Yes ☐ No ☐
10. Prostate-specific antigen (PSA) is a blood test used to detect prostate problems including cancer Yes ☐ No ☐
11. A digital-rectal examination (DRE) can help detect prostate abnormalities that might be cancer Yes ☐ No ☐
12. All prostate cancers are life-threatening and need immediate treatment. Yes ☐ No ☐
13. Screening (PSA/DRE) can sometimes detect prostate cancer early when treatment is more

effective Yes ☐ No ☐

14. There is no need to screen for prostate cancer if you have no urinary symptoms Yes ☐ No ☐

15. Common symptoms of prostate cancer include difficulty in urination and blood in urine. Yes ☐ No ☐

SECTION C:

MEDICAL / REPRODUCTIVE / RISK FACTOR HISTORY (relevant risk covariates)

14. Do you currently have any chronic medical conditions? (tick all that apply)

☐None ☐Hypertension ☐Diabetes mellitus ☐ Heart disease ☐Chronic kidney disease ☐Other (specify) _____

15. Do you have a family history of prostate cancer in a first-degree relative (father, brother, son)? ☐ No ☐Yes ☐Don't know

16. Have you ever been diagnosed with benign prostatic hyperplasia (BPH), prostatitis, or other prostate condition? ☐ No ☐Yes

17. If yes, specify: _____

18. Year of diagnosis: _____

19. Do you smoke tobacco? ☐Never ☐Former ☐Current (number of cigarettes/day: _____)

20. Do you consume alcohol? ☐Never ☐Occasional ☐Weekly ☐Daily (units per drinking day _____)

SECTION D: ATTITUDE TOWARD PROSTATE CANCER SCREENING

Tick all that apply

SA- Strongly agree, A-Agree, N- Neutral, D- Disagree, SD- Strongly disagree

S/N	Statement	SA	A	N	D	SD
1	I believe screening for prostate cancer is important even if I feel healthy					
2	If screening is free and convenient, I would go for it.					
3	I think prostate cancer is a disease that mostly affects the elderly, so I don't need screening.					
4	I believe prayer or faith can replace medical checkups.					
5	Health workers are approachable and supportive in offering prostate cancer screening.					
6	I believe prostate cancer is a serious disease that can cause death.					
7	I am embarrassed by the idea of a doctor performing a rectal examination					
8	I believe the PSA blood test is reliable for detecting prostate cancer.					
9	I am afraid that a positive screening result will ruin my life or work.					
10	I would prefer to avoid screening to not know whether I have cancer.					

11	I believe treatment for prostate cancer can be successful if discovered early					
12	I believe men of my age should be routinely screened for prostate cancer					
13	If a prostate cancer screening test was positive, I would want to know the result					
14	I would accept treatment (surgery, radiotherapy, hormonal therapy) if diagnosed					
15	Fear of sexual dysfunction after treatment would discourage me from screening					

SECTION E: UTILIZATION OF PROSTATE CANCER SCREENING SERVICES

Tick all that apply

1. Have you ever heard of prostate cancer screening before?☐ Yes ☐ No
2. Have you ever had any test specifically to check for prostate cancer? ☐ Yes ☐ No
3. If yes, when last? ☐<1 year ☐ 1–2 years ☐ 3–5 years ☐ >5 years ☐ Don't remember
4. What screening method was used? ☐ Prostate Specific Antigen (PSA) blood test ☐ Digital Rectal Exam ☐ Transrectal Ultrasound ☐ Don't Know ☐Other (specify) _____
5. What prompted you to go for screening? ☐Own decision ☐ Routine check ☐Symptom prompted (e.g. urinary problems) ☐ Doctor's advice ☐ Media ☐ Friend ☐ Community outreach ☐Employer requirement ☐Other (specify) _____

6. If you have never been screened, why not? ()
   - a) I never heard of the test. ☐No ☐Yes
   - b) I felt I was not at risk. ☐No ☐Yes
   - c) Cost is too high. ☐No ☐Yes
   - d) I feared the procedure (e.g. DRE) ☐No ☐Yes
   - e) I don't trust the tests or doctors ☐No ☐Yes
   - f) No screening services near me ☐No ☐Yes
   - g) Other (specify) _____

7. Are you willing to have prostate screening (PSA/DRE) in the future? ☐ Definitely yes ☐Probably yes ☐Not sure ☐Probably no ☐Definitely no
8. Have you ever been advised by a health professional to have a prostate screen? ☐ No ☐Yes If yes, who advised you ☐ Doctor ☐ Nurse ☐ Pharmacist ☐ Community health worker ☐ Friend/relative ☐Other (specify) _____
9. Would you recommend prostate cancer screening to other drivers? ☐ Yes ☐ No
10. Do you know where to get screened in Benin City? ☐ Yes ☐ No
11. How far is the nearest facility that offers PSA/DRE screening from your usual workplace? ☐ <1 km ☐ 1–5 km ☐ 6–10 km ☐ >10 km ☐ Don't know1J2. How much would a PSA

test cost at that facility (NGN)? _____ (approx.) ☐ Don't know

13. Are screening services available on weekends? ☐ No ☐ Yes ☐ Don't know

14. Have you ever been turned away from care due to inability to pay? ☐ No ☐ Yes

SECTION F: BARRIERS TO SCREENING

Tick all that apply (N=None, S=Small, M=Moderate, L=Large, VL=Very large)

SN	Statement	N	S	M	L	VL
1	How much of a barrier is the cost of screening for you?					
2	How much of a barrier is the time required (waiting/travel) to get screened?					
3	How much of a barrier is fear of diagnosis/treatment?					
4	How much of a barrier is lack of privacy at the clinic?					
5	How much of a barrier is perceived low quality of local services?					
6	How much of a barrier is cultural or religious beliefs opposing screening?					
7	How much of a barrier is the fear being stigmatized if I am found to have prostate cancer					

8. Which of the following would make you more likely to have a screening? (tick all that apply)

- a) Free screening day at the motor park ☐ No ☐ Yes
- b) Mobile screening unit near work ☐ No ☐ Yes
- c) Health education by peers/union leaders ☐ No ☐ Yes
- d) Recommendation from doctor or trusted health worker ☐ No ☐ Yes
- e) Partner/family encouragement ☐ No ☐ Yes
- f) Reduced waiting times / weekend screening ☐ No ☐ Yes
- g) Other (specify) _____

SECTION G: CURRENT SYMPTOMS SUGGESTIVE OF PROSTATE DISEASE / CANCER

Instruction: "Please answer regarding how you have felt in the last one month."

For each item use 0=None, 1=Less than 1 time in 5, 2=Less than half the time, 3=About half the time, 4=More than half the time, 5=Almost always.

1. "Over the last month, how often have you had the sensation of not emptying your bladder completely after you finish urinating?" ☐0 ☐1 ☐2 ☐3 ☐4 ☐5

2. "Over the last month, how often have you had to urinate again less than two hours after you finished urinating?" ☐0 ☐1 ☐2 ☐3 ☐4 ☐5

3. "Over the last month, how often have you had a stream that starts and stops?" ☐0 ☐1 ☐2 ☐3 ☐4 ☐5

4. "Over the last month, how often have you found it difficult to postpone urination?" ☐0 ☐1 ☐2 ☐3 ☐4 ☐5

5. “Over the last month, how often have you had a weak urinary stream?” ☐0 ☐1 ☐2 ☐3 ☐4 ☐5

6. “Over the last month, how often have you had to push or strain to begin urination?” ☐0 ☐1 ☐2 ☐3 ☐4 ☐5

7. “Over the last month, how many times do you typically get up to urinate from the time you go to bed at night until you get up in the morning?” ☐ none ☐once ☐twice ☐three times ☐four times ☐five or more times

8. If you have any urinary problems, how much do they bother you? ☐Not at all ☐Somewhat ☐Quite a bit ☐Extremely

9. Have you noticed blood in the urine ☐No ☐Yes→ If yes, approximate onset date: _____

10. Have you noticed blood in the semen? ☐No ☐Yes _____

11. Have you experienced unexplained weight loss in the last 3 months? ☐No ☐Yes →approximate kg lost: _____

12. Have you experienced new or progressive bone pain (back, hips, ribs) not explained by trauma? ☐No ☐Yes → location: _____

H13. Have you had unexplained fatigue or significant loss of appetite in the last 3 months? ☐No ☐Yes

H14. Have you had difficulty passing urine that required emergency care (acute urinary retention) in the last 12 months? ☐No ☐Yes → if yes, date/where treated: _____

APPENDIX IV

ETHICAL CLEARANCE CERTIFICATE

APPENDIX IV

PLAGIARISM