KNOWLEDGE, PERCEPTION, RISK FACTORS AND UTILISATION OF PROSTATE CANCER SCREENING SERVICES AMONG MALE STAFF OF THE UNIVERSITY COLLEGE HOSPITAL, IBADAN, NIGERIA

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A DISSERTATION IN THE DEPARTMENT OF HEALTH PROMOTION AND EDUCATION SUBMITTED TO THE FACULTY OF PUBLIC HEALTH, COLLEGE OF MEDICINE, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH (POPULATION AND REPRODUCTIVE HEALTH EDUCATION) OF THE UNIVERSITY OF IBADAN

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DEDICATION

This work is dedicated to my dearly beloved husband – OTUNBA M. A. HASSAN. Thank you for your never-ending faith in me and in my work. You have been an invaluable support to me. Your love and prayers have kept me throughout this journey. I will be eternally grateful for that.

ABSTRACT

Prostate Cancer (PC) is a public health problem in Nigeria. Male staff in tertiary hospitals have important roles to play in the promotion of screening services. Information related to male staffs' knowledge and pattern of utilisation of PC screening services needed for designing interventions, control initiatives, have not been fully investigated. This study was, therefore, designed to determine the knowledge, perception, risk factors and utilisation of PC screening services among male staff of the University College Hospital (UCH), Ibadan.

A descriptive cross-sectional study design using a three – stage random sampling technique was used to select 590 male staff from Departments and Units. The semi-structured questionnaire used for data collection included: 31–point knowledge and 20-point perception scales. Questions pertaining to PC-related risk factors, screening experiences, suggestive signs/symptoms and perceived determinants of adoption of PC screening services were also included. Knowledge scores of <15, 15-25 and >25 were rated poor, fair and good, respectively. Perception scores of <10 and ≥10 were categorised as non-favourably and favourably disposed to PC screening services respectively. Data were analysed using descriptive statistics, Chi-square test, Student's t-test and ANOVA test at $p = 0.05$.

Respondents' mean age was 37.2±6.2 years. Respondents in the administrative, clinical, paramedical, maintenance and records professional groups were 26.5%, 23.1%, 22.0%, 18.6% and 9.5%, respectively. Majority (70.3%) had heard about PC and their mean knowledge of PC was 12.6±7.5. Respondents with poor, fair and good knowledge were 53.2%, 43.4% and 3.4%, respectively. Mean perception score of respondents was 8.7±4.9 while those with non-favourable and favourable perception were 45.3% and 54.7%, respectively. The PC-related risk factors included family history (6.0 %), use of tobacco products (28.0%) and consumption of foods such as fried foods (86.0%), full cream milk (72.8%), cheese (65.4%) and fatty meat (96.9%). Only 3.9% had ever been screened for PC. The major reason for failure to get screened was perceived lack of vulnerability to PC based on family history (61.8%). Proportion of respondents with positive suggestive signs and symptoms of PC was 17.1%. Mean knowledge of PC was significantly different among the clinical (17.4±6.5), paramedical (13.5±7.4), records (11.2±6.8), maintenance

(10.3±7.5) and administrative staff (9.7±6.5). Mean knowledge of PC was significantly higher among respondents who had ever been screened for PC (16.6±6.4) than those who had never done so (12.4±7.5). The knowledge score of respondents with family history of PC was significantly higher than those with no family history of PC. Significantly higher proportions of respondents aged <40 years had fair (65.6%) and good (95.0%) knowledge related to PC compared to those aged >40 years.

The overall knowledge of prostate cancer was poor among male staff of the University College Hospital, Ibadan, in spite of their favourable perception of screening services. Although, prostate cancer-related risk practices were common, the patronage of screening services was low. Health education and counseling services are recommended to address these concerns.

Keywords: Prostate cancer, Screening services, Perceived vulnerability, Male hospital staff

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CERTIFICATION

I certify that this project was carried out, under my supervision, by Rachel Olufunmilayo HASSAN in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.

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ACS	–	American Cancer Society
AUA	-	American Urological Association
DRE	-	Digital Rectal Examination
GLOBACAN	–	Global Cancer of Nigeria
IARC	-	International Agency for Research on Cancer
NCISEERP	-	National Cancer Institute Surveillance Epidemiological and End Result Programme
PC	-	Prostate Cancer
PSA	-	Prostate Serum Antigen
RCTs	-	Randomized Control Trials
RAs	-	Research Assistants
SEER	-	Surveillance Epidemiology and End Results
USCF	-	University of California. San Francisco Medical Center PC Advocates
UCH	-	University College Hospital
UI	-	University of Ibadan
UI/UCH	-	University of Ibadan/University College Hospital
WHO	-	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Prostate Cancer (PC) is a disease which affects only men and is a major public health problem (Ajape, Ibrahim, Fakeye and Abiola, 2010). Black men of Africa ancestry have been found to be particularly at greater risk of developing PC than other races and ethnic groups (Ross, Stroude, Shayanika, Rose and Jorgensen 2006; Magoha, 2007). Prostate Cancer has become the number one form of cancer in men (Delongchamps, Sihth and Hass, 2007; Akinremi, Ogo and Olatunde et al, 2011).

A study carried out in Nigeria among the urologist by Ajape, Mustapha, Lawal and Abibu; (2011) has documented a progressive increase in the incidence of PC in Nigeria. According to Osegbe (1997), the hospital incidence of PC in Nigeria has been estimated to be 127/100,000 cases while the national PC risk was two percent of all patients out of every 110,000 men. Ogunbiyi and Shittu (1999) in their study carried out in UCH, Ibadan reported that the disease is the leading diagnosed form of cancer among Nigerian men. The annual mortality has been estimated to be 20,000 cancer-specific deaths (Osegbe, 1997). The increase in the prevalence of the disease may be due to an increase in the number of cases occurring in younger- and middle-aged men (Ogunbiyi and Shittu 1999). It has been hypothesized that the increasing incidence of PC could be as a result of introduction of screening techniques especially the PSA test which enables earlier diagnosis of the condition (Ogunbiyi and Shittu, 1999).

Screening for PC is one of the most commonly used techniques in the diagnosis of PC Health care professionals agree that regular screening examinations can result in detection of PC at earlier stages when treatment is more likely to be successful. If detected early, while the tumor is still confined to the prostate, the five-year survival rate is 90% compared to 35% for a more advanced disease (Weinrich, Weinrich, Boyd and Atikson, et *al.*, 1998). The ACS (2006) believes that health care professionals should offer the blood PSA test and DRE yearly, beginning at age 50, to men who have at least a ten-year life expectancy. Men at risk, including men who have a first-degree relative (ACS, 2006) such

as father, brother, or son diagnosed with PC at an early age (younger than 65 years), should begin testing at age 45. For both men at average risk and high risk, the ACS recommends that information should be provided about what is known and what is uncertain about the benefits and limitations of early detection and treatment of PC to enable them make an informed decision about testing (ACS, 2006).

There is no official policy on PC screening in UCH, but in the hospital PC screening services are mainly available in the Departments of Nuclear Medicine and Pathology: this service is being rendered free of charge in Nuclear Medicine Department. In Nigeria PC screening services are mainly available in tertiary hospitals and private laboratories in major towns such as Ibadan and Lagos. Although the male staff of these health care facilities could be vulnerable to PC, systematically conducted studies relating to their knowledge of PC and utilisation of PC screening tests have not been well explored. Yet being workers in tertiary health care facilities makes them role models and potential sources of health information to the general population. In many cases health care staff's preferences and behaviour influence their professional practices. For instance studies conducted by Frank, Brogan, Mokdad, Simões, Kahn *et al.* (1998) as well as by Schwartz, Lewis, Clancy, Kinosian, Radany *et al.* (1994) have confirmed that the personal health habits of health care workers are major predictors of their counseling practices.

This study was, therefore, aimed at exploring the knowledge, risk factors and perception relating to the pattern of utilization of PC screening services by male staff of the University College Hospital (UCH), Ibadan, the oldest and one of the major research and teaching hospitals in Nigeria

1.2 Statement of Problem

Prostate Cancer constitutes a public health challenge worldwide (ACS, 2007). The disease presents a major challenge to health care services (Lewey, 2002). Records based at the UCH cancer registry have shown that PC is an emerging male reproductive health concern (Ekewere and Egbe, 2002). The disease condition accounts for 11-12% of all male cancer in Nigeria (Chukwunso, 2011; Ebuchi and Otunu, 2011). About two thirds of PC patients in Nigeria present with PC metastatic disease (Badmus, Adesunkanmi, Yusuf, Oseni, and Eziyi, 2010).

Health care workers are role models in health matters. In addition, they are often among the sources of health information for the general population. Therefore, it is important that the information they disseminate to others be accurate and that the screening procedures they recommend be appropriate (Gonçalves-Silva, Murta-Nascimento and Ituf-Neto 2010).

Studies related to PC conducted in UCH include the following: Prostate Specific Antigen in Nigerian men residing in Ibadan with no history of PC disease (Abiyesuku, Shittu, Oduwole, and Oshotimehin 2000); orbital metastases prostatic carcinoma in a tropical African Population (Shittu and Ogunbiyi 2003); and a five year study on clinical presentation and out come of management of patients with symptomatic spinal metastasis from PC (Okeke, Ikuerowo, Popoola, Shittu and Olapade-Olapade *et al* 2006).

The facilities for PC screening services were available in UCH but the extent of the utilisation among male staff of the UCH has not been adequately investigated.

In addition the knowledge, risk factors, perception and pattern of utilisation services relating to PC screening among male staff of the hospital are however, yet to be adequately explored. The determination of these variables among male staff of the UCH Ibadan, Oyo State, constitutes the focus of this study.

1.3 Justification

Findings from this study would be useful as baseline information for designing educational programmes aimed at promoting the adoption of PC-related screening services among males in tertiary health care facilities. The results of the study can also be used to facilitate the formulation of policy and support for PC screening related services in UCH. Furthermore the result of the study would contribute to knowledge concerning factors which should be taken into consideration while designing PC-related services for staff in health care facilities.

1.4 Research Questions

The following research questions were formulated to guide the study:

1. What is the level of knowledge of PC and PC screening services among the male staff of UCH?
2. What are the perceptions of the male staff of UCH regarding PC screening services?

3. What are the risk factors relating to PC among the male staff of UCH?
4. What is the pattern of utilisation of PC screening services among the study population?
5. What are the signs and symptoms of PC among the male staff of UCH?
6. What are the factors that serve as barriers and benefits to the adoption of PC screening services among the male staff of UCH?

1.5 Objectives

1.5.1 Broad objective

The broad objective of this study was to determine the knowledge, perception, associated risk factors and symptoms of PC, as well as to document the history of utilisation of PC screening services among male staff of UCH Ibadan.

1.5.2 Specific objectives

The specific objectives of the study were to:

1. Assess the level of knowledge of PC and PC screening services among male staff of the UCH.
2. Determine the perception of male staff of the UCH relating to PC screening services.
3. Identify risk factors relating to PC among male staff of the UCH
4. Determine the pattern of utilisation of PC screening services among the respondents.
5. Identify the signs and symptoms of PC among the respondents.
6. Identify the barriers and benefits that influence the utilisation of PC screening services by the respondents.

1.6 Operational Definition of Terms

Prostate: This is the male reproductive organ that surrounds the urethral at the base of the bladder (Marden, Walmsley, Schweizer and Schweizer 2006).

Prostate cancer: This refers to abnormal cell division and growth of the prostate gland (WHO 2014).

Prostate cancer screening: It is the test carried out to detect PC in its asymptomatic stage.

Clinical staff: They consist of qualified medical doctors working in the hospital setting.

Paramedical staff: They consist of Nurses, Pharmacists, Laboratory Scientists, Dieticians, Radiotherapists/Medical Imaging Scientists, Physiotherapists, Medical Social Workers, Environmental Health Sanitations, Health Attendants, Orthopedic Assistants, Laboratory assistants and Microbiologists who work in collaboration with doctors to diagnose and treat patients.

Administrative staff: They are members of staff that manage available human, material and financial resources of the hospital with a view to achieving effective services, and to achieve predetermined organizational goals. They include Administrative Officers, Clerical Officers, Pension, NHIS Staff, Confidential Secretaries, Accountants and Auditors.

Maintenance officer: These are a group of staff members that ensures the smooth running of the activities in the hospital through provision of services such as water and electricity, management and repair of equipment etc. They include facility Managers, Technicians, Instrumentation staff, Hospital Services, Engineers, Porters and Drivers.

Records and information management staff: They are members of staff that keep health records of patient/clients that attend the health care services. They also keep employment records. They include Record Officers, Computer Scientists, Librarians, Statisticians, and Information Technology Officers.

Agent orange: This is a combination of two chemical herbicides (2,4-D) n-butyl Y-dichlorophenoxycetate and (2,4,5T) n-butyi-2,4,5 trichlorophenoxycetate that poisons food chain and causes serious diseases and a variety of cancers in the lungs, larynx, and prostate.

Prostate Cancer Metastasis disease refers to PC that has spread from original (prostate gland) affected organ to distant organs or lymph nodes which could be regional or distant metastasis (Higano, Small, Schellhammer, et al., 2010; Di Lorenzo, Buonerba, Autorino, et al., 2010; Shen and Abate-Shen,

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction and Conceptual Clarification

Many studies carried out in the last thirty years have focused on issues relating to PC screening among health workers. These issue include investigations such as PC screening practices and beliefs among physicians in metropolitan Washington, D.C. by Voss and Scheetman (2001); a test of knowledge about PC screening among physicians in Southern California by Bell, Hays, Hoffman and Day, *et al.*, (2006); knowledge of basic cancer facts among physicians in training at the University of Tennessee Portland by Madan, Alabadi-Whale and Beech (2006); knowledge and attitude of primary physicians regarding PC screening in Duval and Alachua countries by Pedleton, Cury, Kuseman, Chan, Aunal, Nakamura, Abdoush and Rosser (2008); reported use of pre-screening discussion for PC screening among primary care physician, by Linder, Hawley, Cooper, Scholl, Jibaja-Weiss and Volk in Houston, Texas (2009) and PC screening practices among Physician serving Chinese Immigrants in New York City by Aragones, Trinh- Shevrin and Gany (2009).

Other investigations that have focused on PC screening services among health care workers consists of the following: assessing practices among health care workers in a tertiary- care hospital in Sao Paulo, Brazil by Goncalves-Silva, *et al.*, (2010); knowledge, attitudes and practices toward PC screening among rural male health workers in Western Jamaica by Bourne (2010); knowledge of, attitudes towards and utilization of PC of PSA screening for PC among primary care physicians in UCSF Medical Center, San Francisco General Hospital by Taisan, Cooperberg, Cowan, Keyashian, Greene, *et al.*, (2009) and attitude about shared decision making for PC screening among physician in Georgtown University Hospital and Washington Hospital Centre by Davis, Weisfield, Dorfman, Krist and Taylor (2011); factors affecting PC screening behaviour in a discrete population of doctors at the University Hospital of the West Indies, Jamaica by McNaughton, Aiken and McGrowder (2011) and reconciling primary care and specialist perspectives on PC Screening by Hoffman, Barty, Roberts and Sox (2012).

Most of these research works concentrated on PC screening aimed at detecting PC cancer asymptomatically as a primary preventive measure. The aforementioned studies however concentrated on the knowledge, PC screening practices, PC screening behaviours, factors affecting PC screening behaviour among PC specialist and primary care physicians. The key finding of their studies were that primary care societies should be encouraged to decide whether the implementation of the recommendations of AUA and National Comprehensive Cancer Net work (average-risk men at age 40 to be screened for PC after proper counselling about risk and benefit of PC screening) are feasible and appropriate. respondents with lower knowledge of natural history of PC tends to adopt PC screening services (Holtman, *et al.*, 2012).

The studies also revealed that people of African decent was identified a PC risk factors. low level of knowledge about PC screening test and PC risk, direct professional experience on PC was associated with greater knowledge (Taisan *et al.*; 2009); higher users of routine PSA had lower knowledge scores than lower users and they believed much more in mortality benefits of from PSA screening (Bell, Hays, Hoffman and Day 2006); physicians' knowledge is not an important predictor of their screening behaviour (Pendleton, et al.; 2008); increased physicians' attitudes that favoured PSA testing and the belief that aggressive early treatment improved PC disease outcome are noted from Voss and Schectman (2001); PSA and DRE screening test are recommended for all their patient from age 50 and above regardless of family history of PC (Arogones, *et al.*, 2009).

The studies that were carried out among all male professionals working in the hospital fond out that about 66.7% had undergone PSA testing and 34.2% had submitted to DRE. (Goncalves-Silva *et al.*, 2010), majority had high level of awareness of PC but only 27.1% adopted PC screening services, anal discomfort, fear of the result and gender of the health practitioner were reasons for non utilisation of this service. The few study done in Nigeria on PC screening-related issues among health workers include those of client's demand for screening for PC in Nigeria among the urologist at Ilorin by Ajape *et al* (2011). In their study, it was noted that majority attested that no any documented national guide on PC screening and majority of PC patient presented to the hospital in an advanced stage

The studies carried out in UCH were mainly on the nature of the disease, clinical presentation and outcome of the management of patients with complications from PC. The key findings of the researches included the following: a significant correlation exist between age and serum PSA value of the respondents; PSA values in patients who have PC showed a wide degree of variability (Abbiyesuku, et al.; (2000); increased in incidence of PC in Nigeria (Shittu and Ogunbiyi 2003). Other key finding was that the common systemic metastasis from PC is the lumbar vertebrae, followed by thoracic and sacral vertebrae, their patient presented very late and were generally suitable for any heroic surgical measures (Okeke, *et al.*, 2006). Based on availability of cancer registry facilities for PC screening services at the Departments of Nuclear Medicine and Pathology and many urologist in UCH, no utilisation outcomes from their studies, the existing research has been very limited about PC screening services' knowledge, perception, risk factors and utilisation among male of this tertiary institution.

Cancer is defined by Miller (2012) and WHO (2014) as the disease that is characterized by abnormal cell growth and has ability to invade other tissues and even distant organs while Marden, et al., (2006) describes the prostate gland as a small, walnut-sized structure that makes up part of a man's reproductive system. It wraps around the urethra, the tube that carries urine out of the body.

Mitchell (2011) explains PC screening tests as a critical preventive strategy to detect PC early when treatment can significantly increase the odds of survival. There are non-amenable-to-change risk factors for developing PC one of which is family history. However, screening represents a health behaviour that can be undertaken at the intrapersonal level to reduce PC mortality risk. The screening tests for PC are DRE and a blood test called the PSA. Screening can detect PC at an earlier, asymptomatic stage when treatments might be more effective (Chou, Croswell, Dana, Bougatsos, Blazina, *et al.*, 2008).

Bourne (2009) has acknowledged PC screening as an attempt to determine undetected cancer of the prostate. Groenwald (2000) defines PC screening as DRE procedure that is performed by health care providers and PSA test which is carried out in the science laboratory. Weinrich *et al.* (1998) further expatiates more on PC screening utilisation and described it as the receipt of a PSA measurement or test and/or a DRE at least once in

the past two years. The American Cancer Society (2008) has described PSA as the blood test that measures a protein made by the prostate cells. The concentration of this protein is high in the presence of prostate cancer. The PSA is a glycoprotein secreted only by prostate epithelium. However, the normal range of total serum PSA varies with age increasing from 0-2.5 ng/ml in men less than 50, and 0-6.5 ng/ml in men over 70. According to the definition by Groenwald (2000), Chinese Community Health Resource Centre (2007) and Bourne (2009), DRE is the palpation of the through digital manipulation of the rectum. Digital rectal examination is a procedure in which an examiner inserts a gloved, lubricated finger into the rectum to determine the size, shape and consistency of the prostate. Bourne (2009) explains further that during the examination, the doctor inserts a gloved, lubricated finger into the patient's rectum to determine if the prostate feels irregular or abnormally firm. This procedure takes less than a minute and causes minimal discomfort as stated by Chinese Community Health Resource Centre (2007).

Prostate cancer is the most commonly diagnosed cancer among men and second only to lung cancer in the number of cancer deaths (U.S. Cancer Statistics Working Group. 2009). It constitutes 10% of all male cancer (Bray, Sankila, Ferlay and Parkin; 2002). For reasons that remain unclear, black men have the highest rate of incidence for PC in the world (Edwards, Kole- Jari, Meitz, *et al*., 2003; Jemal, Murray and Ward, et al., 2005). It was noted in a study among primary physician on PC screening conducted by McNaughton, *et al*., (2011) that majority of the medical consultants reported that there is disproportionate high incidence of PC in men of African descent regardless of presence of urinary symptoms.

Moreover, the PC mortality rate for black men is twice that of white men. The report of a study by Glover, Coffey, Douglas, Cadogan, Russell et al., and (1998) shows that in South Africa, the age adjusted incidence is 90 cases per100, 000. In Zimbabwe, the figure is 35 per 100,000 cases. In Nigeria, it has been shown that the age adjusted incidence of PC approaches that of African –Americans and Jamaicans at 300 per 100,000 (Osegbe, 1997).

The incidence rates of PC vary widely from developed to developing countries (Evans and Moller, 2003; Hosseini, Mohammadzadeh, Ghadian, Hooshyar, Lashay, *et al*., 2007, and Magoha, 2007). In Brazil, South America, the prevalence of PC has been reported to be

1.65 higher in black Brazilian of African ancestry compared with Brazilian men of European ancestry (Antopulous, Pambeo and Ellayek 2001). In a report from Lagos-based cancer registry where the hospital incidence was put at $127/10^5$. Osegbe (1997) surmises that incidence of PC may be underestimated in Nigerian. Similar reports from other cancer registry of Nigeria also confirm the increasing hospital-based incidence as follows: $61.3/10^5$ from Calabar, (Ekwere & Egbe, 2002) and $182.5/10^5$ from Ife (Badmus *et al* , 2010). However the true burden of PC disease in Nigeria is not known (Ikuerowo *et al*., 2013).

2.2 Nature of Prostate Cancer

Prostate cancer, as described by Rod, Trent and Philip (2005), Tonita (2009) and Zorn, Gueton and Shiel Jr (2012), is a form of cancer that develops in the prostate. The prostate is a gland in the male reproductive system located at the base or outlet of the urinary bladder. Its function is to help control urination by pressing directly against the part of urethra surrounded by this prostate gland. It secretes prostatic fluid which is very rich of proteins, minerals and accounts for 30% of the volume of semen. Prostatic fluid ensures the nourishment and proper motility of sperm (Ganong, 1997; Kunden, 2011). The prostate gland is a walnut-shaped gland that weighs approximately 26g at the end of puberty but grows larger with normal ageing (Hayward, Rosen and Cunha, 1997). Enlargement of prostate gland with normal ageing is known as "Benign Prostate Hyperplasia".

Kunden (2011) describes PC as the abnormal cell division and growth of the prostate gland which develops and increases slowly and confines to the prostate gland for many years. The condition produces little or no symptoms or outward signs as explained by Tonita (2009) and Zorn *et al*., (2012). Most PCs grow very slowly (Kawachi, Bahnson, Barry, et al., 2010). More than 99 percent of PCs develop from the gland cells (ACS, 2011).

The PC aggressiveness is measured in terms *Gleason score* which is calculated by trained pathologists. As the cancer advances, it can spread beyond the prostate into the surrounding tissues (local spread) or can spread further (metastasis) through out other areas of the body such as lungs, bone and liver (Schmitz, 2009; Damber and Aus 2008; National Cancer Institute, 2014; Zorn, *et al*., 2012).

Most of the time, some symptoms that are similar to characteristics of PC are caused by other prostate problems that are not cancer (Schmintz, 2009). Suggestive signs and symptoms that can occur with PC are obstructive and irritative symptoms (Schmintz, 2009; Tonita, 2009). Obstructive symptoms of prostate cancer are as a direct result of the urethra being pinched closed by the enlarged prostate (Kawachi *et al*., 2010). This results in delayed or slowed start of urinary stream. The irritative symptoms are as a result of irritation caused by the obstruction to the bladder. These symptoms are incontinence of urine, and frequency and urgency in passage of urine, (Marc and Garnick, 1993; Walsh and DeWeese 2007 and Schmitz, 2009).

According to Lewey (2002), Heidenreich, Bolla, Joniau, Mason, Matveev *et al* (2010), and Miller (2012), the recommended diagnostic investigations include DRE, PSA, transurethral ultrasound scan and guided biopsy, CT scan, bone scan and chest X-ray. Iko, Monu, Mangele and Nduka (1987) have suggested that prostatic ultra sonography may have great diagnostic promise in developing economics where more sophisticated equipment may be uncommon. However, Ajape *et al*., (2010), in a more recent study noted that there is 50% sensitivity and false negative correlation between ultrasound and PC diagnosis. Zorn et *al*. (2012) estimate life-time risk of being diagnosed with the PC disease as 17.6% for Caucasians and 20.6% for African-Americans. The life-time risk of death from PC similarly was 2.8% and 4.7% for Caucasians and "African-Americans" respectively.

Reports from all the Southern and Northern parts of Nigeria emphasize late presentation as the pattern in patients with PC. From both South (Ekwere and Egbe, 2002) and North (Dawam, Ralindadi and Kalayi 2000) about two thirds of patients presented with metastatic disease, and 94.2% (Badmus *et al*., 2010) and 91% (Yawe *et al*., 2006) presented with complications respectively. In Nigeria mortality was generally high with 64% of PC patients dying within two years of diagnosis (Osegbe, 1997). Metastases were typically to the spine, with attendant paraparesis or paraplegia; rare orbital metastases were reported from Ibadan (Shittu and Ogunbiyi, 2003). In a five-year study carried out on clinical presentation and outcome of management of patients with symptomatic spinal metastasis from PC at UCH also confirms that patients presented very late and were generally not suitable for any major treatment (Okeke et al., 2006).

The treatment of PC depends on the PC stage and the associated risk factors (Porena and Bracarda 2007). Options for the early stage of treatment may include surgery and radiation therapy. In elderly patients with PC disease, PSA and biopsies are only monitored. According to Walsh (2008), Babaian, Donnelly, Bahn, Baust and Dineen (2008) and Sinfield, Baker, Camosso-Stelinovic, Cohnan, Tarrant *et al.* (2009), PC disease that has spread is treated with drugs to reduce testosterone levels. Surgery is carried out to remove prostate and some tissues around the organ (which is called "Radical Prostatectomy") when the cancer has not spread beyond the prostate gland (Babaian et al., 2008; Walsh, 2008).

Since most patients present with poor prognostic features including high histological grades and at advanced clinical stages, treatment is mostly palliative with bilateral orchidectomy with or without anti-androgen therapy as reported in the study by Olapade-Olaopa, Obamuyide and Yisa (2008), and Ajape *et al.* (2010). A recent study by Ajape *et al.* (2010) at Ilorin shows that only 38.9% of patients had histo-pathological diagnosis before treatment.

A review relating to the traditional treatment of PC has revealed long-standing uses of the traditional medicines for treatment of PC in ethno-botanic investigations carried out in Cameroon by Roja and Rao (2000), and Alakbarov (2001). Extract form plants, such as urtica dioica Hayb. (Khan, Partin and Rittenhouse, 2003), secale cereale (Lowe and Fagelman 1999), hypoxis rooperi (Gerber, 2002), pygeum africanum (Will, Isham, MacDonald, Rutks and Start; 2002), cucubita pepo (Tsei, Tong , Cheng , Lee , Yung et al., 2006), bixa orellana (Zegarra, Loza, Aguirre, Camposm et al., 2007), cocos nucifera (De Lourdes, Molina, Mas, Carbagal, Marrero et al., 2007), piper cubeba (Yam, Schaab, Kreuter and Drewe, 2008), serenoa repens (Tacklind, et al.; 2009) and tellaria occidentalis (Ejike, 2010) are known to be potent botanicals in the management of prostatic diseases.

It is reasonable to expect that many other locally available plants harbour phytochemicals that can be used to manage PC disease. According to UCSF (University of California, San Francisco) Medical Center PC Advocates (2009), Chinese herb mixtures have had claims made about their effectiveness in treating PC, but generally with no research evidence to support those claims. There are no alternative treatments with credible evidence to show

that they can cure cancer but most alternative treatments focus on relieving stress, anxiety and pain (Monti, 2010). Study by Monti (2010) indicates that sawpalmetto and pomegranate juice slow rate of PSA and flaxseed supplement slows rate of cancer cell multiply. This authority concedes this report as only preliminary.

2.3 Physical, Psychological, Social and Economic Burdens associated with Prostate Cancer and Prostate Cancer Screening

2.3.1 Physical consequences

The studies carried out among those that had ever adopt PC by Bisson, Chub, Bennett, Mason, Jones, et al., (2002), Steel, Miller and Maylahan, et al., (2000), Bloom, Stewart, Oakley- Girvans, Banks, Chang (2006), Romero, Romero, Brenny, Pilnti, Kulysz *et al.* (2008) and Fall, Fang, Mucci, Ye, Andren *et al.*, (2009) identify pain as a physical consequence of PC screening. Studies by Begg, Riedel, Bach, Kattan, Warren, *et al* (2002), King (2004), ACS (2008), and Brawley, Ankrest and Thompson (2009), report that the physical consequences of treatment of PC are sexual and urinary dysfunction, cardiovascular disease and diarrhoea (especially following radiation) which can also impact sufferers' quality of life. According to Kawachi et al. (2010), deaths due to PC tend to occur after a period of metastatic disease.

2.3.2 Psychological consequences

The psychological distress could be greater for those reporting high perceived risks. The diagnosis of PC can also cause unnecessary worry, and psychological consequences of PC screening like fear during DRE procedure, shock, grief, anger and depression are other consequences (Begg *et al*., 2002; Siddon, 2004; ACS, 2008; and Brawley *et al*., 2009).

According to Ross, Uhler and Williams (2005), PC disease can cause morbidity leading to diminished quality of life - impotence and incontinence. High risk of suicidal attempts particularly first week of life after diagnoses; feeling dirty, overwhelmed by challenges due to effects of treatments and potential changes to bodily function are some of frequently reported psychological consequences. Men with family history of PC report cancer worries that may increase symptoms of depression and compromise functions in daily life. Though PC worries may have motivated men to seek information regarding their risk and screening for PC, higher levels of anxiety were related to reduce PC

screening and the psychological distress could be great for those reporting high perceived risk (Bratt, Damber, Emanuelson, et al., 2000; Bloom *et al*., 2006).

Researchers like Lin, Liptiz, Miller, *et al*., (2008), Andriole, Crawford, Grubb, Buys, Chia, *et al*. (2009), Schroder, Huggosson, Roobol, *et al*. (2009), and Howard Sokeld-Mann, Patel, Cunich, *et al*. (2012) indicated that men who have undergone PC screening have a significantly higher likelihood of being diagnosed PC false positive and PC that would not have become clinically apparent within their life time. This implies that more men experiencing the attendant harms of diagnoses of PC results in over-diagnosis and unnecessary treatment.

2.3.3 Social burden of PC

WHO's (2004) report on Global Disease Burden ranks Nigeria the 3rd highest country with the total deaths in that year being 13,700 out of the top ten countries of the world with significant PC disease burden. The reported burden of the disease for 2004 also shows that the total death from all cancers in Nigeria was 78,000 and PC recorded 13,700 (17.4%). Similarly, disease burden expressed as Disability Adjusted Life Years (DALYs) lost to PC recorded for 2004 was 86,000 with the United States and Indian having 240,000 and 110,000 respectively (WHO, 2004). According to Matters, Lopez and Murray (2006) in Sub-Saharan Africa, Nigeria ranked first with Republic of Congo and Uganda occupying the second and third positions respectively.

According to ACS (2010) report, black men have 1:5 in life time probability of developing PC compared to 1:7 for whites. The life time probability of dying from PC in black men is 1: 23, while it is 1:38 for white men. There is also disparity in survival with an overall of 5years survival rate of 95% for black men and 100% for white men.

2.3.4 Economics burden of PC and PC screening

The economic burden of a disease is defined by Moore and Boyle, (2002) in terms of the direct and indirect costs incurred by patients and society as a whole. The direct costs reflect the value of goods and services for health care or resources that could have been used for other purposes in the absence of illness (Moore and Boyle 2002). These include the costs of care provided by physicians and other health care professionals, care provided in hospitals and other health care institutions, drugs, laboratory services and research

The indirect cost was described by Moore and Boyle. (2002) as the costs that represent the reduced productivity associated with lost or impaired ability to work because of illness and the loss of economic productivity because of premature death. Grover, Coupal, Zowall, Rajan, Raghu, Elhilali, *et al.* (2000) estimate the costs of treatment per patient as ranging from $16 000 to $23 000 depending on the age of the patient, the PC stage and selected treatments. According to the American Cancer Society (2007), overall cancer costs to economy were estimated to be greater than $219 billion annually in 2007. About 41,000 American men die of PC each year at a national cost of at least one billion dollars (National Prostate Cancer Coalition, 2007).

Mitchell (2011) also reported that there is a significant cost burden to the medical system for long term treatment. In the study of Stokes, Black, Benedict, Rochrborn and Albertsen (2010) cost estimate of 2.5billion dollars annually for men diagnosed after 2009 was reported and these estimates only account for treatment of the disease for the initial six months after diagnosis. Rochrborn and Black (2011) estimated costs associated with the treatment of PC are approximately $34,000 in the last year of life. In 2006, the total estimated cost for all PC care was $9.86 billion. Newer treatments, such as sipuleucel-T, costing more than $93,000 for a full course of therapy, will undoubtedly increase these estimates (Mulkhy 2011).

2.4 Knowledge Relating to Prostate Cancer and Prostate Screening Services

A study relating to PC knowledge among primary physician in Duval and Alachua by (Pendleton, *et al.*; 2008) revealed high level of knowledge among the respondents, but their knowledge was not associated with attitude; this implies that knowledge is not an important predictor of their screening attitude. The same conclusion was arrived at, by Bourne (2010) in his study among rural health workers in Jamaica, knowledge has no influence on screening behaviour of health workers. In a study on factors affecting PC screening behaviour in a discrete population of doctors at the University Hospital of the West Indies, Jamaica by McNaughton, *et al.*, (2011) it was noted that the majority of the respondents were aware that PC among Jamaicans account for one of the highest incidences in the world and there was no direct conclution between knowledge and their professional practice. Also physicians' knowledge of PC does not predict their personal PC screening behavior. Wells *et al.*, in their study among the physicians in Southern

California reported that the higher user of routine PSA screening had lower knowledge scores of natural history of PC and test characteristics recommendation of PC screening. Study by Tonita (2009) among physicians in hospitals at Saskatchewan in Canada has confirmed that lack of adequate knowledge of normal range of PSA level could impair PC detection. Taisan, *et al* (2009) concluded in a survey carried out among primary care physicians on their knowledge of, attitudes towards, and utilisation of PSA screening for PC that the respondents were less knowledgeable about PC screening tests and overall PC risk. A study conducted by Bourne (2010) among the rural male health workers reveals that 44.2% were health professionals (including doctors, nurses and hospital administrators). Slightly above ninety-five percent (95.3%) of the respondents indicated that they had knowledge of PC screening while 71.8% stated the correct location of prostate gland in the human body.

2.5 Perception Relating to Prostate Cancer and Prostate Screening Services

Prostate Cancer screening was believed to begin at age 40 and some found the DRE embarrassing in the study conducted by McNaughton, *et al*., (2011). The study carried out by Voss and Scheetman (20010) among physicians in metropolitan Washington D. C. on PC screening practices and beliefs has revealed that the respondents believed that PC screening reduces mortality of PC if aggressive treatment initiated at very early stage. Bells et al., in their study, the physicians had expressed belief towards benefit of PC screening.

2.6 Determinants and Risk Factors Relating to Prostate Cancer

The determinants and risk factors for PC are yet to be adequately investigated. Although Lewey (2002) reports that the incidence of PC appears to be rising, the cause of the disease is not fully understood. Known modifiable risk factors which are strongly associated with increased risk of PC include age, family history, lifestyle, ethnicity and genetics (Moul, 2000; Valeri, Connllier, Moineau, Cancel-Tassin, Azrouzi *et al* 2002; and Mitchel, 2011).

Although men of every racial and ethnic background are susceptible to PC, black men, more than men of any other ethnic background, experience the differential burden of earlier age at onset, higher incidence and mortality rates, and more advanced stages of the disease when diagnosed (Jemal, Siegal, Xu and Ward, 2010). Studies by Brose, Rebbeca

Calzonek *et al*., (2002), Brunner, Moore, Pallanti, *et al*., (2003) and Edwards *et al*. (2003) have reported that the proportion of PC attributable to dominantly inherited susceptibility genes is currently estimated to be 5 - 10%.

Epidemiological evidence suggests that the incidence and death from PC are related to migration and environmental factors such as diet, ultra violent rays and cadmium (Magoha, 2007). Other people who are at risk of this PC include men who have been exposed to agent orange, men who abuse alcohol and smoking, those that take animal fat, tire plant workers, painters and farmers (US National Library of Medicine, 2010). Kubo, Ozasa, Mikami, Wakai and Fujino, (2006) conducted a cohort study among rotating shifting workers in Japan. They also noted that significant increase in PC risk exist among this group of workers.

The modifiable risk factors linked to PC risk observed in developed countries were associated with urbanized life styles which include physical inactivity and intake of high fat diet which stimulates increased testosterone levels, which is known to be associated with PC growth (Habito and Ball, 2001; Spentzos, Mantzoros, Regan, Morrissey, Duggan *et al*. 2003; Parson and Kashefi, 2008; and Chukwunso, 2011). Intake of poultry meat with skin and eggs may increase risk of PC disease progression (Richman, Stacey, Meir, Kenfield, Stampfer, Giovannucci, et *al*., 2011).

Life-time risk of developing PC and dying from the PC rises substantially among men between the ages of 45 and 50 (Kwango, Perkeys and Morris, *et al*., 2000; Matters *et al*., 2006). A twofold greater risk of developing PC and dying of it exist among the blacks (Greenlee, Murry, Boldu and Wingo, *et al*., 2000). Studies conducted in Nigeria by Azuzu and Obeke (2012) among academic and non-academic male staff of the University of Ibadan and Ebuchi and Otuinu (2011) among male staffs of the University of Lagos. The two studies indicated that PC occurs in men between the ages of 40 to 59, with the mean age at presentation being 68.4 years and age range of 47–91 years. Matters *et al* (2006) found out in their study that there was a 45.3% fold increase in PC reported between the age groups of 30-44 and 45-50.

According to Thompson, Shanafelt and Loprinzi (2003) and Thompson, Pruler, Goodman, Tangen, Lucia, *et al*. (2004), PC is the most common non-skin cancer in the American men and it was noted to be the second leading cause of death with the peak incidence being in the seventh and eighth decades of life. The mean duration of symptoms prior to

presentation has been noted to be 10.3 months in Nigeria from the study conducted by Ajape *et al.* (2010) among Nigeria native African urban populace in Ilorin. Shittu and Ogunbiyi (2003) from the study conducted among men with PC disease presented at UCH Ibadan have reported on average duration of symptoms prior presentation to be 6-8 months and patients tend to die within 2-3 years except for a few cases. Haas, Delongchamps, Brawly, Chou and de la Rossn (2008) on the other hand, have noted from the review of research literatures on world epidemiology of PC that some PCs may pass through a period of latency of up to 15-20 years, during which the disease is histologically present but has not come to attention yet.

2.7 Prevalence of Prostate Cancer with Special Reference to Nigeria

Prostate cancer is the most common male cancer-related problem in Nigeria (Okeke *et al*., 2006). In Nigeria it has been reported that PC has become the top male cancer and fourth commonest cancer (Ferlay, Shin, Bray, Forman and Mathers, et al., 2008 and GLOBACON, 2008). Global report on PC disease has ranked Nigeria as the first out of nine countries with the highest prevalence of PC in the world (WHO, 2004). Prostate Cancer is the most common male cancer constituting 11-12% of all male cancers in Nigeria (Ebuchi and Otunu, 2012). The American Cancer Society has reported that the average annual PC death rate for black men between 2002 and 2006 was 56.3% and 23.6% for white men; The PC-related mortality in black is 2.4 higher than that of white men (ACS, 2009; 2010).

Recently published data from southwestern Nigeria revealed a hospital prevalence rate of 182.5 per 100,000 male admissions in the hospital (Badmus *et al*., 2010). However, the true prevalence in the Nigerian community is not known (Ikuerowo *et al*., 2013). Ikuerowo *et al* (2013) also reported that the prevalence rate of PC among men aged >40 in Lagos is 1,046 per 100,000 men. This is higher than previously reported hospital-based study. Studies from different geographical zones in Nigeria have reported increasing prevalence of PC as follows: Zaria in the North-East with 9.2% (Alolayon, 2004). Benin in the South-South with 7.13% (Okobia and Aligbe, 2005). Igbos in South-East Nigeria 26.2% (Iyare, 2008), Kano in the North-West with 16.5% (Mohammed, 2008). and Lagos in the South-West with 9.92% (Jedy-Agba, 2012). Study by Akinremi et al (2014) report the highest mortality of PC in recent preliminary data from a five-year cohort which

revealed that 22.7% cases of PC who presented at the Federal Medical Centre Abeokuta with advanced disease were all dead within two years.

Report by Chu, Ritchy, Dewesa, Quraishi, Zhang *et al* (2011) through the record of International Agency for Research on Cancer (IARC) and National Cancer Institute Surveillance Epidemiology and End Results Programme (NCISEERP), on review of cancer incidence rates in Africa from 1973-2007 noted that the PC incidence rates were highest in the East Africa (10.7- 38.1 per 100,000 man years, age adjusted world standard) and lowest in the West Africa (7-19.8 per 100,000 man years, age adjusted world standard). These authorities reported further that these patterns of occurrence are likely due to differences between African and American men in medical care access, screening, registry quality, genetic diversity and westernization. Chu *et al* (2011) also report that incidence rate in Africa will likely continue to rise with improving economics and increasing adoption of western culture.

2.8 Utilisation of Prostate Cancer Screening Services

Cancer screening allows for early detection of cancer and it facilitates reductions in cancer mortality (Pignone, Rich, Teutsch, Berg and Lohr; 2002). The most common screening tests for men over the age of 40 are for detecting PC, and evidence suggests that screening early for detection of PC is effective (Paquette, Sun, Paquette, Connelly, Mcleod *et al*. 2002; ACS, 2006).

Prostate cancer screening is described by Atulomah *et al* (2010) as the physical examination which involves palpating the prostate by DRE, by measuring the levels of PSA in the blood or by a biopsy (where a sample of prostate tissue is taken for histology examination). A PSA level of 4ng/ml and above is indicative of a prostate problem, either an enlargement or a frank case of PC cancer. One of the benefits of PC screening is the achievement of improved quality of life by reduction of associated consequences.

Atulomah *et al* (2010) have explained that the best period to begin PC screening should be between the ages of 30 and 40. Early detection and treatment strategies have led to a five-year survival rate near 100% (Mitchel, 2011). Previously men with PC presented for treatment at advanced stages at which point disease-specific mortality was high before the introduction of PC screening (Messing *et al*., 1999). But now most men present with localized disease for which many therapeutic options are available. In certain populations

with regular adoption of PC screening services. PC may not affect length or quality of life if managed at early stage (Klotz. 2006).

Several medical organizations have developed cancer screening guidelines. Table 2.1 provides a summary of cancer screening recommendations by some American medical organizations (Zoorob, Anderson, Cefalu and Sidani, 2001; ACS, 2006; American Medical Association, 2006 and United States Preventive Services Task Force, 2012).

Table 2.1: Summary of U.S. National Recommendations on Screening for Prostate Cancer

Association	Recommendation
American Cancer Society.	Begin screening at age 50 offering annual DRE and PSA screening to men who have at least a10-year life expectancy and to younger men with a family history of cancer.
American Medical Association.	Begin screening at age 50 offering annual DRE and PSA screening to men and start at age 40 years for those with an affected first degree relative.
United State Preventive Services Task Force.	Insufficient evidence to recommend for or against PSA testing for the general population.

(Adapted from Mona, Zhu, Palmer and Wu, 2007)

Prostate cancer can develop into a fatal, painful disease, but it can also develop so slowly that it will never cause problems during the man's lifetime and it is difficult for a physician to determine how the cancer will proceed based on the two major types of screening tests currently available (Odedina, Ogunbiyi and Ukoli 2006). Prostate cancer screening is controversial (Delongchamps *et al.*, 2007). A major consideration for any screening protocol is to balance the possibility of needless treatment with that of saving lives. A 2010 analysis concluded that routine screening with either a DRE or PSA is not supported by evidence as there is no mortality benefit from screening (Odedina, Yu, Akinremi, Realms, Freedman, *et al*., 2009).

The United States Preventive Services Task Force (USPSTF) has made a final recommendation against PSA-based screening in healthy men arguing that the potential risks outweigh the potential benefits (USPSTF, 2012). This recommendation against routine screening for PC is based on a review of new evidence on the benefits and harms of PSA-based screening for PC (Chou, Croswel, Dana, Bougatsos, Blazina *et al*. 2011; Moyer, 2012 and USPSTF 2012). Furthermore several European randomized studies on screening and PC mortality have concluded that, "prostate-specific antigen-based screening" results in small or no reduction in PC-specific mortality and is associated with harms related to subsequent evaluation and treatments, some of which may be unnecessary (Andriole, et al. 2009, Schroder, et al., 2009 and Schröder, Hugosson, Roobol, Tammela, Ciatto et al. 2012).

However, according to Moyer (2012) the USPSTF recommendation against PSA-based screening for PC applies to men in the general U.S. population, regardless of age. An analysis that was carried out by Schröder *et al.* (2009; 2012) which confirmed the previous beliefs that PSA-based screening significantly reduce mortality from PC but do not affect all-cause mortality.

The reactions to the review and the recommendation on PC screening as released by USPSTF are mixed and have raised more controversies. According to Bankhead (2011) the recommendation of USPSTF against PSA screening has not been approved by US Government. This position implies that it is not yet an official policy of the US Government. The recommendation has also drawn official reaction from the medical organizations such as the American Urological Association (AUA) as well as from

individual physicians. There is the concern that the recommendation could do more harm than good to many men at risk of PC. Bankhead (2011) has called attention to the fact that USPSTF is a group of primary care physicians like pediatricians and obstetrician/ gynecologists, who had never treated PC patients and so has simply misinterpreted screening of PC with reference to use of PSA as a screening technique. The final report of the USPSTF against PSA screening issued in May 2012 warns categorically that the statements or recommendation should not be interpreted as to represent official USPSTF recommendations for practice. It was stated that the recommendation statements are provided by the USPSTF for informational purposes only (USPSTF, 2012).

Prostate cancer is the most common male cancer constituting 11-12% of all male cancers (Ebuchi and Otunla, 2011; Ejike, 2010) in Nigeria. There is as at now no national PC cancer screening programme in Nigeria. Furthermore about two thirds of PC patients in Nigeria presented with metastatic disease (Badmus et al., 2010).

Based on, preceding argument for and against the PSA screening test, it can be stated that asymptomatic men can then make an informed decision about whether they wish to have a PSA test or not, after discussion of pros and cons of the PC screening test with their primary care physicians. Primary care physicians and urologists are still involved in routine screening in Nigeria; in fact it is the norm at the Nuclear Medicine Department of UCH Ibadan. Once there is no official policy on PC screening in Nigeria, it may be premature to discontinue the current practice and related studies.

Screening practices have had a substantial influence on PC incidence (Ukoli, Osime, Akcieyeni, Okunzuwa, Kittles *et al.*, 2003). The distribution of PSA in Nigerian population has been found to be similar to that of unscreened US populations with greater than 4ng/l readings in 15.7% of men above 50 years. Ukoli *et al.* (2003) and Igwe, Ikuroocha, Ogunkwe, Nwobu, Duru *et al.* (2004) found that this apparent increase in incidence may reflect improved detection rates, while Farkas, Schneider and Perrotti (1998) in particular related the increase incidence of PC to the use of PSA screening test.

Report of study on reconciling primary care specialist perspectives on PC screening tests carried out by Hoffman *et al.* (2012) suggests that primary care society and health care systems should be encouraged to evaluate the evidences and decide on feasibility of

implementation of recommendations of AUA and National Comprehensive Cancer Network to screening men at risk of PC at age 40.; however another study carried out by Hoffman, Papenfuss, Buller and Moon (1996) on attitude and practice of primary care physician for PC screening found that primary care physicians believed that screening of PSA with PSA should not be left alone for urologist.

The currently most commonly used methods, the DRE and PSA test, both have limitations, and at present there is limited evidence that these screening methods reduce morbidity and mortality (Bratt, Kristoffersson and Lundgren, 1997; Turin, Redaelli, Gramegna and Radice, 2003; Jacobsen, Lamonde, Honour, Kash, Hudson *et al.* 2004; Papatsoris and Anagnostopoulos, 2008). The study of PC screening practices carried out by Aragones *et al.*; (2009) among the physicians serving Chinese immigrants in New York City documented that PSA and DRE are recommended to their male patient of 50 years and above but majority of them recommended PC screening to patients with family history of PC from 45-50 years.

The report of Chan, Vernon, Haynes, O'Donell and Ahn (2003) in their own study conducted on physicians' perspective on the importance of facts men ought to know about PSA testing, have stated that urologist were significantly more likely to adopt PC screening with PSA than either internist or family physician. to have participated in a mass screening programme for PC and to support PC screening of with PSA in men aged 50 and above.

A longitudinal study by Voss and Schectman (2001) on PC screening practices and beliefs among primary care physician reported high and increasing rates of PSA testing. Research carried out at University of Ilorin in Nigeria by Ajape, *et al.* (2011) among urologists on client demand for PC screening affirmed that the number of men requesting for PC per respondent is still low. A study by McNaughton, *et al.* (2011) among a discrete population of doctors in Jamaica reported that 59% of respondents had been screened, the respondents agreed that both PSA and DRE should be used for PC screening and they also encouraged their patient to undergo PC screening services.

A review of PC research in Nigeria by Akinremi *et al.* (2011) reveals that routine PC screening is not practised and most PSA testing and DRE emanate from surgical clinics. Furthermore Beaulac, Fry and Onyskoma (2005) describe smokers as less likely to obtain

PSA screening. A study by Bourne *et al.* (2010) among 170 rural male health workers notes that 44% of respondents were health professionals (doctors, nurses, pharmacists and physiotherapists). However, only 27.1% of the total sample adopted PC screening test. Report from the study that assessed PC screening among health workers at a tertiary care hospital in Sao Paulo, Brazil carried out by Goncalves-Silva *et al.* (2010) revealed that 66% male staff had undergone PSA testing and 32.4% had submitted to a DRE.

2.9 Barriers and Benefits to the Utilisation of Prostate Cancer Screening Services

Little research has been carried out among male health workers on the barriers and benefits which influence PC screening services. The factors which influence the uptake of PC screening services will be reviewed under two headings: barriers to the utilisation of PC screening services and benefits of the utilisation of PC screening

2.9.1: Barriers to the utilisation of PC screening services

Certain characteristics or factors that play significant roles in adoption of PC screening negatively were revealed in a study by Bourne (2010) which examined pattern of utilisation of PC screening among male health workers in Jamaica. For instance religion or spirituality plays a critical role in rural males' low adoption of PC screening especially the technique associated with examination of prostate gland in its anatomical position, interfere with cultural practices and ideology. The insertion of the finger into the rectum is also a fundamental factor which deters many males from seeking to carry out DRE, and this aids in the explanation of males' unwillingness to have someone, in particular another male, examine or insert a finger in their anus which could be discomforting (Bourne, 2010).

Prostate cancer examination represents a threat to men's sexuality which also contributes to a reluctance to undergo PC screening test or utilize health care (Allen, Gilson- Glover and Gilligan2007). Bourne, (2010) noted in his study that men have the idea that they are going to lose their manhood if they take any kind of treatment relating to PC. For some men, this is a major concern. Fear of the result, cost and discomfort from DRE are other form of barriers that were documented form the study of Bourne (2010).

2.9.2 Benefits of Utilisation of PC Screening Services

The report of Bourne, (2009) concluded that awareness and knowledge of PC and PC screening, age, perceived PC risk, as well as having sons, marital status and positive family history significantly influence uptake of PSA as PC screening. According to Taisan *et. al.*, (2010) age, ethnicity and family history of PC was a good motivator for utilisation of PC services. The study further revealed that patients' request for PC screening test, history of urinary symptoms and co-morbid conditions were the factors that commonly influenced providers to offer PC screening test. A study by Tonita (2009) noted that physical examination and medical check up also have positive significant effect on PC screening.

2.10 Public Health Approach

Public approach draws upon knowledge from many disciplines including medicines, sociology, epidemiology, psychology, education and economics (WHO, 2010). From public health perspective, prevention strategies can be classified into three types namely primary, secondary and tertiary prevention (Dahlberg and Krug, 2002; Smithy and Straus, 2004; WHO, 2010). According to ACS (2013) PC is a common cancer in men that, once it progresses to the later stages, has serious morbidity and mortality consequences as well as burdensome financial issues for patients, the healthcare system, and society. As a result, several strategies have been developed to reduce the morbidity, mortality, and costs associated with PC, including the identification of patients at risk, chemoprevention regimens that prevent the development of the disease in those at risk, and the early diagnosis of patients with confirmed disease (Zimmerman and Mehr, 2013).

A number of interventions are available for PC diagnosis for primary and secondary prevention strategies (Atulomah *et al.*, 2010). Primary prevention refers to preventing the development of cancer, usually in men who have an average or high risk for its occurrence. This includes men with a family history of PC. Primary prevention involves PC screening at the asymptomatic stage of development of the disease and lifestyle adjustments that may be in form of dietary regimen (Atulomah *et al.*, 2010). Akinremi (2011) has noted that lifestyle and behavioral modifications are known to be important in cancer prevention. A major concern relating to PC is the remarkable lack of awareness of

the condition in Nigerian especially among Nigeria urban populace (Ajape, Bihaturnde Abiola *et al.*, 2010).

According to Kramer, Hagerty and Justman, (2008); Abbey and Al (2011); Davis (2012) and Millar (2011) secondary prevention is aimed at individuals with known precancerous lesions. In this case, chemoprevention is used to deter the progression of these lesions to the cancerous state. Secondary prevention entails treatment of PC which includes surgery, radiation and chemotherapy to prevent further complication (Walsch. 2008).

Tertiary prevention on the other hand relates to prevention activities that are geared towards palliative treatment to alleviate suffering from the disease (Sinfield, *et al.*, 2009). Tertiary prevention focuses on halting disease progression and recurrence in patients with PC (Silberstein & Parsons, 2010). Kramer *et al.*, (2009), Abbey and Al (2011), Davis (2012) and Millar (2011) also described tertiary prevention as the prevention used in patients with diagnosed PC to prevent new cancers or metastasis.

Currently no proven preventive measures have been identified with reference to PC (Lewey, 2002). There is not yet any national cancer screening programme, and yet annual PSA checks are not practised routinely in Nigeria (Eke and Sapira, 2002).

2.11 Summary of Literature Review

Prostate cancer screening is an attempt to determine undetected cancer of the prostate. The two common PC screening tests are DRE and PSA. Prostate Cancer screening utilisation is described as a participant having a prostate specific antigen (PSA) measurement or test and/or a digital rectal exam (DRE) at least once in the past two years.

There is dearth of information from literature relating to PC screening among male health workers in Nigeria. Few available data on PC screening services are derived from general reproductive health, health records, and PC and PC screening studies. Many of the studies are not generalized due to limitation in scope, reliance on qualitative data and inability to fully capture prevalence of PC screening adoption among different category of male staff working in tertiary health institution.

In Nigeria PC is the most common male cancer, constituting 11-12% of all male cancers. When consider increase in the incidence of PC with age, late presentation to the hospital and that life expectancy among most populations is increasing. PC presents a major

challenge to health care services. Certain behavioural factors such as perceived susceptibility, perceived severity, perceived barrier, perceived benefits, likelihood of taking action and cue to action contribute much to adoption of PC screening among male hospital staff.

Experiences from adopters of PC have been linked with the numerous physical and psychological consequences of PC screening like pain and fear during DRE procedure, shock, grief, anger, depression, immediate risk of cardiovascular event and high risk of suicidal attempt particularly first week of life after diagnoses, feeling dirty, and being overwhelmed by challenges due to effects of treatments.

Some of the perspectives on PC prevention include individual approach, community approach, population approach and public health approach. Public health approaches which include primary, secondary and tertiary prevention present an opportunity for integrated and inter-sectorial prevention control of PC.

2.12 Conceptual Framework

A Conceptual framework is the presentation of the causal linkage of a problem among concepts believed to be related to a specific problem. Health study-related frameworks are developed to guide studies relating to health problem investigation. One of such well-acknowledged models is Health Belief Model (McMillan and Schumacher, 2000; Anfara and Mertz, 2006). It is developed with the aim of providing a guide to Health Education research and practice (Anfara and Mertz, 2006). It is not meant to incorporate all factors of interest but rather to show only a small part of causal web selected to explain the relationships among some given variables of interest to study valued for predictability, integration of information or analogy as the case may be (Leedy and Ormrod, 2005; Creswell, 2007; Johnson and Christensen, 2007). For this research, the conceptual models that would be adopted are Health Belief Model (HBM) and Trans-theoretical Model. The overview of HBM is presented first, followed by the Trans-theoretical Model.

2.12.1 Health Belief Model (HBM)

Health Belief Model is by far most commonly used theory in health education and health promotion (Glanz, Barbara and Viswanath, 2008; Capenter, 2010). It was developed as a means to explain and predict preventive health behaviours.

The concepts of the HBM as related to PC screening include (a) perceived susceptibility to PC; (b) perceived severity of having PC; (c) perceived benefits of being screened for PC; (d) perceived barriers to being screened for PC; (e) cues to action to seek screening for PC; and (f) self-efficacy, or the confidence in one's ability to take action (Glanz *et al*., 2008; Glanz and Donald, 2010).

According to this model, the likelihood that an individual will take action to prevent illness depends on the person's following perceptions: that they are personally vulnerable to the disease, that the consequences of the disease would be serious, that the precautionary behaviour will effectively reduce and prevent the severity of the disease, and that the benefits of reducing the severity of the condition will outweigh the costs of taking action (Hollister and Anema, 2004; Gutierrez and Long, 2011).

Modifying factors incorporated in the model include demographic variables and knowledge. Once an individual perceives a threat to his health and is cued to action and the perceived benefits outweigh the perceived barriers, the individual is likely to engage in the preventive health action (Hollister and Anema, 2004; Solhi, Shojai, Seraj and Faghih, 2010).

The HBM was selected for this study because its tenets suggest that preventive health behaviour is a function of perceived severity of illness, perceived susceptibility to that illness, perceived benefits for taking an action to prevent that illness and perceived barriers to engaging in that action (Gutierrez and Long, 2011).

The tenets of HBM show that the behaviour exhibited is determined by whether the individual believes that he/she is susceptible to PC disease, regards this problem as serious, and is convinced that there is benefit in undertaking treatment or prevention activities such as PC screening. In exploring the extent to which perception may influence screening behaviour, the application of the Health Belief Model framework in this study is shown in Figure 2.1.

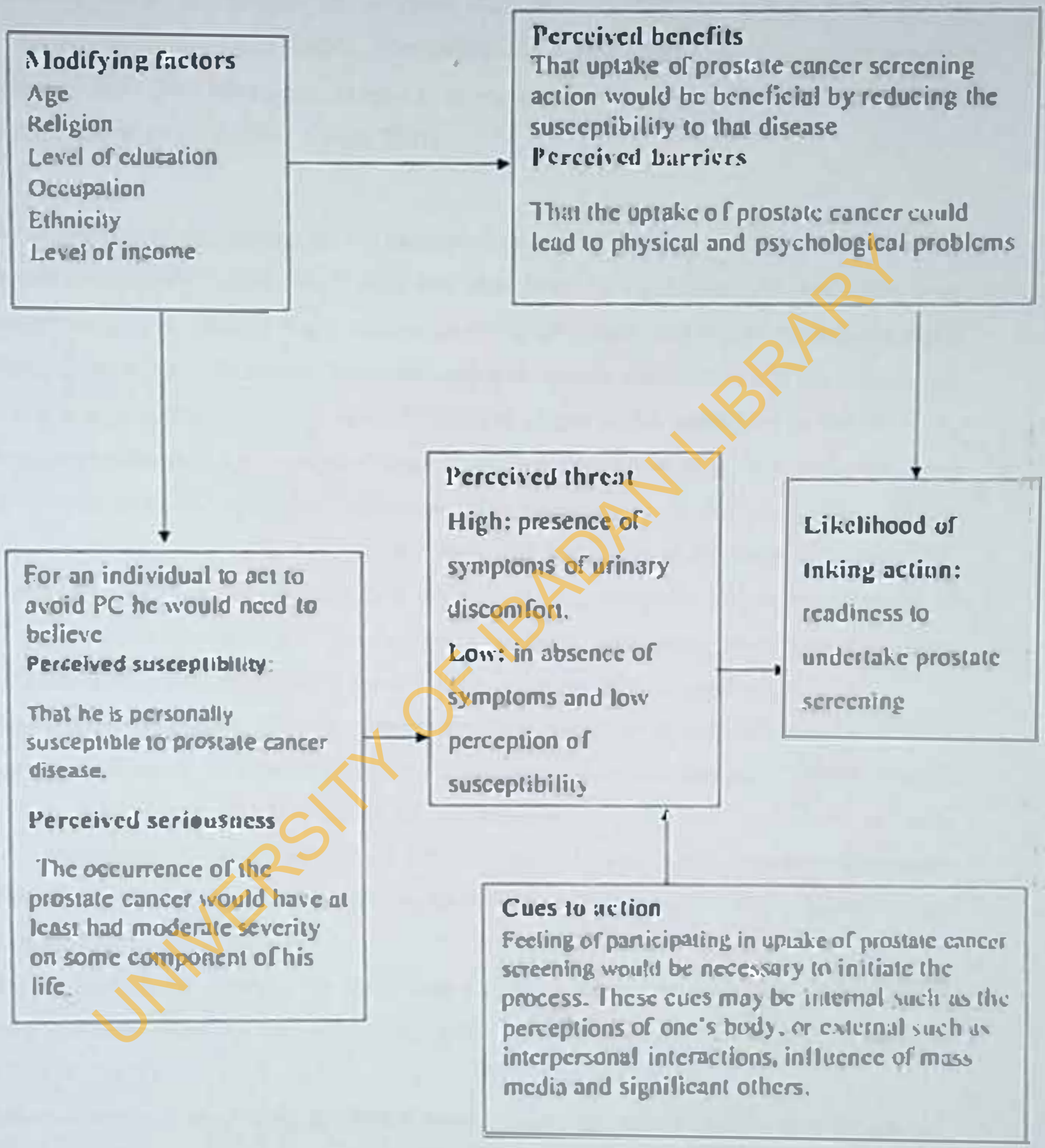

Figure 2.1: Health Belief Model applied to the PC

Source: Abraham and Sheeran (2005)

2.12.2 Trans-theoretical Model (Stages of Change Model)

Developed by Prochaska and DiClemente (1983), the model's basic premise is that behaviour change is a process, not an event. As a person attempts to change behaviour, he or she moves through five stages. The stages of Change Model have been applied to a variety of individual behaviour, as well as to organizational change (Clemow, 2004; Glanz Barbara and Viswanath2008; Rossi, 2004).

The Model is circular; people do not necessarily systematically progress from one stage to the next, ultimately "graduating" from the behaviour change process. Instead, they may change the process at any stage, relapse to an earlier stage, and begin the process again (Glanz *et al.*, 2008). They may circle through this process repeatedly, and the process can be truncated to any point (Glanz *et al.*, 2008). The stages in this Model are as follow:

Re-contemplation Stage: - At this stage, there is no intention or prior knowledge about the new behaviour or innovation (Clemow, 2004; Glanz *et al.*, 2008; Rossi, 2004). In this case, the health workers have not heard about PC screening or the need to undergo PC screening services is not the behaviour of interest. They may not perceive the benefit of PC screening. Information through campaigns, lectures, workshops, newsletters hand bills and posters can raise their critical consciousness relating to PC screening.

Contemplation Stage: - This is a stage in which behaviour is not currently carried out such as adoption of PC screening, but it is being contemplated (Glanz, *et al.*, 2008). Health workers for instance, intend to utilize PC screening services. At this stage, they may seek more information from colleagues or other sources. Trained health workers and health promoters in PC screening services can also provide more persuasive information through training and workshops.

Preparation Stage: - Here, the individual has adequate information and he is inclined more towards adopting the behaviour such as utilisation of PC screening services (Clemow, 2004).

Action Stage: - At this stage, the health worker is now practically involved in the practice of routine PC screening services.

Maintenance Stage: - At this stage, the action or behaviour is sustained or maintained (i.e. routine PC screening services) (Clemow, 2004; Glanz *et al*., 2008; Rossi, 2004). The health worker may attend more update lectures on PC screening services and read more literatures on the effects of the disease.

Relapse Stage: - This is the stage at which a health worker falls back to the former negative atlitude or behaviour (i.e. non utilisation of PC screening services). This might be due to lack of provision of positive solution to the reported difficulty in accessing the facilities for the service, poor attitude of other colleagues toward PC screening services because they do not perceive PC as a serious problem, or laxity on the part of the PC screening service provider unit.

This model was used to assess the level of knowledge, perception, risk factors and pattern of utilisation of PC screening services of the male staffs of UCH. The model also helped the researcher to assess whether the health workers were health educated or health informed about PC screening services. With the Trans-theoretical Model, it is easy to classify the health workers into various categories in terms of the stage they are with respect to the adoption of the principles of PC screening services.
The tenets of this model were used to guide the framing of some of the items contained in the questionnaire used for the study.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design and Scope

The study was a descriptive cross-sectional survey. It was limited in scope to the knowledge, perception, risk factors and utilisation of PC screening services among male staff of University College Hospital Ibadan (UCH) relating to PC screening services during the period of study (June to July, 2013).

3.2 Study Setting

The study was carried out at the University College Hospital (UCH), Ibadan. The hospital was established by an act of parliament in November, 1952 in response to the need for the training of medical personnel and other categories of healthcare professionals for the country and the West African sub-region (www.uch.com).

The establishment of the Hospital was sequel to the visitation panel led by Dr T. E. Hunt of the University of London in 1951 to assess the clinical facilities for the clinical postings of medical students registered for the M.B.B.S. degree of the University of London based at UCH Ibadan. The University College Hospital, Ibadan was therefore an affiliate of the University of London. Students were prepared in Ibadan at the University College Hospital, Ibadan for the University of London MBBS degree (www.uch.com).

The physical development of the Hospital commenced in 1953 in its present site and was formally commissioned on 20th November, 1957. The Hospital, which was initially commissioned with 500 bed spaces, now has 850 bed spaces and 163 examination couches. The current bed occupancy ranges from 55-60% (www.uch.com).

In addition to undergraduate medical programmes (based in the College of Medicine of the University of Ibadan), the UCH also provides residency training programme in various specialties and runs several other professional programmes for various cadres of health staff (www.uch.com). Records obtained from the Human Resources Department and each unit /Department (2012) of the Hospital showed that a total number of 1,029 male staff

members were employed by the management of UCH. This consists of 237 clinical staff members, 240 paramedical staff members, 267 administrative staff members, 189 male staff members in the Maintenance Department and 96 male staff members in the Records and Information Management Department.

3.3 Study and Target Population

The study population for this research was classified into male staff in Clinical, Paramedical, Administrative and Maintenance, Record and Information Management Departments at University College Hospital (See Table 3.1). They were on pensionable appointment with management of UCH.

3.4 Sample Size Determination

The minimal sample size for the study was estimated by using the following Leslie Kish formula (Araoye, 2004):

$$N = \frac{Z^2 pq}{d^2}$$

Where

Z^2 = Standard Normal Deviate set at 1.96

P = Proportion of men that had undergone PC screening among male staff of the University of Lagos, Lagos, Nigeria = 28.4% (Ebuchie and Otuinu, 2011).

q = 1-p

d = Level of precision limit set at 0.04 (96% confidence interval)

For the purpose of this research, precision limit was increased for accuracy of the result; d^2 value was considered at the 96% confidence interval.

The precision limit (d) was (100-96) % =4%

So, d= 4% = 0.04

Thus:

$$N = \frac{1.96^2 X 0.284 X 0.716}{0.04^2}$$

$$= 488$$

A possible 10% non-response, attrition or incomplete response rate was calculated as follows and added to the calculated sample size: $\frac{10 \times 488}{100} = 48.8$

Hence, the sample size was 488 + 48.8= 536.8; this was subsequently rounded up to 600 The total sample size of 600 was shared proportionately among the classified professional groups of respondents in each unit.

The proportion of each professional group of respondents was calculated using the following formula:

Sample size of the professional group =

$$\frac{\text{Sample population} \times \text{Calculated samples of the professional group}}{\text{Total sample size}}$$

Table 3.1: Proportion of Classified Professions

Clinical staff N= 237	*Paramedical Staff N= 240*	*Administrative Staff N =267*	Maintenance Officers N= 189	Record and Information Management Staff N= 96
$\frac{237}{1029} \times 600 = 138^*$	$\frac{240}{1029} \times 600 = 140^*$	$\frac{267}{1029} \times 600 = 156^*$	$\frac{189}{1029} \times 600 = 110$	$\frac{96}{1029} \times 600 = 56^*$

*Proportions scheduled for study in each of the professional groups.

Male staff members of the UCH who agreed to participate in the study constituted the study sampling. Persons excluded from the study were casual and contract male staff members. Male staff members on sabbatical leave, or leave of absence and male staff employed by contactors (such as security and cleaner) and College of Medicine University of Ibadan male staff of the University of Ibadan.

3.5 Sampling Technique and Procedure

A three-stage sampling technique was employed to select the participants from the study population. In this sampling technique, the study population was stratified into 15 Departments (see Appendix IV for details). The second stage involved the stratification of the respondents in each category of Department into units. For instance, nursing Department was stratified into the following units: theatre, neuroscience etc. (see Appendix V for details). The third stage of stratification entailed classification of study population in the unit according to their professions and proportionate sampling method (see Appendix V for details). The classification of study participants according to their professional groupings is presented in Table 3.2.

Table 3.2: Classification of Study Population According to Their Professions

S/N	Clinical staff 237*	Paramedical staff =240*	Administrative staff =267*	Maintenance officers = 189*	Record and information management staff =96*
1	Anaesthesia 19	Nursing 21	Nursing 1	Radiology 24	Statistician 1
2	Chemical Pathology 6	Physiotherapy 17	Pharmacy 2	Engineering 4	Nuclear Medicine 1
3	Child Oral Health 3	Pharmacy 28	Radiology 3	Nuclear Medicine 5	School of Information Management 1
4	Clinical Pharmacology 2	Virology 2	Chemical Pathology 18	Hospital Service 19	Health Records 73
5	Community Medicine 11	Microbiology 15	Accident and emergency 2	Total Quality Management 4	Information Management 5
6	General Out Patient 8	Dietetics 3	Staff Medical Service 7	Procurement Unit 10	Information Technology 13
7	Medical Microbiology 5	Medical Social Workers 31	Family Medicine 2	Bio medics 26	Fully Medicine 2
8	Haematology 4	Radiology 17	Paediatrics 2	Total Facility Management 32	
9	Medicine 22	Pathology 35	Medicine 2	Bulk Stores 17	
10	Nuclear Medicine 3	Radiotherapy 3	Anaesthesia 1	Instruments 17	

S/N	Clinical staff 237*	Paramedical staff =240*	Administrative staff =267*	Maintenance officers = 189*	Record and information management staff = 96*
11	Obstetrics & Gynaecology 25	Medicine 4	Dentistry 6	Radiotherapy 1	
12	Ophthalmology 11	Chemical Pathology 8	Ophthalmology 6		
13	Otorhinolaryngology 7	Accident and emergency 4	Nuclear Medicine 1		
14	Oral Pathology 3	Haematology 17	Obstetrics and Gynaecology 3		
15	Oral Maxillofacial 5	Occupational Therapy 2	Psychiatry 2		
16	Orthopaedic & Trauma 7	School of Environmental 3	Audit 17		
17	Paediatrics 18	Public Health Tutor 1	Account 48		
18	Pathology 9	Paediatrics 5	Hospital Service 31		
19	Preventive Dentistry 1	Nurse Tutors 2	Total Quality Management 3		
20	Psychiatry 10	School of Nursing 6	Procurement Unit 2		
21	Radiology 13	Pre-Operative Nursing 2	Bio-medics 2		
22	Radiotherapy Dentistry Restorative 4	Nuclear Medicine 10	Human Resources 31		
23	Surgery 38	Occupational Nursing 2	General Admin 41		
24	Palliative 3	School of Medical Laboratory 2	Legal Unit 2		
25			Community Liaison Office 10		
26			Radiotherapy 1		
27			Medical side 15		
28			Surgical 6		

*Total study population

Source: Human Resources Department UCH (2012), Records kept by all Departments (2012).

The following formula was used to select eligible respondents from the Clinical staff.

$$\frac{\text{Total No. of male clinical staff}}{\text{Total No. of male staff of UCH}} \times \text{Total sample size}$$

$$\frac{237}{1029} \times 600 = 138$$

From the above formula, 138 respondents constituted the total sample size calculated for male clinical staff.

A similar proportionate sampling method was also adopted to select eligible male clinical staff members from each Department. For instance, the following formula was used to select eligible male clinical staff from a Department:

$$\frac{\text{Total No. of male clinical Staff in a Department}}{\text{Total No. of male clinical Staff}} \times \text{Total sample size calculated for Clinical staff}$$

Example: Clinical staff in the Department of Anesthesia

Anaesthesia Department consisted of 19 male clinical staff members.

Therefore, $\frac{19}{237} \times 138 = 11$

From the above formula, 11 male clinical staff respondents were selected from the Department of Anesthesia (See Table Appendix V for details of selection of eligible respondents from the other Departments).

Finally proportionate sampling method was used to select eligible respondents from each section/unit within the Department. The following formula was used to select eligible male administrative staff members from the unit within a Department.

$$\frac{\text{Total No. of male administrative staff in a unit within the Department}}{\text{Total No. of male administrative staff}} \times \text{Calculated sample size for male Administrative staff}$$

Revenue Collection Unit under Account Department

Revenue collection section consisted of four male administrative staff members while Account Department consisted of 48 male administrative staff members but total sample selected from this Department was 28.

Therefore number of selected respondents.

$$\frac{4}{48} \times 28 = \frac{2.3}{}$$

From the above formula two respondents were selected from revenue section of Account Department classified under paramedical staff. The UI/ UCH Ethics Committee approval contains details of eligible men selected from other units.

Thereafter simple random technique involving balloting the eligible respondents. Male staffs that picked yes rolled piece of the paper and consented to participate from each profession in the stratified unit are the eligible respondents. Randomly selected eligible respondents that had given consent were interviewed using a semi-structured questionnaire.

3.6 Methods and Instrument for Data Collection

Data were collected using self-administered method facilitated by the use of a semi-structured questionnaire. The design of the draft questionnaire was done after a review of related literature. The questionnaire was divided into seven sections labeled sections A, B, C, D, E, F and G. Section A dealt with the socio-demographic characteristics of the respondents while Section B sought to assess knowledge of PC and PC screening services among respondents. Section C focused on the perception of male staff of the UCH relating to PC screening services among the respondents; Section D dealt with the risk factors among staff of UCH that could make them vulnerable to PC. Section E explored respondents' screening behaviour relating to PC. Items relating to the determination of the prevalence of suggestive signs/symptoms of PC among the respondents were contained in section F. Lastly Section G was used to identify factors that influenced the utilisation of PC screening services among the respondents. The self-administered questionnaire was drawn in English (See Appendix I for the questionnaire).

3.7 Training of Research Assistants (RAs)

Three Research Assistants who had previous experience in data collection were recruited and trained for two days to assist in data collection. The content of the training included objectives and purpose of the study, interpersonal communication skills on data collection and techniques. Importance of respondents' informed consent and confidentiality were stressed during the training. The semi structured questionnaire was discussed in details. The training methods included brief lecture, demonstration and return demonstration and role play.

3.8 Validity and Reliability of the Instrument

3.8.1 Validity

Validity of an instrument is the ability of an instrument to measure what it is designed to measure (Golafishani, 2003). In order to ensure validity of the questionnaire, related literature including previous instruments, was reviewed. The draft questionnaire was made available to peers and experts in the fields of Health Promotion and Education and Urology based in the College of Medicine Ibadan for review. Necessary amendments or adjustment were effected based on their inputs. The questionnaire was then pre-tested among respondents with similar characteristics at the Federal Medical Centre, Abeokuta. The centre offers tertiary level health care services including PC care like UCH. This exercise helped in the determination of the reliability of the instrument.

3.8.2 Reliability

Reliability, also termed reproducibility/repeatability, refers to the stability, the consistency of an instrument relating to the information it is designed to collect (Golafishani, 2003). The questionnaire was administered to 10% of the sample size for this study which was 60 respondents of the Federal Medical Centre, Abeokuta in a pilot study. The administered copies of the questionnaire were cleaned, coded, entered into the computer and analysed.

The Crombach's Alpha model technique of SPSS (version 15) was used to determine the reliability of the instrument. The reliability co-efficient of 0.7 was obtained, implying that the instrument was very reliable. Few revisions were made on the instrument before it was finally used. The revisions made included inclusion of questions relating to factors influencing utilisation of PC screening services as well as skipping mechanisms.

3.9 Data Collection Process

The data were collected using the semi-structured questionnaire (see Appendix I) with the help of three trained RAs. This was done by moving round the Departments and Units to enlist eligible respondents to participate. The respondents were literate and so the instrument was self-administered. Data collection took place from 12pm to 6pm during the week days for five weeks. Consent of the participants was sought before the administration of the questionnaire after explaining to them the purpose of the research, time that would be spent to complete the question and importance of the research. As a result of the busy nature of the participant's clinical assignments it was not possible for them to complete and return the completed copies of the questionnaire immediately. A date and convenient time were fixed for the researcher and RAs to report back to collect completed questionnaire copies.

A completed copy of the questionnaire was collected immediately a respondent was through with it. It was then checked for completeness and accuracy. Attention of a respondent was drawn to any cases of omission or incomplete responses in the questionnaire. Six hundred copies of the questionnaires were administered but 590 were found to be valid after a review due to attrition and incomplete responses. This yielded a response rate of 98.2%

3.10 Data Management and Analysis

Copies of the questionnaire were edited by the researcher with the help of RAs. They were numbered serially for easy identification, control and recall of any copy with problems. The responses in each questionnaire copy were hand-coded, facilitated by the use of a coding guide developed by the investigator. A template was then designed on the Statistical Package for Social Science (SPSS) version 16.0 for entering of the coded data. The coded copies of the questionnaire were carefully entered into the computer one by one. Thereafter the frequency distribution of responses was generated for each variable. Respondents' knowledge was assessed using a 31- point knowledge scale, and then mean score was calculated (See Appendix II for the scale including scores). Knowledge scores of 1-14, 15-14 and 25-30 were categorized as poor, fair and good respectively. Similarly a 20-point perception scale was used to assess respondents' perception. The mean perception score was calculated and scores <10 and >10 points were classified a for each

respondent were calculated and the knowledge scores were categorized as negative and positive respondent (See Appendix IV for the perception scale and scores).

3.11 Ethical Considerations

The ethical principles guiding the use of human participants in research were taken into consideration in the design and conduct of the study. Ethical approval was obtained from the Joint UI/UCH Institutional Ethics Review Committee (See Appendix VI for the letter of approval). An official permission to conduct the study was obtained from the Management of UCH and the Head of each Department /Unit in the hospital. A respondent's consent was also obtained after provision of adequate, clear and complete information about what the study entailed (See Appendix VI for details of the contents of the informed consent form).

Only the signature of participants and date appeared on the form. Ethical standards relating to confidentiality were strictly adhered to. Respondents were informed that participation was voluntary and that data collected would be used mainly for research purposes. Anonymity of responses was also ensured as respondent's name and any other personal identifier were not written on the copies of questionnaires. Respondents with positive PC screening test and symptoms of PC were requested or advised to seek for medical and counseling services.

3.12 Limitations

The study was characterized by some limitations. One of the limitations was dearth of information in the literature on PC screening in Nigeria relating to health workers. This posed a serious challenge in respect of information which could be used to design this study. The problem was ameliorated through the use of literature on studies conducted outside Nigeria, mostly from the developed countries in spite of their inherent limitations. Another limitation of the study was the crowded work schedule of the respondents which made the completion of administered copies of the questionnaire very difficult. In order to address this challenge, maximum of ten visits were paid to many of the participants before questionnaire copies were completed.

Nine respondents from Radiology Department refused to participate in the study due to non-inclusion of their cadre as Radiology Technicians as one of the alternative

occupations or professional group in the instrument. They erroneously interpreted the situation as lack of recognition of their work by the investigator. The researcher tried to clarify the reason for exclusion of this group from the list. The explanation tendered was that there was a limit to the number of the occupations that could be accommodated and that all others not specifically listed came under "*Others, specify*" as contained in the questionnaire. This was however, not enough to convince them to change their minds. They were not interview due to the voluntary nature of the research.

One eligible respondent in Biometrics Department refused to be involved in the study. His justification for refusing was that his belief was that PC disease is caused by evil spirit and not a medical problem. The increase of the calculated sample size from 488 to 600 helped to accommodate the cases of attrition that were encountered.

CHAPTER FOUR

4.0 RESULTS

4.1 Respondents' Sociodemographic Characteristics

The socio-demographic characteristics of the respondents are presented in Table 4.1. All the 590 respondents were male staff members on pensionable appointment at the UCH, Ibadan. The ages of the participants ranged from 25 - 60 years with a mean of 37.2 ± 6.2 years. Majority (67.2%) of the respondents' age were not within the recommended age for PC screening services which is > 40 years. Majority (67.1%) of the respondents were married. Almost seventy-three percent (72.7%) were Christians, 26.4% were Moslems while 0.8% were adherent of the Traditional African Religion faithful. The respondents were predominantly Yoruba (82.4%). The details relating to other ethnic groups are contained in the Table under reference.

The respondents could be differentiated into five categories based on the nature of their primary assignment; these are highlighted in Table 4.2. The administrative staff (26.5%) topped the list closely followed by respondents who were clinical staff (23.4%). The paramedical staff accounted for 22% (See the Table 4.2 for details). The respondents' working experiences are presented in Table 4.3. Their experiences ranged from 1-32 years with mean of 6.9 ± 4.7 years. Majority (85.6%) had been in the service of UCH for 10 years. Respondents with a working experience of five years or less accounted for 18.8%. Their highest levels of education are shown in Table 4.4. Respondents with bachelor's degree (33.1%) topped the list, with HND constituting 21.9% Respondents with post-Graduate education accounted for 11.7% (See Table 4.4 for details)

Table 4.1: Respondents' Age, Marital Status, Religion and Ethnic Group

N = 590

Characteristics	No	%
Age[a] group in years		
25 – 29	12	2.0
30 – 34	181	30.8
35 – 39	203	34.4
40 – 44	107	18.1
45 – 49	52	8.8
50 – 54	23	3.9
55 and above	12	2.0
Marital Status		
Single	168	28.5
Cohabiting	10	1.7
Married	396	67.1
Separated	7	1.2
Divorced	5	0.8
Widow	4	0.7
Religion		
Christianity	429	72.7
Islam	156	26.5
Traditional/ African Religion	5	0.8
Ethnic group		
Yoruba	486	82.4
Hausa	20	3.4
Ibo	58	9.8
South-South (Niger Delta/ Delta/ Edo)	16	2.7
Table	10	1.7

Table 4.2: Categoriznion of Respondents' Nature of Services Rendered

N = 590

Category of staff	No	%
Clinical Staff **	138	23.4
Paramedical Staff +	130	22.0
Administrative Staff ++	156	26.5
Maintenance Officer +++	110	18.6
Records And Information Management Staff ***	56	9.5

**Clinical Staff: Medical doctors of various specialties

+ Paramedical Staff: Nurses, Pharmacists, Laboratory Scientists. Dieticians, Radiotherapists/ Medical Imaging Scientists, Physiotherapists, Medical Social Workers, Environmental Health Sanitation Officers, Health Attendants, Orthopaedic Assistants, Laboratory Assistants and Microbiologists

++ Administrative Staff: Administrative Officers, Clerical Officers, Pension, NHIS Staff, Confidential Secretaries, Accountants and Auditors

+++ Maintenance Officers: Facility Managers, Technicians, Instrument, Hospital Services, HTO, Works, Engineers, Porters and Drivers

***Records and Information Management Staff: Record officers, Computer Scientists, Librarians, Statisticians and Information technology officers and Researchers

Table 4.3: Respondents' Working Experiences (in years) as Staff of UCH

N=590

Working experience in years*	No	%
≤ 5	288	48.8
6 - 10	217	36.8
11-15	49	8.3
16 – 20	22	3.7
21- 25	11	1.9
26 – 30	2	0.3
31 and above	1	0.2

Table 4.4: Respondents' Highest Level of Education

N= 590

Highest Level of Education	No	%
Completed primary education	11	1.9
Some secondary education	9	1.5
Completed secondary education / Technical	24	4.1
Polytechnic (OND)	92	15.6
Polytechnic (HND)	129	21.9
Registered Nurse/Midwife	4	0.6
NCE	35	5.9
Bachelor's degree	195	33.1
MSC/MA *	62	10.5
MBA *	2	0.3
MBBS / Fellowship	3	0.5
ICAN (Professional)	1	0.2
MPH *	21	3.6
PhD *	2	0.3

*Post-graduate (academic) = 87 (14.7%)

4.2 Awareness and Knowledge

Table 4.5 shows respondents' level of awareness and knowledge relating to what PC is about. Many (70.3%) had ever heard of PC and 69.7% of this group could describe PC accurately. The details of incorrect responses are contained in the Table under reference Details of respondents' sources of information on PC are shown Table 4.6. Work place (53.8%) topped the list of sources of information followed by the Internet (51.3%), news paper (50.1%), medical journals (44.7%), magazine (43.2%), television (41.5%), radio (40.1), colleagues (39.5%), and seminar/workshop/Departmental seminar (38.5%). Respondents' spouse (10.4) was the least source of information (See Table 4.6).

Table 4.7 contains respondents' knowledge of the age that a man's susceptibility to PC increases. Majorities (63.2%) of the respondents were able to state that 40 years and above is the age at which a man's susceptibility to PC increases. Other identified ages of increase susceptibility to PC were ≥70 years (12.6%); ≥18 years (9.6%); as from the age of puberty (5.4%); ≥50 years (3.7%) and right from birth (2.2%). Respondents' knowledge relating to the likely signs and symptoms of PC are highlighted in Table 4.8. The correct specific symptoms of PC known to the respondents included difficulty in urinating /delayed or slowed start of urinary stream (88.2%), dribbling or leakage of urine/ most often after urinating/ slow urinary stream (88.5%), straining when urinating, or not being able to empty out all of the urine (81.1%). The other symptoms listed by respondents are shown in the Table.

Table 4.9 contains respondents' knowledge relating to factors which could be associated with the occurrence of PC. Most (91.1%) correctly stated that age is one of the factors that can be associated with the occurrence of PC followed by heredity (90.1%), family history of PC (86.7%), race (86.0%) and type of dietary intake (79.2%). Obesity (57.9%) was the least mentioned factor (See the Table under reference).

Respondents' knowledge relating to the prevention of the likelihood of dying from PC is shown in Table 4.10. Better health care service (99.0%) and periodic medical examination (97.6%) were listed by most respondents as ways of preventing PC-related death. The other correct factors that were itemized by the respondents are highlighted in the Table. Only 13% stated that the likelihood of dying from PC cannot be prevented (for details, see Table4.10).

Table 4.11 summarizes respondents' reasons for stating that the risk of getting PC cannot be reduced or prevented. The adduced reasons included the disease being genetically inherited (11.3%), lack of PC-related management resources in PC care (7.5%), PC as part of the ageing process (3.8%), and the prevailing poor health services (3.8%) (For details, see Table 4.11). Over half (57%) were not aware of such health care facilities in Ibadan

Most (96.1%) of them who were aware of names of health facilities that provide PC screening services correctly mentioned UCH/Nuclear Medicine/ Chemical Pathology while others (3.9%) also correctly listed the other health facilities in the city that provide PC screening services.

Respondents' sources of information on PC screening services are presented in Table 4.12. Work place (36%) topped the list followed by colleagues (27.7%) and the Internet (25.9%). The least source of information was the respondents' spouse (6.7%). The other sources of information listed by the respondents are shown in the Table.

Majority (61.0%) of them correctly identified Nuclear Medicine and Pathology Departments as the locations where PC screening services could be carried out within the UCH.

Respondents' knowledge relating to PC generally and PC screening services in particular are highlighted in Table 4.13. More than half (57.0%) knew that rectal examination is among such test for detecting PC. Majority (74.4%) stated correctly that early PC screening test should be carried out before the onset of symptom of PC disease. Majority (74.8%) stated correctly that surgery or radiation can be used to treat/cure PC in its early stage. It was correctly reported by 64.5% that PC can be transmitted from father to son while 62.3% also accurately stated that a man can have PC without having any pain or symptoms (For details see Table under reference).

The results relating to the classification of respondents' level of knowledge as poor, fair or good is presented in Table 4.14. A 31-point knowledge scale was used to carry out the assessment. The overall mean knowledge score was 12.6±7.5. Slightly over half (53.2%) of the respondents had poor knowledge (< 15 points). Respondents with fair (≥15 -24) and good (25-31) were 43.4% and 3.4% respectively. Respondents' level of knowledge was also determined by selected socio-demographic characteristics such as "category of staff"

"working experience", "age" and "family history". The distributions of knowledge scores by category of staff are shown in Table 4.15. The proportion of respondents with good knowledge of PC and PC screening services among clinical staff (80%) topped the list. Similarly clinical staff (34.0%) constituted the highest proportion of those who had fair knowledge as only 11.1% of them had poor knowledge (See the Table for other details). Table 4.16 contains the comparison of respondents' mean knowledge scores by category of staff using the F-test. The mean knowledge score among the clinical staff was higher (17.4±6.5) than the scores for each of the other categories. The mean score for the Administrative Staff constituted the lowest (9.8±6.5). Overall, there was a significant difference between the mean knowledge scores of the respondents by category of staff (For details, see Table 4.16).

The comparison of respondents' mean knowledge scores by working experience in years is shown in Table 4.17. Respondents who had worked for less than nine years had a mean knowledge score of 12.3±7.8 while those that had worked for 10 years and above had a mean knowledge score of 13.6±6.3. The difference was however not statistically significant (P>0.05) (For details, see Table under reference).

The results of the comparison of respondents' mean knowledge scores by age are highlighted in Table 4.18. Respondents within the age range of 25-39 had a score of 12.7±7.8 while those aged 40 and above had a score of 12.4±6.9. The difference in the mean scores was not statically significant (See Table 4.18 for details). Table 4.20 presents the comparison of respondents' mean knowledge scores by prevalence of adoption of PC screening services. Respondents that had never adopted PC screening had the lowest mean knowledge score of 12.4±7.5 while those that had ever had the test had a higher mean score of 16.6±6.5. The mean scores were significantly different (p<0.05) (See Table 4.19 for details)

The comparison of respondents' mean knowledge scores by family history of PC is shown in Table 4.20. Respondents with family history of PC had a mean knowledge score of 16.0±12.7 while those with no family history of PC only had 12.4±7.6. The difference in the two groups' mean knowledge score was statistically significant. The comparison of respondents' mean knowledge scores by intake of PC risk-related foods/ meat and fish is summarized in Table 4.21. Respondents that enjoyed consumption of cheese had a mean

knowledge score of 13.5±7.4; those that consumed full cream milk had a mean knowledge score of 13.6±7.7 while respondents that enjoyed intake of fried foods had a mean knowledge score of 13.5±7.6. Respondents who enjoyed consumption of PC risk- related meat and fish had lower mean knowledge scores of 12.6±7.5 and 12.7±7.4 respectively (See Table for details).

Tables 4.22 to 4.24 summarize relationship between respondents' knowledge of PC and PC screening, and selected demogrnphic variables. The selected variables were age group and working experience. The respondents' distributions of working experience with good scores were ≤40 years (95.0%), >40 years (5.0%), ≤5 years (45.0%), >5 years (55.0%), ≤ 15 (95.0%) and >15 (5.0%). Overall there was no significant relationship between knowledge of PC and PC screening and two (working experience among ≤5 years and >5 years, ≤15 years >15 years) of the selected demographic characteristics while there was significantly higher proportions of respondents aged <40 years had fair (65.6%) and good (95.0%) knowledge related to PC compared to those aged >40 years (See Tables for details).

Table 4.5: Respondents' Awareness and Knowledge Relating to what Prostate Cancer is about

Awareness and Knowledge	No	%
Ever heard of prostate cancer (n=576)		
Yes	405	70.3
No	171	29.7
Meaning/Description of Prostate cancer (n=373)		
Cancer of the prostate gland *	260	69.7
Inflammation of the prostate gland	43	11.5
Cancer of the male reproductive organ	32	8.6
Inability to urinate	38	10.2

*Correct response

Table 4.6: Respondents' Sources of Information on Prostate Cancer Screening Services

N= 405

Sources	No**	%
Work place	218	53.8
Internet	208	51.3
News paper	203	50.1
Medical journals	181	44.7
Magazine	175	43.2
Television	168	41.5
Radio	64	40.1
Colleague	60	39.5
Seminar/Workshop/Departmental/seminar	56	38.5
My friend	105	25.9
My wife	42	10.4
Others* (n =15)	15	3.7

**Multiple responses were present

*Other sources (n= 15): Medical School (2.2%), Books (1%), Church (0.25%) and Health worker (0.25%)

Table 4.7: Respondents' Knowledge of the Age** at which a Man's susceptibility to Prostate Cancer increases

N= 405

Knowledge-related Variables	No	%
Right from birth/ No specific age / No certain age for it	9	2.2
As from the age of puberty	22	5.4
≥18 years	39	9.6
≥30 years	8	2.0
≥40 years **	256	63.2
≥50 years	15	3.7
≥60 years	4	1.1
≥70	51	12.6
≥80 years	1	0.2

Table 4.8: Respondents' Knowledge about to Signs and Symptoms of PC

Signs/ symptoms of PC	Responses (%)	
	Yes	No
Headache (n=130)	87 (66.9)	43 (33.1)*
Difficulty in urinating / delayed or slowed start of urinary stream(n=348)	307(88.2)*+	41 (11.2)
Uneasy feelings in the penis/ straining when urinating/ not being able to empty out all of the urine (n=265)	215 (81.1)*+	50 (18.9)
Uneasy feelings around the anus (n=196)	85 (43.4)	111 (56.6)*
Uneasy feelings in the anus (n=197)	82 (41.6)	115 (58.4)*
Uneasy feelings at the lower abdominal region (n= 244)	189 (77.5)*	55 (22.5)
At times there are no early signs (n= 267)	227 (85.0)*	40 (15.0)
Dribbling of urine / leakage of urine, most often after urinating, slow urinary stream (n=330)	292 (88.5)*+	38(11.5)
Others (n=7)	7 (1.7)	398(98.3)

*correct signs and symptoms

**Others (n=7): weight loss (1.0%), back pain (0.5%), blood in the urine (0.2%)

*+ Highly suggestive of PC: difficulty in urinating, delayed or slowed start of urinary stream (88.2%), dribbling or leakage of urine, most often after urinating, slow urinary stream (88.5%), straining when urinating/ not being able to empty out all of the urine (81.1%).

Table 4.9: Respondents' Knowledge Relating to Factors which could be Associated with the Occurrence of Prostate Cancer

Factors which could be associated with PC	Responses (%)	
	Yes (%)	No (%)
Age (n=325)	296 (91.1)*	29 (8.9)
Inherited genes (n=263)	237 (90.1)*	26 (9.9)
Family history of prostate cancer (n=316)	274 (86.7)*	42 (13.3)
Race (n=171)	147 (86.0)*	24 (14.0)
Dietary intake (n=245)	194 (79.2)*	51 (20.8)
Sexually transmitted infection (n=220)	168 (76.4)	52 (23.6)*
Excessive alcohol consumption (n=234)	176 (75.2)	58 (24.8)*
Cigarette smoking (n=240)	180 (75.0)*	60 (25.0)
Multiple sexual partner (n=213)	146 (68.5)	67 (31.5)*
Occupation (n=213)	126 (59.2)*	87 (40.8)
Obesity (n=195)	113 (57.9)*	82 (42.1)
Physical inactivity (n=180)	96 (53.3)	84 (46.7)*

*correct factors

Table 4.10: Respondents' Knowledge Relating to the Prevention of the Likelihood of Dying from Prostate Cancer

Prevention of the likelihood of dying from PC	Responses (%)	
	Yes (%)	No (%)
Whether PC-related death can be prevented (n=405)	352 (87.0)*	53 (13.0)
Ways of preventing PC-related death		
Better health care service (n=301)	298 (99.0)*	3 (1.0)
Periodic medical examination(n=329)	321 (97.6)*	8 (2.4)
Improved sex education (n=265)	210 (79.2)	55 (20.8)*
Others (correct)(n =8)	8 (2.3)*+	344(97.7)
Others (Incorrect)(n=8)	8 (2.3)**	344(97.7)

* Correct response

*+others (correct) (n = 8): taking of appropriate diet/adequate fluid and fruit (1.1%), public enlightenments about the disease (0.9%); and early detection/ screening (0.3%)

**others (incorrect) (n = 8): regular prostate gland examination as from age 65 (0.6%), moderate participation in social activities (0.3%), vaccine (1.1%) and use of the drugs for PC according to the physician direction (0.3%)

Table 4.11: Respondents' Reasons for Stating that Risk of Getting PC cannot be Reduced or Prevented

N=53

Adduced reasons	Responses	
	No	%
Because it is genetically inherited	6	11.3
Because it is one of the diseases that is part of the ageing process	2	3.8
The disease is one which is due to people's exposure to many things that affect our health negatively	1	1.9
Due to poor health services	2	3.8
Lack of PC-related management resources (drugs and specialists in PC care)	4	7.5

Table 4.12: Respondents' Sources of Information on Prostate Cancer Screening Services

N = 405

Sources	No**	%
Work place	146	36.0
Colleagues	112	27.7
Internet	105	25.9
News papers	100	24.7
Magazine	95	23.5
Medical journals	92	22.7
Radio	90	22.2
Television	81	0.0
Seminar/Workshop/ Departmental / seminar	78	19.3
My friend	53	13.1
My wife	27	6.7
Others* (n =9)	9	2.2

**Multiple responses were present.

*Other sources of information (n=15): medical school (0.2%); books (1.8%) and Urologists (0.2%).

Table 4.13: Respondents' Knowledge Relating to Prostate Cancer Generally and Prostate Cancer Screening services

Knowledge-related Statement	Responses	
	True (%)	False (%)
A rectal examination is the recommended procedure for detecting haemorrhoid and not prostate cancer (n= 451)	194 (43.0)	257 (57.0)*
The Prostate Specific Antigen (PSA) is a blood test that can be used to detect the antibody against PC. (n=474)	348 (73.4)	126 (26.6)*
Prostate cancer cannot be cured even when detected early (n= 481)	179 (37.2)	302 (62.8)*
Prostate cancer cannot be treated even when detected early (n =478)	153 (32.0)	325 (68.0)*
Prostate cancer can be prevented by regular exercise (n =459)	250 (54.5)	209 (45.5)*
Prostate cancer can be transmitted from father to son (n =468)	194 (41.5)*	274 (58.5)
Prostate cancer is particularly more common among persons aged 25 to 50 (n =476)	251 (52.7)	225 (47.3)*
A man can have prostate cancer without having any pain or symptoms (n =472)	294 (62.3)*	178 (37.7)
Surgery or radiation can cure prostate cancer in its early stage (n=464)	347 (74.8)*	117 (25.2)
Early detection of prostate cancer should be done in the absence of symptom of prostate cancer (n=476)	354 (74.4)*	122 (25.6)
Men with family history of prostate cancer are more likely to get the disease in the future (n =499)	322(64.5)*	177(35.5)

*Correct responses

Table 4.14: Classification of Respondents' Level of Knowledge

N= 590

Level of knowledge* in points	Proportion of respondents (%)	Qualitative evaluation
< 15	314 (53.2)	Poor
≥ 15-24	256 (43.4)	Fair
25-31	20 (3.4)	Good

*It should be noted that the overall mean knowledge score was 12.6±7.5; range. 0-29

Table 4.15: Distribution of Knowledge Scores by Category of Staff

N =590

Category of staff	Level of Knowledge		
	<15	≥15-24	25-31
	Poor (%)	Fair (%)	Good (%)
Clinical Staff	11.1	34.0	80.0
Paramedical Staff	20.4	24.6	15.0
Administrative Staff	35.4	17.2	5.0
Maintenance and Supportive Staff	22.3	15.6	0.0
Records and Information Staff	10.8	8.6	0.0

Table 4.16: Comparison of Respondents' Mean Knowledge scores by Category of Staff

Category of staff	NO	$\bar{X}$ score	SD	F	P- value
Clinical Staff	138	17.37	6.5	27.178	0.00
Paramedical staff	130	13.48	7.4		
Records and information staff	56	11.8	6.8		
Maintenance and supportive staff	110	10.27	7.5		
Administrative Staff	56	9.75	6.5		

P > 0.05

Table 4.17: Comparison of Respondents' Mean Knowledge Scores by Working Experience in Years

Working experiences in years	No	$\bar{X}$ score	SD	t- value	P- value
≤ 9	459	12.3	7.8	1.811	0.07
≥ 10	131	13.6	6.3		

P > 0.05

Table 4.18: Comparison of Respondents' Mean Knowledge Scores by Age

Age group in years	No	$\bar{X}$ score	SD	t- value	P- value
25-39	396	12.70	7.8	0.545	0.59
≥ 40	194	12.35	6.9		

P > 0.05

Table 4.19: Comparison of Respondents' Mean Knowledge Scores by Prevalence of Adoption of Prostate Cancer Screening Services

Pattern of adoption of PC services	No	$\bar{X}$ score	SD	t- value	P- value
Ever adopted	23	16.61	6.4	2.621	0.01
Never adopted	566	12.44	7.5		

P < 0.05

Table 4.20: Comparison of Respondents' Mean Knowledge Scores by Family History of PC

Family history	No	$\bar{X}$ score	SD	t -value	P- value
Positive	35	16.00	4.7	2.8	0.01
Negative	548	12.39	7.6		

P < 0.05

Table VIII: Comparison of Respondents' Mean Knowledge Scores by Intake of Prostate Cancer Risk-Related Foods

Consumption of risk-laden food	No	$\bar{X}$ score	SD	t- value	P- value	Level of significant
Cheese						
Yes	191	13.5	7.4	-0.294	0.77	P > 0.05
No	101	13.7	8.2			
Full cream milk						
Yes	225	13.6	7.7	0.041	0.97	P > 0.05
No	84	13.6	7.8			
Fried food						
Yes	332	13.5	7.6	0.321	0.02	P < 0.05
No	54	10.9	8.1			
Risk-laden meat						
Yes	572	12.6	7.5	0.591	0.55	P > 0.05
No	18	11.6	8.6			
Risk-laden fish						
Yes	487	12.7	7.4	0.640	0.52	P > 0.05
No	103	12.2	8.0			

Table 4.22: Relationship between Knowledge and Age Group

Age (in years)	Level of knowledge					
	Poor	Fair	Good	X^2	df	P-value
≥ 40	209 (66.6%)	168 (65.6%)	19(95.0%)	7.348	2	0.03
>40	105 (33.4%)	88 (34.4%)	1 (5.0%)			

P < 0.05

Table 4. 23: Relationship between Knowledge and Year of Working Experience in UCH (≤ 5 & > 5)

Years of working experience	Level of knowledge					
	Poor	Fair	Good	X^2	df	P-value
≤ 5	166 (52.9%)	113 (44.1%)	9 (45.0%)	4.918	2	0.11
> 5	148 (47.1%)	143 (55.9%)	11(55.0%)			

P > 0.05

Table 4.24: Relationship between Knowledge and Year of Working experience in UCH (≤ 15 &> 15)

Years of working experience	Level of knowledge					
	Poor	Fair	Good	X^2	df	P-value
≤ 15	296 (94.3%)	239 (93.4%)	19 (95.0%)	0.247	2	0.88
> 15	18 (5.7%)	17 (6.6%)	1 (5.0%)			

P > 0.05

4.3 Perception Relating to Prostate Cancer and Prostate Cancer Screening Services among Respondents

Table 4.25a and b presents respondents' perceptions relating to PC and PC screening services. Slightly less than half (48.6%) of the respondents had appropriate (positive) perception relating to the occurrence of PC by not agreeing that the disease only occurs in people who are too sexually active. Majority (73.0%) disagreed with the perception that PC only occurs in people who do not believe in God. Respondents were asked about their perception of severity of PC. Few of them (22%) had the wrong perception that PC is a mild disease. Some (24.6%) were of the wrong perception that PC is not as serious as people are made to believe. Many (36.1%) were of the perception that treatment of PC can lead to impotence.

When asked about their perception on PC screening test, very few (18.9%) stated negative perception that early detection of prostate cancer is waste of time: detecting it cannot stop it from killing anyone who has it. Similarly 17.9% had a negative perception that PC screening is a useless exercise because there is no cure for the disease even if it is detected. A total of 47.2% of the respondents agreed positively that benefits of PC screening outweigh the challenges one goes through during the screening procedure. More than a third (34.5%) of respondents agreed positively that PC screening tests in Nigeria are not reliable because of the poor state of our equipment.

Other perceptions of the respondents with regards to PC screening services which are not amenable to classification into appropriate or inappropriate but can affect adoption of PC screening include, cost of screening for PC is too high (agreed= 40.9%; disagreed =32.4%) and procedure for detecting PC is too painful (agreed =24.4%; disagreed =45.7%) (For details see Table under reference)

The result relating to the classification of respondents' level of perception as poor and good is presented in Table 4.26. A 20-point perception scale was used to carry out the assessment. Some (45.3%) of the respondents had non-favourable perception (< 10 points) and many (54.7%) of them had favourable perception (≥10).

Table 4.25: Perception Relating to PC and PC Screening Services

Perception relating to PC and PC screening services	Assessment		
	Agree (%)	Disagree (%)	Undecided/No opinion (%)
Prostate cancer only occurs in people who are too sexually active (n =517)	147 (28.4)**	251 (48.6)*	119 (23.0)
Prostate cancer is a mild disease(n =513)	113 (22.0)**	311(60.7)*	89 (17.3)
The procedure for early detection of prostate cancer can worsen the disease if one has it (n =513)	124 (24.2)**	268 (52.2)*	121 (23.6)
Early detection of prostate cancer is a waste of time; detecting it cannot stop it from killing anyone having it eventually (n =518)	98 (18.9)**	313 (60.4)*	107 (20.7)
Prostate cancer only occurs in the people who do not believe in God (n =526)	60 (11.4)**	384 (73.0)*	82 (15.6)
Cost of screening for prostate cancer is too high (n =515)++	176 (34.2)	211 (40.9)	128 (24.9)
Treatment of prostate cancer can lead to impotence (n =510)	184 (36.1)*	199 (39.0)**	127 (24.9)
Benefits of prostate cancer screening outweigh the challenges one goes through during the screening procedure (n =513)	242 (47.2)*	147 (28.7)**	124 (24.1)

*Appropriate/positive perception statement

**Inappropriate/negative perception statement

++ Not amenable to classification into appropriate or inappropriate but perception can already affect adoption of PC screening

Table 4.26b: Perception relating to PC and PC Screening Services (continued)

Perception relating to PC and PC screening services	Assessment		
	Agree (%)	Disagree (%)	Undecided/No opinion (%)
Cancer screening tests in Nigeria are not reliable because of the poor state of our equipment (n =519)	179 (34.5)*	236 (45.5)**	104 (20.0)
The procedure for detecting prostate cancer is too painful (n =505)++	123 (24.4)	231 (45.7)	151(29.9)
Prostate cancer is not as serious as people are made to believe (n =513)	126 (24.6)*	279 (54.4)**	108 (210)
Prostate cancer screening is a useless exercise because there is no cure for the disease even if it is detected (n =508)	91 (17.9)**	316(62.2)*	101 (19.98)

*Appropriate/ positive perception statement

** Inappropriate/ negative perception statement

++ Not amenable to classification into appropriate and inappropriate but perception can already affect adoption of PC screening

Number of no risk-laden perception (Appropriate/ +ve perception) 420 (71·2%)

Number of Risk laden perception (Inappropriate/ –ve perception) 170 (28·8

Table 4.26: Classification of Respondents' Perception Score

N= 590

Level of perception* points	Proportion of respondents in (%)	Qualitative evaluation
< 10	267 (45.3)	Poor
≥ 10	323 (54.7)	Good

* Poor perception was categorized into non-favourable perception.

*Good perception was categorized into favourable perception

* Note: the assessment is on 20-point perception scale

4.4 Prostate Cancer-related Risk Factors

Table 4.27 shows the family history of PC among the respondents. The prevalence of family history of PC was 6.0%. Respondents' family members or relatives who had had PC were grand father (37.1%), father (17.1%) and brother (8.6%). Only 3.3% had lost a relation to PC. The Table also highlights the family relationship shared with their family member. A majority (78.9%) were extended family while the rest (21.1%) were nuclear family members (See Table 4.27for more details).

The prevalence and pattern of smoking or use of tobacco products among the respondents are contained in Table 4.28. More than a quarter (28.5%) of the respondents had ever smoked cigarette or used tobacco products and 22.2% among this group were currently smoking. Majority (70.3%) of the current smokers smoked five sticks of cigarette or less per day with a mean of 3.7 ±3.0. Over four-fifth (86.6%) had smoked or used tobacco products for 10 years or less with a mean of 6.8 ±4.4 (See Table 4.28 for details).

Table 4.29 presents details of foods respondents enjoyed eating most of the time. The PC risk-related foods they enjoyed eating were fried foods (86.0%), full cream milk (72.8) and cheese (65.4%). Intake of foods that are not PC risk-related consumed by respondents included fruits (97.4%), vegetables (97.2%), beans (89.9%), yam (93.7%) and rice (96.6%) (See Table 4.29 for details). Respondents' consumption of PC-risk related foods was higher (68.0%) than intake of non PC-risk related foods.

The typologies of PC-risk related food, meat and fish that not PC-risk related most commonly consumed by respondents are highlighted in Table 4.30. The most common meat and fish intake that are not PC-risk related enjoyed most included of old layer chicken with skin, cockerel chicken with skin, turkey, pig, pork, *ponmo*, *ugeuneu*, *bokoto*, cow intestine and goat meat while the most common PC - risk related fish comprised of *alaran* fish (*okueko*) and catfish. The prevalence of intake of PC - risk related meat and fish are 96.7% and 82.5 respectively (See Table 4.30 for details). Majority of the

Table 4.27: Family History of Prostate Cancer among the Respondents

Family history	No	%
History of diagnosis of PC among family member(s) (n = 583)		
Yes**	35	6.0
No	548	94.0
Relationship with family member(s) who had PC (n = 35)		
Grand father**	13	37.1
Father **	6	17.1
Brother **	3	8.6
Uncle /cousin	13	37.2
Family member ever died of PC (n = 582)		
Yes	19	3.3
No	563	96.7
Type of family relationship shared with the late family (n = 19)		
Nuclear family member **	4	21.1
Extended family member	15	78.9

**positive family history

Table 4.28: Prevalence and Pattern of Smoking or Use of Tobacco Products among Respondents

Prevalence and Pattern	No	%
Ever smoked cigarette/ use tobacco products (n = 586)		
Yes	167	28.5
No	419	71.5
Currently smoking / using tobacco products (n = 167)		
Yes	37	22.2
No	130	77.8
Number of sticks of cigarette smoked per day (n = 37) *		
≤ 5 sticks/day	26	70.3
≥ 5 sticks and above/day	11	29.7
Length of smoking/ tobacco product use (in years) ** (n = 37)		
≤10 years	32	86.5
≥10 years and above	5	13.5

*Mean of stick of cigarette smoked per day = 3.7±3.0; Range 1 – 10 sticks

**Mean of length of smoking/ using tobacco product = 6.8±4.4; Range 1 - 21years

Table 4.29: Foods Respondents Enjoyed Eating Most of the Time

Foods	No	%
Fruits (n= 308)		
Yes	300	97.4
No	8	2.6
Vegetables (n= 509)		
Yes	495	97.2
No	14	2.8
Cheese (N= 292)		
Yes #	191	65.4
No	101	34.6
Beans (n= 493)		
Yes	443	89.9
No	50	10.1
Low-fat milk (n= 299)		
Yes	221	73.9
No	78	26.1
Full-cream milk (n= 309)		
Yes #	225	72.8
No	84	27.2
Yam (n=431)		
Yes	404	93.7
No	27	6.3
Rice (n= 535)		
Yes	517	96.6
No	18	3.4
Fried foods (n= 386)		
Yes #	332	86.0
No	54	14.0
Solid food (n=112)**	112	100.0

#Risk-laden foods: cheese, full cream milk and fried foods

**Solid foods: *eba, fufu and* pounded yam (all are carbohydrates)

Table 4.30: Typologies of Prostate Cancer-related risk- and non-risk Meat and Fish Consumed by Respondents

Typologies of PC-related risk-laden and non-risk-laden Meat and Fish	No	%
Risk-laden meat * (n=590)		
Yes*	572	96.9
No	18	3.1
Risk-laden fish ** (n=590)		
Yes **	487	82.5
No	103	17.5
Non-risk-laden meat + (n=590)		
Yes+	18	3.1
No	572	96.9
Non-risk-laden fish ++ (n= 590)		
Yes ++	103	17.5
No	487	82.5

*Old layer chicken with skin, Cockerel chicken with skin, Turkey, Pig, Pork, *Punmo*, *Agemowo*, *Bokoto*, Cow intestine and goat meat

** *Alaran* fish (*okueko*), catfish

+ *Kundi*, Bush-meat, Snail

++ Snakefish, Crayfish, *Panla* fish, Dry fish, *Sinwi* and Electric fish

4.5 Prostate Cancer Screening Experiences

The respondents' PC screening history is summarized in Table 4.31. Only 3.9% of the respondents had ever been screened for PC. Among this group a majority (87.0%) were screened for PC only once with UCH being the place where most (95.7%) of them were screened. The most common PC screening test experienced by respondents was the PSA (43.5%). Majority (35.2%) of the respondents that had ever been screened were not within the recommended age for PC screening. The prevalence of positive PC test was 17.4% (See Table 4.31 for more details). Mean age of the respondents that had ever been screened was 39.7±6.1years (For details see Table 4.31).

Table 4.31: Respondents' Pattern of Utilisation Prostate Cancer Screening Services

Utilisation of Prostate Cancer Screening	No	%
Ever being screened for PC(n = 589)		
Yes	23	3.9
No	566	96.1
Frequency ever screened for PC(n= 23)		
Once	20	87.0
Twice	2	8.7
Three times	1	4.3
Places where PC screening tests were ever done(n = 23)		
UCH	22	95.7
Private Hospital	1	4.3
Types of PC screening test ever received(n= 23)		
PSA	10	43.5
Blood	1	4.3
CT Scan	1	4.3
No response (NR)*	11	47.9
Outcome of PC test ever done (n = 23)		
Positive	4	17.4
Negative	15	65.2
NR*	4	17.4
Respondent age category (n = 23)		
30 – 39 years	15	65.2
40 years and above	8	34.8

*Mean Age 39.7±6.1 Median 41.5 Range 30-53

*No responses were included

4.6 Signs and Symptoms of Prostate Cancer among Respondents

The signs and symptoms of PC among respondents is presented in Table 4.32. The sign and symptom that topped the list was the experience of bone pain most often (11.6%) in the lower back and pelvic bones. The other experienced suggestive signs and symptoms were delayed or slowed start of urinary stream (10.2%), dribbling or leakage of urine most often after urinating (6.3%), and experience of slow/poor urinary stream (6.3%). Other details relating to suggestive signs and symptoms ever experienced are shown in the Table. The positive suggestive signs/symptoms of PC was 17.1% among the respondents (For details see Table 4.32).

Table 4.33 contains information relating to the prevalence of discussing signs and symptoms of PC with someone as well as the persons ever discussed suggestive signs /symptoms of PC with. Some (31.7%) had ever shared any of the experienced signs/symptoms of PC. This group of respondents had discussed with the following: parents (40.6%); colleagues (40.6%); wife (25.0%) and pharmacist (40.1). Only few (6.3 %) discussed with a Urologist (See Table 4.33 for details). A place where respondents usually sought health care advice or treatment for any ailment is shown in Table 4.34. The UCH was the usual place for majority (87.5%). This was followed by patronage of private health care facilities or private doctors (55.0%) while the least visited was herbal home (16.7%).

Table 4.32: Signs and Symptoms of Prostate Cancer among Respondents

Signs and symptoms	Yes (%)	NO (%)
Ever experienced delayed or slowed start of urinary stream (n =411)	42 (10.2)*	369 (89.8)
Ever experienced dribbling or leakage of urine most often after urinating (527)	33 (6.3)*	494 (93.7)
Ever experienced slow/poor urinary stream (n =527)	33 (6.3)*	494 (93.7)
Ever experienced straining when urinating, or not being able to empty out all the urine (n =528)	32 (6.1)*	496 (93.9)
Ever seen blood in your urine or semen (n =528)	32 (6.1)*	496 (93.9)
Ever experienced bone pain most often in the lower back and pelvic bones (n=517)	60 (11.6)*	457 (88.4)

*Suggestive signs and symptoms

Number of respondents with positive signs and symptoms =101 (17.1)

Number of respondents with negative signs and symptoms = 489 (82.9)

Table 4.33: Proportion of respondents who Discussed Signs and Symptoms of Prostate Cancer with Someone

Sharing of signs and symptoms of PC with someone	Yes (%)	No (%)
Prevalence of ever discussing any of these signs with someone (n =101)	32 (31.7)	69 (68.3)
Persons ever discussed signs/ symptoms with		
Parents (n =13)	13 (40.6)	59.4
Wife (n=14)	8 (25.0)	6 (75.0)
Colleague (n=18)	13 (40.6)	5 (59.4)
Urologist (n =14)	2 (6.3)	12 (93.7)
General Surgeon (11)	2 (6.3)	9 (93.7)
Laboratory Scientist (n = 11)	2 (6.3)	9 (93.7)
Pharmacist (n=10)	4 (12.5)	6 (87.5)
General Doctor (n=32)	3 (9.4)	29 (90.6)

Note: Multiple responses were included

All 69 (68.3%) respondents with "never discussed" signs and symptoms of PC were excluded from analysis

Table 4.34: Places where Respondents Usually Sought Health Care Advice or Treatment for any Ailment

What place	Response	
	Yes (%)	No (%)
UCH (n =16)	14 (87.5)	2 (12.5)
Private hospital/Clinic/Private doctor (n =20)	11 (55.0)	9 (45)
Pharmacy (n =18)	7 (38.9)	11 (61.1)
Government hospital (n =20)	11 (55.0)	9 (45)
Herbal home (n =12)	2 (16.7)	10 (83.3)

Barriers and Benefits to the utilisation of PC Screening Services

Barriers adduced by respondents for non utilization of PC screening services are summarized in Table 4.35. Absence of a family of history of PC (61.8%) was the most common reason. The other barriers included lack of time and painful aspect of the DRE procedure (43.0%), and fear of the outcome of the result (37.9%). Over one quarter (27.3%) of the respondents indicated embarrassment during DRE procedure as one of the barriers for not adopting PC screening services. Other responses from the respondents included no adequate information (56.6%), not within the age of the screening (18.2%) and no screening policy in Nigeria (See Table 4.35for details).

Table 4.36 presents benefits listed by respondents which could help promote the adoption of PC screening services. The benefits included public enlightenment about PC (12.1%), affordability of this service (11.4%) and easy access to the service (3.8%). Majority (67.3%) adduced reasons were vague. The beneficial factors that facilitated adoption of PC screening services by respondents that had ever been screened for PC are contained in Table 4.36. Only eight out of the 23 respondents (see Table 4.37) who had ever been screened for PC listed the factors that influenced them to utilize PC. The need to find out if they had PC topped (37.5%) the enumerated factors. About one quarter of the responses was vague (For details see Table under reference).

Table 4.35: Barriers Adduced by Respondents for not Adopting PC Screening Services

Adduced Barriers	Yes (%)	No (%)
Not having family history of prostate cancer (n =492)	304 (61.8)	188 (38.2)
Not having time (n =466)	175 (43.0)	291 (62.4)
Procedure for the test might be too painful (n =453)	195 (43.0)	258 (57.0)
If my result is positive people around will be aware (n =458)	191 (41.7)	267 (58.3)
If my result reveals prostate cancer, this is a dead warrant / Fear of the outcome (n =457)	173 (37.9)	284 (62.1)
Do not have money for the test (n =462)	156 (33.8)	306(66.2)
Prostate cancer treatment leads to poor penile erection again (n =454)	152 (33.5)	302 (66.5)
No belief in the laboratory result (n =461)	140 (30.4)	321 (69.6)
It is embarrassing (n =352)	96 (27.3)	256 (72.7)
Others(n =35)*	35(6.2)	532(93.8)

Multiple responses were present

*Others (n= 35): Afraid of the screening (1.4%); do not think it is necessary (1.1%), fear of the outcome (0.9%), not within the age of the screening (18.2%), no adequate information about the screening (56.6%), I know I don't have (0.5%), It is recommended for those who are forty and above (0.5%), I have never heard of PC screening (0.2%), planning to do it in the future (0.5%) and no screening policy and protocol in Nigeria (0.2%)

Table 4.36: Benefits Listed by Respondents which could help Promote the Adoption of Prostate Cancer Screening Services

N = 455

Listed Benefits	No*	%
Enlightenment on what PC is all about	64	12.1
Experience of suggestive signs and symptoms	52	9.8
When the services are affordable	60	11.4
When the services are easy to access	20	3.8
When there are competent professionals to do the test	9	1.7
If there are arrangements to keep the result confidential	9	1.7
If the test will not be invasive	5	0.9
If the disease is treatable/curable	3	0.6
When there are no side effects	2	0.4
Vague responses	306	67.3

*Multiple responses were included while persons who gave no responses were excluded

Table 4.37: Factors Facilitating Adoption of Prostate Cancer Screening Services by Respondents that ever Screened for Prostate Cancer

Factors/Reasons	(N =8)+	
	No	%
To find out if I have PC	3	37.5
To know my health status	2	25.0
Vague	2	25.0
Medical request	1	12.5

*No response and not applicable were excluded

++Reasons adduced by eight (8) out of the 23 respondents (see Table 4.32) who had ever been screened for PC.

CHAPTER FIVE

5.0 DISCUSSION, CONCLUSSION AND RECOMMENDATIONS

5.1 Socio-demographic Characteristics

The ages of the respondents ranged from 25 - 60 years with a mean of 37.2 16.2 years. This implies that a proportion of the target population was within the age that life-time risk of developing PC and dying from PC rises substantially. Kwango et al., (2000) and Matters et al., (2006) reported in their studies that life-time risk of developing PC and dying from PC rises substantially among men between the ages of 45- 50years. Furthermore Matters et al., (2006) found out in their study that there was a 15.3% fold of increase in PC reported between the age group of 30-45 years.

This also implies that a proportion of the target population was within the suggested age range at which males should begin PC screening tests routinely. According to Ajape et al., (2011) in Nigeria, there is no official policy on PC screening services but generally it should be noted that age range recommendation varies in different countries and also depends on degree of risk, a suggested age range at which people should adopt PC screening services is 30 - 40 years (Akinolah, *et al.*, 2010). A similar study carried out among health care workers who were employed in Western Regional Health Authority rural health institutions in Jamaica reveals an age range of 29 years and above (Bourne, 2010).

More than half (54.6%) of the respondents were not health professionals, they were administrative staff, maintenance, records and information management staff. This finding was not very different from what Bourne (2010) noted in his study. Bourne noted that non-health professionals among male health workers accounted for 55.8%. This composition of staff in the study setting is to be expected, it is a large teaching hospital that will necessarily consist of core clinical staff and support staff.

Majority (85.6%) had working experience below 10 years with a mean of 6.9 4.7. In Nigeria the stipulated maximum working experience in years for civil servant is 35 years. The study population therefore had many more years to spend before they would be due

for retirement. Motivating the study population to be involved in routine PC screening health behaviours by the hospital management would be an important investment, an investment aimed at promoting their health and maximising their productivity. Only judicial officers and academic staff of Universities are allowed to work till 65 to 70 years before they are retired (Federal Civil Service Commission, 2000).

5.2 Awareness and Knowledge of Prostate Cancer and Prostate Cancer Screening

Many of the respondents were aware of what PC is; that it is the cancer of the prostate gland. The study revealed that work place (the hospital) was the respondents' main source of information relating to PC and PC screening services. The study setting is one of the foremost teaching hospitals in Nigeria with highly skilled staff. There are medical and surgical oncology services in the hospital. In addition the hospital houses the Nigerian cancer registry. This situation may be responsible for respondents' mention of the UCH as their source of information.

A study by Bourne (2010) which focused on PC screening knowledge, attitudes and practices among male health worker revealed that majority of the respondents were aware of PC. Health care workers are role models in health matters. They are usually among the first category of people to be aware of cases of PC and other health problems of public health importance. This is to be expected anyway because health workers, ideally, should be more knowledgeable about health matters compared to those who are not.

Majority of respondents in this study had knowledge of the age range at which a man's susceptibility to PC increases. The suggested age for PC screening text was 40 years (Atulomah 2010). According to Kwango *et al.* (2000) and Matters *et al.*, (2006), lifetime risk of developing PC and dying from the disease rises substantially among men between the ages of 45 and 50 years. Majority of the respondents in this study had knowledge of highly suggestive symptoms of PC.

A large proportion of the respondents were also knowledgeable about factors which could be associated with the occurrence of PC. Age, heredity, family history and type of dietary intake were the major factors mentioned by the respondents. These factors were similarly reported in previous studies. Age has been identified as a significant risk factor for PC (Allen *et al.*, 2007; Magoha, 2007). It should also be noted that other risk factors similarly

associated with increased risk of PC include family history, lifestyle, ethnicity, genetics and lifestyle changes (Aronson and Freedland, 2000; Moul, 2010; Valeri *et al*., 2012; Allen, *et al*., 2007; Magoha, 2007; Ejike and Ezeanyika, 2009; Mitchel, 2011 and ACS, 2002, 2004, 2006 and 2012).

Majority of the respondents reported that better health care services and periodic medical examination are major ways of preventing the likelihood of dying from PC. A previous review of PC disease in Nigeria by Akinremi *et al*. (2011) revealed different ways of preventing of PC which included lifestyle and behavioral patterns. This study showed that respondents' level of knowledge relating to preventive measures relating to likelihood of dying from PC was low. Multiple intervention methods including public enlightenment, advocacy and in-service training are needed to improve their knowledge as the weakness of one could be counter-balanced by the strength of other methods.

More than half of the respondents were not aware of health facilities that provide PC screening services in Ibadan. Work place was also reported to be the main source of information about PC screening services which also implies that effective health education programme relating to PC screening services should be organized within the study setting. The study noted that over half of the respondents were knowledgeable about the fact that DRE is among the tests for detecting PC. According to Tingen *et al*. (1998), regular screening with DRE significantly helps in detecting PC at an earlier stage. Another previous study carried out among primary care Physicians in one tertiary and one general hospital in San Francisco by Taisan *et al*. (2009) identified DRE as an accepted screening method. According to the definition provided by Groenwald (2000); Chinese Community Health Resource Centre (2007) and Bourne (2009), DRE is the palpation of the prostate gland through digital manipulation of the rectum.

A large proportion of respondents had good knowledge of the appropriate time period to have a PC screening test and about early treatment of PC. A similar finding was reported in a previous study carried out by Tingen *et al*. (1998). The study also revealed that many of the respondents reported that PC can be transmitted from father to son, apparently referring to the genetic link of the disease.

Respondents' mean knowledge score on PC and PC screening using 31- point knowledge scale was 12.6±7.5 with 53.2% of the respondents having poor knowledge of PC and PC screening. Obviously this indicates gaps in the knowledge of the male staff members about

PC and PC screening. Further analysis showed that knowledge was greater among clinical and paramedical staff than other professional groups. A similar experience was recorded in the study conducted among rural health workers in Jamaica by Bourne (2010). Good knowledge among clinical and paramedical staff is expected because these staff members are usually exposed to cancer-related issues during their basic and continuing education programmes. The high level of knowledge among clinical and paramedical staff in this study may be due to one form of medical education or the other acquired by them. In addition, being staff members of a reputable tertiary hospital in Nigeria may have given clinical and paramedical staff more opportunities and privileges to attend seminars, work shop and conferences relating to cancer with special reference to PC.

Moreover due to the nature of their schedule of duty, they have the greatest opportunity for direct patients' care which may influence their knowledge. It was observed in this study that respondents that had ever had PC screening test had higher knowledge of PC and PC screening. A study by Bells *et al.*, conducted among the physicians in Southern California however revealed a contrary experience. It was noted that the higher user of routine PSA screening had lower knowledge scores of natural history of PC and test characteristics recommendation of PC screening. However, a previous study by Bourne (2009) also reported a contrary situation; he noted that knowledge had no influence on screening behaviour of male health workers.

The result of this study has shown that the level of knowledge of respondents with family history of PC was higher than respondents with no family history of PC. This implies that increased level of knowledge has positive relationship with family history. Respondents' past experiences derived from family members that had PC may have contributed to the high level of knowledge. A similar observation was made in the study conducted by Magnus (2004) which showed that the level of knowledge among respondents with family history of PC was higher than those with no family history.

5.3 Perception Relating to Prostate Cancer and Prostate Cancer Screening Services

Given the role of risk perceptions in inducing certain health behaviours, it is necessary to understand peoples' risk perception regarding PC disease and PC screening (Glanz *et al.*, 2008). According to Carpenter (2010) risk perception is defined as the perceived

seriousness of a health threat and perceived personal vulnerability to a given health-related condition as revealed by the Health Belief Model. Consciousness of one's vulnerability is important for initiating precautionary actions (Weinstain. 1988). Perception of male health workers relating to the phenomenon is needed with a view to coming up with appropriate preventive strategies. Moreover health workers are an important source of health information for the general population. Therefore, it is important that the information they disseminate to others is accurate and that the screening procedures they recommend are appropriate (Gonçalves-Silva *et al*., 2010).

The study showed a mixture of both positive and negative perceptions of PC and PC screening services among the study population. An example of a positive perception relate to the view that occurrence of PC disease does not occur only in people who are too sexually active. A similar observation was recorded in a past study by Allen *et al.* (2007) and Ukoli *et al*. (2003). Another positive perception on severity of PC was that PC is a very serious disease, more than what people are made to believe. This perception was not different from what Ukoli *et al*.'s (2003) earlier noted.

Many of the respondents had the opinion that early detection of PC is not a waste of time and not a useless exercise. This is another positive perception. Furthermore some were of the perception that the benefits of PC screening outweigh the challenges one goes through during the screening procedure. The findings of this study contradict the recommendation of USPSTF against PSA screening which has not been approved by US Government. The recommendation proposed by USPSTF is "against PSA-based PC screening regardless of age and family history of PC screening". Bankhead (2011) had, however, reported the official reaction from the American Urological Association (AUA) as well as individual physicians that the recommendation by USPSTF could do more harm than good to many men at risk of PC. Attention was called to the fact that USPSTF is a group of primary care physicians like paediatricians and obstetrician/gynecologists, who had never treated PC patients and so could have misinterpreted the literature review which forms the basis of their recommendation. The study implies that respondents with positive perception had favourable perception relating to PC disease and PC screening.

A typical example of a negative risk perception among some respondents was the opinion that treatment of PC cannot lead to impotence. This implies that many respondents had non-favourable perception related to impotence as one of the problems of treatment of PC.

Though perception of respondents' risk of developing PC is outside the scope of this study, a past study on perception of PC screening services by Cormier, Kwan and Reid (2002), which was carried out among first degree relations of men with PC noted that many of the study subjects believed that they were at higher risk. What Bloom *et al.* (2006) noted in his study is different; he reported that a positive family history of PC does not necessarily increase risk of the disease but this factor may provide motivation to obtain a PSA test.

The study noted that some of the respondents were of the perception that cost of PC screening was too high and that the procedure for screening for PC is too painful. These respondents' opinions are not amenable to classification into either positive risk or negative risk but can, all the same, affect adoption of PC screening. The study has shown that majority of the respondents had a favourable perception relating to PC but the misconception of the few ones with negative perception could have strong influence on their behaviour as health worker. In many cases health care staff's preferences and behaviour influence their professional practices. For instance previous studies carried out among health workers by Schwartz *et al.* (1991) and Frank *et al.* (1998) revealed that the personal health habits of health care worker are major predictors of their behavioural practices.

5.4 Prostate Cancer-related Risk Factors and Screening Experiences

Few of the respondents had a family history of PC; the identified relatives with PC related history were grand fathers, fathers and brothers. Family history is one of the known non-modifiable PC risk factors. One cannot change one's family history but one can use the information from ones family history to be taking appropriate preventive measures. Family history has been shown to be strongly associated with increased risk of PC (Allen *et al.*, 2007 and Mitchel, 2011). The practices among the respondents which could make them vulnerable to PC included use of tobacco products and consumption of PC risk related foods. Increase in incidence of PC has been linked to consumption of high-fat diet

(Valeri *et al.*, 2002; Mitchel, 2011). Previous studies have noted that men who smoke tobacco products and those who consume animal fat are at greater risk of PC (Habito and Ball, 2001; Spentzos, *et al.*, 2003; Magoha, 2007; Parson and Kashefi 2008; US National Library of Medicine, 2010; and Chukwunso, 2011).

The prevalence of use of PC screening services among the study population was low. This finding is similar to those of a research carried out among Urologists at the University of Ilorin Teaching Hospital, Ilorin in Nigeria by Ajape *et al.* (2011) on client demand for PC screening. They observed that the number of men requesting for PC per respondent was low. A review of PC disease in Nigeria by Akinremi *et al.* (2011) has shown that routine PC screening is not practiced by many men and that most PSA testing and DRE emanate from surgical clinics. The study carried out among rural male health workers of Western Regional hospitals in Jamaica by Bourne (2010) has shown that only 27.1% of the respondents had ever adopted PC screening services. An exceptional situation was found in Brazil. For instance a cross sectional study conducted by Goncalves-Silva *et al.* (2010) among health workers in a tertiary-care hospital in Sao Paulo, Brazil revealed that majority (67.0 %) of male health workers had undergone a PC screening test.

The ages of respondents that ever adopted PC screening services range from 30 to 53 years with a mean of 39.7±6.1. This implies they were within the suggested age range at which men can adopt PC screening services. Although majority (67.2%) of the respondent were within age 25-39, these group of respondents were not within the suggested age group for routine PC screening which made them not to be eligible for adoption of PC screening services. Low prevalence of adoption of PC screening services among the study population indicates that being a health care professional does not necessarily have a significant effect on adoption of PC screening services. Low utilisation of PC screening services and prevalence of positive signs/symptoms of PC among the respondents constitute a source of concern. This is more so as late presentation of the disease can lead to metastatic disease. Metastases involving the spine, readily leads to paraplegia and rare orbital metastases (Shittu and Ogunbiyi, 2003; Badmus *et al.*, 2010). The prostate gland and some tissues around the organ can still be removed when the cancer has not spread beyond the prostate gland (Walsh, 2008; Babain *et al.*, 2008). The prevalence of positive PC test in this study may be a tip of the iceberg, as fear of stigmatization might have prevented some respondents from sharing their experiences.

5.5 Signs and Symptoms of Prostate Cancer among Respondents

The study has established the signs/symptoms of PC among the respondents as 17.1%. This result calls for an urgent action to protect the health of the affected respondents. The management of the hospital (UCH, Ibadan) has a moral or ethical obligation to initiate preventive measures. Furthermore it was observed that almost one third of the respondents ever shared their experience with the following: parents, colleagues and wife. Only few discussed with a urologist. By implication, the remaining two thirds (68.3%) of the respondents never shared their experience. Their health behaviour may be due to the aspect of traditional male gender tendencies such as toughness and emotional control (Courtney, 2000; Addis and Mahalik, 2003; Illic, Risbridger and Green 2005; Allen *et al*, 2007). According to Plowden (2006) and Jones, Steeves, William (2009), significant others have a strong influence on people's decision to adopt PC screening services.

5.6 Barriers and benefits to Utilisation of Prostate Cancer Screening Services

The study has revealed reasons adduced for not adopting PC screening by some respondents. Many respondents reported that absence of family history of PC was the main reason for not adopting PC screening test. According to Plowden (2006), PC screening adoption depends on factors which include family history of PC.

The other reasons adduced included lack of time, pain associated with the procedure and fear of the outcome of the result. Previous studies have attested to the influence of these factors on decision to undergo PC screening. According to Ardit, Shimmer, Siegmaier, Ziegler and Berker *et al* (2003) and Wolfang David and Hans- Joachim *et al* (2010) respondents' unwillingness to adopt PC screening services may be due to fear of positive result of PC and fear of painful procedure during the test. Furthermore embarrassment was also one of the reasons for not adopting PC screening services. A previous study by Bourne (2010) among the rural health workers noted that DRE was considered a violation of one's manhood. Clearly this finding implies that education or "health literacy" does not remove this socio-cultural barrier against PC screening.

Over half of the respondents reported that lack of adequate information about PC screening hindered them from carrying out the test. The assumption that being a staff member in a health care setting would promote awareness of the disease has been proved wrong by this result. This signifies the need for health education interventions to improve

respondents' awareness about PC screening. According to Plowden (2006) increasing knowledge and getting the message out are important motivators for accepting PC screening services.

Only a few of the respondents mentioned public enlightenment, affordability of the service and easy access to the service as factors which could help to promote the adoption of PC screening services. This is not different from the findings from past studies by Jones *et al.* (2009); Rose *et al.* 2009; Winterich *et al.*, 2009; and Ogunbiyi. (2010)

The study has noted that respondents that had ever adopted PC screening services reported that the main motivation for adopting the practice was the need to find out if they had PC. According to Atulomah *et al.* (2010), respondents that had ever adopted PC screening participated in the test for the purpose of improving their quality of life by reducing the consequences associated with PC in case PC disease was detected. This, of course, is one of the benefits of PC screening.

5.7 Implication of Findings for Health Promotional Education and Health policy

Findings from this study have health promotion and education implications. they suggest the need for multiple interventions directed at addressing the phenomenon. Health education is any planned combination of learning experiences designed to predispose, enable and reinforce voluntary behaviour conducive to health in individuals, groups or communities (Green and Kreuter, 1999). World Health Organization (2008) have stated that a coordinated multi-sectorial approach which usually involves a multidisciplinary strategies is needed to address issues of PC screening and PC prevention.

In-service training programmes designed for male health care workers on PC and PC screening services should address identified gaps in knowledge and challenges in the prevention and control of PC and PC screening. It should be designed to cover the following areas: associated risk factors; positive signs/symptoms; management procedures; complications; physical, physiological, psychological and economical consequence; and importance of prevention and benefits of PC screening tests. Such an initiative will strengthen the knowledge of male health workers regarding PC and PC screening services.

An in-service training programme is an educational intervention that can help improve competence and knowledge of male health workers, especially those who have not had training on PC and PC screening during their basic training. This is particularly so for male workers that are not health professionals such as administrative, maintenance and information related staff. The ultimate goal of an in-service training should be the development of a sustainable system for existing male health workers to acquire knowledge and skills needed for PC and PC screening control programmes. The in-service training programme could be in the form of seminars, conferences and similar continuing education opportunities.

The results of this study are useful for the design of an in-service training curriculum for male health workers. For effectiveness, in-service training programmes should address the specific training needs of each category of male health workers based on their statutory job description and educational preparation. In a previous PC screening educational intervention study among African-American men was carried out by Taylor *et al.* (2006); it was noted that respondents' knowledge scores increased after the interventions. In addition, decisional conflicts about PC screening were reduced and majority had the intention to have a PSA and a DRE within the year. According to Oshinaike and Brieger (1992), in-service training has been proven to be effective as a health education strategy for health care-related workers.

Public enlightenment programmes including awareness campaigns have the potentials for reaching a large number of people. Though public enlightenment campaign can create awareness and influence knowledge, perception and attitudes and foster political will for action, evidence of the effectiveness of these approaches in changing people's perception on a sustained basis remains insufficient (Whitaker, Hailey esus, Swan, and Saha man 2007). However, efforts must be made to combine it with other strategies such as peer education and policy intervention to effectively address the issue of PC and PC screening among male health workers. Public enlightenment techniques could involve the use of posters, leaflets, documentaries, jingles and billboards (Whitaker *et al.*, 2007). Use of one or more communication media could be very helpful as the weakness of one could be compensated for, by the strengths of the other media.

Right information equips people with knowledge of the facts and this, in turn, dispels fears and misconceptions about PC and PC screening (Whitcher *et al*., 2007). Public enlightenment messages should, among other things, contain information on nature of PC disease, associated risk factor, positive suggestive signs/symptoms, complications, treatment, prevention, perceived susceptibility, perceived severity, risk assessment, benefits of PC screening and locations where PC screening tests could be done within UCH. The PC and PC screening-related public enlightenment programmes should be targeted at different professional groups based on their different PC related information needs.

Counseling is a health education strategy which facilitates the making of choices including what to do in the case of PC screening. It could be used to address the psychosocial challenges associated with PC screening (WHO, 2010). Counseling is typically characterized by one person assisting another person or group of persons to gain an understanding of challenges being experienced. Counseling thus assists people to make and implement appropriate decisions (Glanz *et al*.). Professional counselors or health workers should be trained to provide counseling services to male health workers about PC and PC screening. It is important to offer psycho-therapy or counseling services before and after PC screening to enable people to face the psychological consequences that could be associated with the test and to assist people to make informed decisions regarding whether to participate in PC screening or not. Effort should be made to conduct counseling in an environment that ensures safety and confidentiality.

The combined use of two or more of the afore-mentioned health promotion and health education strategies is preferred for preventing and controlling PC disease because of the inherent advantages. The use of a combination of strategies ensures that the weaknesses of one are catered for by the strength of the others (Knimcich, Weijts, Reddy and Meijer-Weitz, 2001; Lambert and McKevith, 2002).

5.8 Conclusion

This study has revealed that the level of awareness of PC and PC screening among the respondents was high. However, more than half of the respondents had poor in-depth knowledge of PC and PC screening, despite the fact that the respondents were workers in a health care setting where PC is routinely managed after diagnosis. In-service training, counseling and public enlightenment are important educational strategies for addressing the situation.

The respondents' knowledge about PC and PC screening varied with their professional grouping. Generally, clinical and paramedical male health workers in UCH were more knowledgeable compared with administrative, maintenance and information male health workers. This is being expected as the professionals are exposed to more educational opportunities than the non health professionals.

Male health workers in UCH are vulnerable to PC. The identified PC risk-related practices include smoking of cigarette/ use of tobacco-related products and consumption of risk-laden foods. The vulnerability of the respondents is a major public health concern that needs to be addressed urgently and this could be done through in-service training, counseling and public enlightenment.

The study has shown that many of the respondents had favourable perception relating to early detection of PC disease. For instance many of them were of the view that the benefits of PC screening outweigh the challenges one faces during the screening procedure. Thus study has revealed that many of the respondents supported PC screening. Non-favourable perceptions which include views "that the PC disease only occurs in people who are too sexually active" and "that PC is a mild disease, which is not as serious as people are made to believe" are the typical examples of perceptions that need to be addressed so as to facilitate adoption of PC screening services. The misconception of the few ones with negative perception has potential influence on their practice as health workers.

The study has shown that embarrassment is one of the barriers to the adoption of PC screening test by over one quarter of the respondents. Cultural beliefs relating to discussion and examination of one's reproductive organs by other parties which can constitute barriers to PC screening needs to be addressed.

5.9 Recommendations

The recommendations based on the study are as follows:

1. Public enlightenment interventions relating to PC and PC screening, prevention and control are needed in the study setting. These interventions should be targeted at male health workers should be aimed at improving their knowledge of ways of preventing and controlling of PC.
2. Elements of PC prevention and control education should be infused into the pre-employment education curricula for male workers in health care setting. Introduce the training/induction activities relating to the diagnosis, signs and symptoms, risk factors, treatment, complications, prevention and control of PC disease.
3. Appropriate educational intervention such as counseling is needed to modify respondents' perceptions relating to risk of PC as well as perceived causes, severity and complications of PC.
4. There is need for regular continuing education programmes to increase male staff members' knowledge and modify their perception relating to the prevention and control of PC.
5. A policy which makes PC screening a routine health seeking behavior for male staff with first degree family history of PC should be formulated and implemented by authourities of UCH.

5.10 Suggestion for Further Study

An educational intervention of the quasi-experimental design is needed to determine the relative effects of educational strategies on knowledge, decisional conflict and self-reported PC screening among male workers in a tertiary and non-tertiary health care setting.

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APPENDIX I

QUESTIONNAIRE

KNOWLEDGE, PERCEPTION, RISK FACTORS AND UTILISATION OF PROSTATE CANCER SCREENING SERVICES AMONG MALE STAFF OF THE UNIVERSITY COLLEGE HOSPITAL IBADAN, OYO STATE, NIGERIA

Dear Respondent,

My name is Hassan, Rachel Olufunmilayo. I am a post-graduate student in the Department of Health Promotion and Health Education, Faculty of Public Health, University of Ibadan. I want to learn from you about issues related to prostate cancer screening services. This interview is important because it will help us understand the factors influencing the acceptance of prostate cancer screening services in Nigeria.

Kindly answer the questions as honest as possible. The questionnaire will take about 30 minutes and you are free to terminate the interview at any point you wish without any repercussion. Whatever is learnt from the study will be useful for research purpose only. Your name is not required, so do not write your names on the questionnaire and be assured that your responses will be kept confidential. For your information necessary ethical approval has been obtained at the joint UI/UCH Ethical Review Committee.

Consent to participate:

Do you agree to take part in this study? [Tick (√)] 1. Yes ☐ 2. No ☐

If you agree to take part, can you start to answer the questions now? [Tick (√)]

1. Yes ☐ 2. No ☐

For office use only

Name of interviewer.....

Date.....

Serial No.....

SECTION A: Socio-demographic Information.

Please Tick (√) any of the responses that apply to you in the boxes (☐) provided or complete the blank spaces provided.

1. What is your age? (As at last birthday in years)..... .....

2. Marital Status?

   1. Single ☐ 2. Cohabiting ☐ 3. Married ☐

   4. Separated ☐ 5. Divorced ☐ 6. Widow ☐

   7. Any other (specify) .....

3. What is your religion?

   1. Christianity ☐ 2. Islam ☐ 3. Traditional ☐

   4. Others (specify).....

4. What ethnic group do you belong?

   1. Yoruba ☐ 2. Hausa ☐ 3. Ibo ☐

   4. Others (specify) ----------

5. What is your profession?

   1. Doctor ☐ 2. Nurse ☐ 3. Pharmacist ☐

   4. Laboratory Scientist ☐ 5. Dietician ☐ 6. Physiothempist ☐

   7. Medical Social Worker ☐ 8. Administrative officer ☐ 9. Record Officer ☐

   10. Engineer ☐ 11. Others (specify)..... .....

6. How long (in years) have you been functioning as a health professional in this institution in the capacity referred to in question 5? .....

7. What is your highest level of education?

   1. Completed Primary Education ☐ 2. Some Secondary Education ☐

   3. Completed Secondary Education ☐ 4. OND ☐ 5. NCE ☐

   6. HND ☐ 7. Bachelor degree ☐ 8. M.SC/ MA. ☐ 9. MPH ☐

   10. PhD ☐ 11. Nursing ☐

   14. Others (specify).....

Section B: Awareness and Knowledge Relating to Prostate Cancer and Prostate Cancer Screening Services.

Tick (√) any of the options that applies to you in the boxes (☐) provided or complete the blank spaces provided.

8. Have you ever heard of prostate cancer?

1. Yes ☐ 2. No ☐

(If No go to question 33)

9. What is prostate cancer?

1. Cancer of the prostate gland ☐ 2. Inflammation of the prostate gland ☐
3. Inability to urinate ☐ 4. Cancer of the male reproductive organ ☐
6. Others (specify) ----------

10. What are your sources of information on prostate cancer?

(You can tick (√) more than one option).

		Yes	No
1	My wife		
2	My friend		
3	Television		
4	Work place		
5	Internet		
6	Medical Journals		
7	Seminar		
8	Workshop		
9	Colleagues		
10	Friends		
11	Relatives		
12	Radio		
13	News papers		
14	Magazine		

15. Others (Specify) ----------

11. At what age can a man's susceptibility to prostate cancer increases?

1. From 40 years and above ☐ 2. From birth ☐ 3. From puberty ☐
4. From age 18 years ☐ 5. Others ----------

12. What are the likely signs and symptom of prostate cancer? (You can tick (√) more than one option)

		Yes	No
1	Headache		
2	Difficulty in urinating		
3	Uneasy feelings in the penis		
4	Uneasy feelings around the anus		
5	Uneasy feelings in the anus		
6	Uneasy feelings at the lower abdominal region		
7	A times there are no early signs		
8	Dribbling of urine		

9. Others (specify) .....

13. Which of the following are features which could be associated with prostate cancer? (You can tick (√) as applied, you can tick (√) more than one option).

		Yes	No
1	Race		
2	Age		
3	Dietary intake		
4	Sexual transmitted infection		
5	Occupation		
6	Cigarette Smoking		
7	Obesity		
8	Inherited genes		
9	Physical inactivity		
10	Multiple sexual partner		
11	Excessive alcohol consumption		
12	Family history of prostate cancer		

13. Others (specify).....

14. Can the likelihood of dying from prostate cancer be reduced or prevented?

1. Yes ☐ 2. No ☐

(If No go to question 16)

15. How can the likelihood of dying from prostate cancer be reduced or prevented?
(You can tick (√) more than one option)

		Yes	No
1	Better health care services		
2	Periodic health care services		
3	Improved sex education		

4. Others (please specify) ----------

16. Why do you think the risk of likelihood of getting prostate cancer cannot be reduced or prevented ? ----------

17. Are you aware of any health facilities that provide prostate cancer test/ screening services in Ibadan?

1. Yes ☐ 2. No ☐ (if No go to question 20)

18. If yes to question 17, mention the names of such health facilities where prostate cancer tests are conducted ----------

19. What are your sources of information on prostate cancer screening services?
(You can tick (√) more than one option).

		Yes	No
1	My wife		
2	My friend		
3	Television		
4	Work place		
5	Internet		
6	Medical Journals		
7	Seminal		
8	Workshop		
9	Colleagues		
10	Friends		
11	Relatives		
12	Radio		
13	News papers		
14	Magazine		

15. Others (Specify) ----------

20. Is there a prostate cancer screening programme at UCH?

1. Yes ☐ 2. No ☐

(If No, go to question 22)

21. If yes to question 20, where is it located within UCH? _____

The Table below contains a list of statements relating to prostate cancer/ prostate cancer screening.

For each tick (√) whether it is true or false to show how sure you are about each statement.

	Prostate cancer/ prostate cancer screening related statements.	Tick (√) True	Tick (√) False
22.	A rectal examination is the recommended procedure for detecting haemorrhoids and not prostate cancer.		
23.	The Prostate Specific Antigen (PSA) is a blood test that can be used to detect the antibody against prostate cancer.		
24.	Prostate cancer can not be cured even when detected early.		
25.	Prostate cancer can not be treated even when detected early.		
26.	Prostate cancer can be prevented by regular exercise.		
27.	Prostate cancer can be transmitted from father to son.		
28.	Prostate cancer is particularly more common among persons aged 25 to 50years.		
29.	A man can have prostate cancer without having any pain or symptoms		
30.	Surgery or radiation can cure prostate cancer in its early stage.		
31.	Early detection of prostate cancer should be done in the absence of symptom of prostate cancer.		
32.	Men with family history of prostate cancer are more likely to get the disease in the future.		

Section C: Perception of prostate cancer / prostate cancer screening services.

The Table below contains a list of statements relating to prostate cancer/ prostate cancer screening.

For each statement tick (√) whether you agree or disagree with. If not sure or no opinion tick (√) undecided

	Perception of prostate cancer/ prostate cancer screening services	tick [√] Agree	tick [√] Disagree	tick [√] Undecided / no opinion
33.	Prostate cancer only occurs in people who are too sexually active			
34.	Prostate cancer is a mild disease.			
35	The procedure for early detection of prostate cancer can worsen the disease if one has it			
36.	Early detection of prostate cancer is a waste of time; detecting it cannot stop it from killing any one having it eventually.			
37.	Prostate cancer only occurs in the people who do not believe in God.			
38.	Cost of screening for prostate cancer is too high.			
39.	Treatment of prostate cancer can lead to impotence.			
40.	Benefits of prostate cancer screening outweigh the challenges one goes through during the screening procedure			
41.	Cancer screening tests in Nigeria are not reliable because of the poor state of our equipment.			
42.	The procedure for detecting prostate cancer is too painful.			
43.	Prostate cancer is not as serious as people are made to believe.			
44.	Prostate cancer screening is a useless exercise because there is no cure for the disease even if it is detected			

SECTION D: Related risk factors of prostate cancer

Tick (√) any of the responses that applies to you in the boxes (☐) provided or complete the blank spaces provided.

45. Do you have a family member with prostate cancer or who has ever been diagnosed with prostate cancer?

1. Yes ☐ 2. No ☐

(if No go to question 47)

46. What is your relationship with the family member who had prostate cancer?

1. Grand father ☐ 2. Father ☐ 3. Brother ☐

4. Uncle/Cousin 5. Others (specify).....

47. Do you have a family member who died of prostate cancer before?

1. Yes ☐ 2. No ☐

(if No go to question 49)

48. What type of family member was the person?

1. Nuclear family member ☐ 2.Extended family member ☐

49. Have you ever smoked or used any tobacco products?

1. Yes ☐ 2. No ☐

(if No go to question 53)

50. Do you presently smoke tobacco or use tobacco products?

1. Yes ☐ 2. No ☐

(if No go to question 53)

51. How many sticks of cigarette do you take per day? .....

52. How long have you been smoking (in years)? .....

53. Which of the following foods do you enjoy eating most of the time?

(You can tick (√) more than one option).

		Yes	No
1	Fruits		
2	VegeTables		
3	Cheese		
4	Beans		
5	Low fat milk		
6	Full cream milk		
7	Yam		
8	Rice		
9	Fried foods		

10. Others (specify) .....

54. Which of the following sources of meat or fish do you enjoy eating?
(You can tick (√) more than one option)

		Yes	No
1	Cow meat		
2	Old layer chicken with skin		
3	Goat meat		
4	Cockerel chicken with skin		
5	Intestine of cow meat		
6	Alaran fish (oku eko)		
7	Panla fish		
8	Cat fish		

9. Others fish (specify).....

10. Others meat or fish (specify).....

Section E: Prostate cancer related screening history

Tick (√) any of the options that applies to you in the boxes (☐) provided or complete the blank spaces provided.

55. Have you ever been screened for prostate cancer?

1. Yes ☐ 2. No ☐

(If No go to question 60)

56. How many times have you been screened for prostate cancer in the last 1yr/2yrs?

1. Once ☐ 2. 2times ☐
3. 3times ☐ 4. Others (specify) ------

57. Where did you perform the prostate cancer screening?

1. U C H ☐ 2. State Government hospital ☐
3. Others (specify)----------

58. What type of prostate cancer screening tests has ever been used to screen you?

.....

.....

59. What was the outcome of the prostate cancer screening test?

1. Positive ☐ 2. Negative ☐
3. Others (specify)----------

Section F: Prevalence of suggestive signs and symptoms of prostate cancer.
Tick (√) any of the options that applies to you in the space provided or complete the blank spaces provided.

		Yes	No
60.	Have you ever experienced delayed or slowed start of urinary stream?		
61.	Have you ever experienced dribbling or leakage of urine, most often after urinating?		
62.	Have you ever experienced slow/ poor urinary stream?		
63.	Have you ever experienced straining when urinating, or not being able to empty out all of the urine?		
64.	Have you ever seen blood in your urine or semen?		
65.	Have you ever experienced bone pain most often in the lower back and pelvic bones?		

(If answer to question 60 to 65 is No, go to question 69).

66. Have you ever discussed any of these signs you ticked in question 60-65 with your one? 1. Yes ☐ 2. No ☐

(if No go to question 69)

67. Which of the following did you discuss with?

(You can tick (√) more than one		Yes	No
1	Parents		
2	Wife		
3	Colleagues		
4	Urologist		
5	General Surgeon		
6	Pharmacist		

7. Others (specify) ——————

68. Where do you usually seek health care advice or treatment?

(Tick (√) as applicable, you can tick (√) more than one)		Yes	No
1	UCH		
2	Private hospital/Clinic		
3	Private doctor		

4	Pharmacy		
5	Government Hospital		
6	Herbal home		

7. Others (specify) ——————————————.

Section G: Factors influencing utilisation of prostate cancer screening services (Opinion of person who has never been screen for prostate cancer and factors that encouraged the person who had undergone prostate cancer screening).

(For the person who has never been screened for prostate cancer).

You can tick (√) more than one option)

69. Which of the following is the reason why you do not go for prostate cancer screening?

		Yes	No
1	It is embarrassing.		
2	I do not have money for the test.		
3	If prostate cancer is found and treated, I will not have penis erection again.		
4	I do not have time.		
5	I do not have belief in the laboratory result.		
6	I do not have family history of prostate cancer.		
7	Procedure for the test might be too painful		
8	If my result is positive people around will be aware.		
9	If my result revealed prostate cancer, this is a death warrant.		

10. Other (specify) ——————————————————————

——————————————————————

——————————————————————

70. From your own opinion/view, what will make you accept prostate cancer screening services? ——————————————————————

——————————————————————

(For the person who have undergone prostate cancer screening)

71. What are the reasons that encouraged you to go for prostate cancer screening?

Thank you very much!

APPENDIX II

Knowledge Scale/ Marking Scheme

QUESTION* No	Correct response	Maximum Score
9	Cancer of the prostate gland	1
11	From 40 years and above	1
12.2	Difficulty in urinating	1
12.3	Uneasy feelings in the penis	1
12.6	Uneasy feelings at the lower abdominal region	1
12.7	At times there are no early signs	1
12.8	Dribbling of urine	1
13.1	Race	1
13.2	Age	1
13.3	Dietary intake	1
13.5	Occupation	1
13.6	Cigarette smoking	1
13.7	Obesity	1
13.8	Inherited genes	1
13.12	Family history prostate cancer	1
14	Yes	1
15.1	Better health care services/Public enlightens about the disease /awareness	1
15.2	Periodic health care service/early detection/ Prevention	1
16.1	Genetics/ Because it is genetically connected/ Because is one of the ageing diseases/Aging check cannot be modified/ Due to our exposure to many things that affect our health negatively	1

16.2	Sedentary lifestyle and dietary related/ Poor health services/ People still believe that prostate cancer is not real/ No drugs and qualified specialist on prostate cancer/ No drugs for cancer management	1
22	False	1
23	False	1
24	False	1
25	False	1
26	False	1
27	True	1
28	False	1
29	True	1
30	True	1
31	Tue	1
32	True	1
TOTAL SCORE		31

POINTS	QUALITATIVE ASSESSMENT/EVALUATION	CODE
< 15	POOR	1
≥ 15-24	FAIR	2
≥ 25-31	GOOD	3

APPENDIX III

Perception Scale/Marking Scheme

S/N	Perception of Prostate Cancer/ Prostate Cancer Screening Services	tick [√] Agree	tick [√] Disagree	tick [√] Undecided/ no opinion	Maximum score
33.	Prostate cancer only occurs in people who are too sexually active	Inappropriate -ve	Appropriate +ve	Inappropriate - ve	2
34.	Prostate cancer is a mild disease.	Inappropriate -ve	Appropriate +ve	Inappropriate - ve	2
35.	The procedure for early detection of prostate cancer can worsen the disease if one has it.	Inappropriate -ve	Appropriate +ve	Inappropriate - ve	2
36.	Early detection of prostate cancer is a waste of time; detecting it cannot stop it from killing any one having it eventually.	Inappropriate -ve	Appropriate +ve	Inappropriate - ve	2
37.	Prostate cancer only occurs in the people who do not believe in God.	Inappropriate -ve	Appropriate +ve	Inappropriate - ve	2
38.	Cost of screening for prostate cancer is too high. ++	Appropriate +ve	Inappropriate -ve	Inappropriate - ve	-
39.	Treatment of prostate cancer can lead to impotence.	Appropriate +ve	Inappropriate -ve	Inappropriate - ve	2
40.	Benefits of prostate cancer screening outweigh the challenges	Appropriate +ve	Inappropriate -ve	Inappropriate - ve	2

	one goes through during the screening procedure				
41.	Cancer screening tests in Nigeria are not reliable because of the poor state of our equipment.	Inappropriate -ve	Appropriate +ve	Inappropriate -ve	2
42.	The procedure for detecting prostate cancer is too painful.+*	Appropriate +ve	Inappropriate -ve	Inappropriate -ve	-
43.	Prostate cancer is not as serious as people are made to believe.	Appropriate +ve	Inappropriate -ve	Inappropriate -ve	2
44.	Prostate cancer screening is a useless exercise because there is no cure for the disease even if it is detected.	Inappropriate -ve		Inappropriate -ve	2

*+ the perceptions that are not amenable to classification

Points	Qualitative Assessment/Evaluation	Code
< 10	POOR (non favourable perception)	1
≥ 10	FAIR (favourable perception)	2

APPENDIX IV

Stratification of Study Population into Departments and Units

S/N	Department	Unit	No of male staff
1	Nursing	Neuroscience	2
		Surgery	2
		Main Theatre	8
		Theatre	3
		Warden	6
		Admin	1
			=22
2	Physiotherapy	Paediatric	4
		Orthopaedics	3
		Neurosurgery	2
		Medicine	2
		Cardiopulmonary	3
		Burns Unit	3
			=17
3	Pharmacy	Staff Section	2
		Medical Out Patient	3
		Wards	6
		Oncology	2
		Adult Retroviral Clinic	3
		General Out Patient	2
		National Health Insurance	2
		Dental Center	2
		Manufacturing Section	4
		Admin Staff	2
			=28
4	Clinical Pharmacology	Clinical Pharmacologist	2
			=2
5.	Virology	Statistician	1
		Laboratory Scientist	2
		Total	=3
6.	Microbiology	Mycology/Special Diagnosis	1
		Cerebro Spinal Fluid Culture	2

		Routine	1
		Tuberculosis Culture	4
		S T C Serelogy	1
		S T C Culture	2
		Swabs/ Media Kitchen	1
		Tuberculosis Staining and Micro	1
		Stool	1
		Swabs	1
		Medical microbiology	5
		Total	=20
7	Dietetics	Radiotherapy	1
		Ward Round	1
		Kitchen	1
		Total	=3
8.	Medical Social Worker	Medical Out Patient	4
		Surgical Out Patient	2
		Psychiatric	2
		Accident &Emergency	2
		Paediatric	1
		Obstetric & Gynaecology	1
		Main Office	2
		Alonu Office	1
			=15
9	Radiology	Radiographers	9
		Sectaries	3
		Darkrooms	8
		Admin Office	13
		Porters	24
		Radiologist	13
			=70
10	Pathology	H Histopathology	10
		Histochemistry	9
		Research Laboratory	10
		Neuropathology	6
		Chemical Pathology	9
			= 44

10	Radiotherapy	Admin office	1
		Technologist	3
		Physicist	1
		Engineering	4
		Radiotherapist	4
			=13
11	Dentistry	Restorative	4
		Peridonotology	0
		Child oral heath	4
		Oral maxillofacial	8
		Oral pathology	4
		Oral Laryingotology	7
		Preventive Dentistry	1
			=28
12	Chemical Pathology	Scientist	8
		Admin	18
		Doctor	6
			=32
13	Accident and emergency	Ortho and trauma	4
		Receptionist	2
		X-ray Department	2
		Medical Side	15
		Obstetrics and gynaecology	4
		Surgical Side	6
			=33
14	Palliative	Medical Officer	3
		Admin	1
			=4
15	Staff Medical Service	Secteries	7
			=7
16	Family Medicine	Admin	2
			=2
17	Pediatric	Bilirubin Laboratory	5
		General Office	2

		Doctor	18
			=25
18	Medicine	Lab assistance	
		E E G	2
		E C G	1
		General Office	1
		Community medicine	2
		Doctor	11
		Nuclear Medicine	22
			3
			=42
19	Anaesthesia	Office	
		Doctors	1
			19
			=20
20	Ophthalmology	Eye Clinic	
		General Office	2
		Ophthalmologist	4
			11
			=17
21.	Nuclear Medicine	Clerk	
		Physicist	1
		Computer Operator	1
		Lab Scientist	1
		Pharmacy	2
		Lab Assist	3
		Radiographer	2
		Water Treatment	3
			4
			=17
22.	Occupational therapy	Splint	
			2
			=2
23	Surgery	Secteries	
		Admin officer	3
		Messenger	2
		Orthopedic & Trauma	1
		surgery	7
			38
			=51

24.	Obstetrics and Gynecology	Admin officer	2
		Sectary	1
		Obstetrics & Gynaecology	25
			=28
25.	General Out Patient	Doctor	8
			=8
26.	Hematology	Medical haematology	4
		Scientist	17
			=21
27.	Psychiatry	Admin Officer	2
		Psychiatrist	10
			=12
28.	Health Records	Medical out patient	4
		Children out patient	4
		Ear Nose and throat	4
		Eye	4
		Surgical output patient	3
		General Out patient	2
		O T CHEW	3
		Causality	4
		Staff Clinic	4
		Physiotherapy	2
		Obstetric & Gynaecology	1
		Radiology	6
		Radiotherapy	3
		PEPFAR	4
		STC/ Hematorna logy	2
		Psychiatry	1
		Owena dialysis	2
		Palliative	1
		Akinkungbe Foundation	1
		Dental	1
		Abedo	1
		Central Admin	12
			=73

29.	Information Management	Secretary	3
		Receptionist	2
			=5
30.	Audit	Compliance	
		Revenue	2
		Cash Book	3
		Stores	1
		Reconciliation	4
		Payment	1
		In-service mortuary	2
		Salary	4
		Debt Recovery	0
			2
			=17
31.	Account	HOD Section	4
		Cash book	6
		Salary	4
		Budget	5
		Cash Office	2
		Final account	3
		Revenue	4
		Reconciliation	5
		Fixed Asset	2
		Pension	1
		Tax	1
		Contract Fees	1
		Payment Unit	7
		Private suit	1
		Investment and special duties	2
			=48
32.	Information Technology	Net Ware	5
		Soft Ware	3
		Hard Ware	3
		Users support	2
			=13
33.	Hospital Service	NHIS	8
		Telephone room	4
		General Admin	12

		Service Officer	6
		Dental	1
			=31
34.	Total Quality Management	All the wards	2
		Clinics	2
		Admin Officer	3
			=7
35.	Tele Medicine	Production control and studio	1
		Server room and classroom	1
			=2
36.	Procurement Unit	Bidding document	2
		Procurement Office	5
		HOD's Office	3
		Secterics	2
			=12
37.	Bio medics	Owena dialysis	6
		CSSD / Unit	7
		Theater SSD/ICU	5
		General Workshop	5
		Radiology	2
		Administrative officers	1
		HOD/ Assistance	1
		Dentistry	1
			=28
38.	Total Facility Management	Environmental	1
		Water treatment	3
		Electrical	2
		Plumbing	1
		Lift attendant	12
		Medical	1
		Capital Project	2
		Estate	10
			=32

39.	Bulk Stores	Receiving Bay	9
		Stationery Stores	1
		Medical Stores	3
		Linen Stores	1
		General Stores	1
		HOD'S Office	2
			=17
40.	Instruments	Pipeline	5
		Oxygen	29
		Workshop	9
		Office	4
			=47
41.	Human Resources	Nursing Department	3
		Admin Tech	1
		Residing Unit	2
		Junior Record	2
		Dispatch	4
		Residing unit	6
		Housing	1
		Training Unit	1
		Hospital Office	1
		Sales of form	1
		Senior Record	5
		Pilling	4
			=31
42.	General Admin	Key Room	11
		Laboratory	2
		Main Office	5
		Extension Office	15
		C M A's Office	5
		C M D's Office	13
			=51
43.	Legal Unit		2
			=10
44.	Community Liaison Office		

45.	Schools		
	Federal Government Founded Schools	School of Environmental	
		Public Health Tutor	3
		School of Information Management	1
			1
	Schools	School of Nursing	
		Peri-Operative Nursing	6
			2
		Occupational Health Nursing	
			2
		School of Medical Laboratory Science	
			2
			=17
		Total male staff	=1029

APPENDIX V

Proportionate distribution of the study population in the unit according to their professions

S/N	Clinical staff = 237 237 x 600 = 138 1029	Paramedical staff = 240 240 x 600 = 140 1029	Administrative staff = 267 267 x 600 = 156 1029	Maintenance officer = 189 189 x 600 = 110 1029	Record and information management staff = 96 96 x 600 = 56 1029
1	Anaesthesia 19 19 x 138 = 11 237	Nursing 21 21 x 140 = 12 240	Nursing 1 1 x 156 = 1 267	Radiology 24 24 x 110 = 14 189	Statistician 1 1 x 56 = 1 96
2	Chemical Pathology 6 6 x 138 = 3 237	Physiotherapy 17 17 x 140 = 10 240	Pharmacy 2 2 x 156 = 1 267	Engineering 4 4 x 110 = 2 189	Nuclear Medicine 1 1 x 56 = 1 96
3	Child Oral Health 3 3 x 138 = 2 237	Pharmacy 28 28 x 140 = 16 240	Radiology 3 3 x 156 = 2 267	Nuclear Medicine 5 5 x 110 = 3 189	School of Information Management 1 1 x 56 = 1 96
4	Clinical Pharmacology 2 2 x 138 = 1 237	Virology 2 2 x 140 = 1 240	Chemical Pathology 18 18 x 156 = 11 267	Hospital Service 19 19 x 110 = 11 189	Health Records 73 73 x 56 = 42 96
5	Community Medicine 11 11 x 138 = 6 237	Microbiology 15 15 x 140 = 9 240	Accident and emergency 2 2 x 156 = 1 267	Total Quality Management 4 4 x 110 = 2 189	Information Management 5 5 x 56 = 3 96
6	General Out Patient 8 8 x 138 = 4 237	Dietetics 3 3 x 140 = 2 240	Staff Medical Service 7 7 x 156 = 4 267	Procurement Unit 10 10 x 110 = 2 189	Information Technology 13 13 x 56 = 8 96
7	Medical Microbiology 5 5 x 138 = 3 237	Medical Social Worker 31 31 x 140 = 18 240	Family Medicine 2 2 x 156 = 1 267	Biomedics 26 26 x 110 = 15 189	Tele Medicine 2 2 x 56 = 1 96
8	Haematology 4 4 x 138 = 2 237	Radiology 17 17 x 140 = 10 240	Paediatric 2 2 x 156 = 1 267	Total Facility Management 32 32 x 110 = 19 189	

9	Medicine 22 22 x 138 = 13 237	Pathology 35 35 x 140 = 20 240	Medicine 2 2 x 156 = 1 267	Bulk Stores 17 17 x 110 = 10 189	
10	Nuclear Medicine 3 3 x 138 = 2 237	Radiotherapy 3 3 x 140 = 2 240	Anaesthesia 1 1 x 156 = 1 267	Instruments 47 47 x 110 = 27 189	
11	Obstetrics & Gynaecology 25 25 x 138 = 15 237	Medicine 4 4 x 140 = 2 240	Dentistry 6 6 x 156 = 4 267	Radiotherapy 1 1 x 110 1 189	
12	Ophthalmology 11 11 x 138 = 6 237	Chemical Pathology 8 8 x 140 = 4 240	Ophthalmology 6 6 x 156 = 4 267		
13	Otorhinolaryngology 7 7 x 138 = 4 237	Accident and emergency 4 4 x 140 = 2 240	Nuclear Medicine 1 1 x 156 = 1 267		
14	Oral Pathology 3 3 x 138 = 2 237	Haematology 17 17 x 140 = 10 240	Obstetrics and Gynaecology 3 3 x 156 = 2 267		
15	Oral maxillofacial 5 5 x 138 = 3 237	Occupational Therapy 2 2 x 140 = 1 240	Psychiatry 2 2 x 156 = 1 267		
16	Orthopaedic & Trauma 7 7 x 138 = 4 237	School of Environmental 3 3 x 140 = 2 240	Audit 17 17 x 156 = 10 267		
17	Paediatrics 18 18 x 138 = 10 237	Public Health Tutor 1 1 x 140 = 1 240	Account 48 48 x 156 = 28 267		
18	Pathology 9 9 x 138 = 5 237	Paediatric 5 5 x 140 = 3 240	Hospital Service 12 12 x 156 = 7 267		

19	Preventive Dentistry 1 1 x 138 = 1 237	Nurse Tutor 2 2 x 140 = 1 240	Total Quality Management 3 3 x 156 = 2 267		
20	Psychiatry 10 10 x 138 = 6 237	School of Nursing 6 6 x 140 = 4 240	Procurement Unit 2 2 x 156 = 1 267		
21	Radiology 13 13 x 138 = 8 237	Pre-Operative Nursing 2 2 x 140 = 1 240	Bio medics 2 2x156 = 1 267		
22	Radiotherapy Dentistry Restorative 4 4 x 138 = 2 237	Nuclear Medicine 10 10 x 140 = 6 240	Human Resources 31 31 x 156 = 18 267		
23	Surgery 38 38 x 138 = 22 237	Occupational Nursing 2 2 x 140 = 1 240	General Admin 41 41 x 156 = 24 267		
24	Palliative 3 3 x 138 = 2 237	School of Medical Laboratory 2 2 x 140 = 1 240	Legal Unit 2 2 x 156 = 1 267		
25			Community Liaison Office 10 10 x 156 = 6 267		
26			Radiotherapy 1 1 x 156 = 1 267		
27			Medical side 15 15 x 156 = 9 267		
28			Surgical 6 6 x 156 = 4 267		

APPENDIX VI

INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)
COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN. IBADAN, NIGERIA.

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UI/UCH EC Registration Number: NHREC/05/01/2008a

NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: Knowledge, Perception and Utilization of Prostate Cancer Screening Services among Staff Workers of the University College Hospital, Ibadan, Oyo State, Nigeria

UI/UCH Ethics Committee assigned number: UI/EC/12/0325

Name of Principal Investigator: **Rachel O. Hassan**

Address of Principal Investigator: Department of Health Promotion & Education,
College of Medicine,
University of Ibadan,Ibadan

Date of receipt of valid application: 04/10/2012

Date of meeting when final determination on ethical approval was made: N/A

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and given *full approval* by the *UI/UCH Ethics Committee*.

This approval dates from 31/05/2013 to 30/05/2014. If there is delay in starting the research please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC early in order to obtain renewal of your approval to avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all investigators guidelines, rules and regulations and with the terms of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to the research site without previous notification.

Professor A. Ogunniyi
Director, IAMRAT
Chairman, UI/UCH Ethics Committee
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