PROSTATE CANCER SCREENING IN NIGERIAN MEN: PERCEIVED BARRIERS AND RECOMMENDATIONS

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ABSTRACT

Prostate cancer has been described as the leading cause of cancer-related deaths among men aged 40 years and above, especially in developing countries including Nigeria. By 2030, the global burden of prostate cancer which is currently the fifth leading cause of death worldwide is expected to hit 1.7 million new cases and 499,000 new deaths. The exact causes of prostate cancer are unknown, it is thought that aging, family history, lifestyle, genome changes and race are among the significant risk factors. Routine screening for prostate cancer by prostate specific antigen and digital rectal examination can lead to early detection of the disease, thereby optimizing incidence, minimizing prevalence, and reducing the mortality rate. Studies have shown that Nigerian men are less likely to engage in screening practices due to fatalistic beliefs, lack of knowledge about prostate cancer and risk factors, misconception about screening, and no encouragement from the service provider among others. This review recommends the establishment and maintenance of institutional frameworks and policy guidelines that would create awareness programs on prostate cancer and the benefits of early screening for all men in Nigeria.

Key words: Barriers, digital rectal examination, prostate cancer, prostate specific antigen, screening.

INTRODUCTION

The prostate is a walnut-sized gland in the male reproductive system. It is situated beneath the bladder in front of the rectum and covers the upper part of the urethra (the tube that empties the bladder of urine). It supports bladder control and creates the seminal fluid that nourishes and transports sperm. Prostate adenocarcinoma (prostate cancer) is the most common type of non-skin melanoma among men globally (Tasian *et al*., 2012). When the ability to control cell growth or death is compromised in the prostate gland, a condition known as prostate cancer results. More than 99% of prostate cancers develop in the gland cell which is why it is called adenocarcinoma otherwise it is called sarcoma. As a result, abnormal cells concentrate around the prostate gland to form tumors (Kolade, 2017). The majority of prostate cancers grow slowly, while some grow relatively fast (Stewart and Wild, 2014; National Cancer Institute, 2015). Men under the age of 40 are rarely diagnosed with prostate cancer, and by the age of 50, it is usual for men to notice changes in the size and shape of the prostate cells (Cancer treatment centers of America [CTCA] n.d). By 2030, the global burden of prostate cancer which is currently the fifth leading cause of death worldwide is expected to hit 1.7 million new cases and 499,000 new deaths (Center *et al*., 2012). However, this burden is not evenly distributed across the globe as black men have a higher incidence of prostate cancer, a more aggressive course, and a higher mortality rate when compared to white men. Despite extensive research, there is still no consensus regarding the causes of these discrepancies or the most effective ways to reduce them. According to the International Agency for Research on Cancer (IARC), prostate cancer accounted for 29.1% of all male malignancies in Nigeria in 2018, with an age-standardized 1-year prevalence rate of 16.1, which is less than one-fourth of the rate in the United States. However, with 32.8 cases and 16.3 deaths per 100,000 men, prostate cancer is both the most prevalent and deadliest cancer in Nigerian men. 80% of Nigerians are thought to be incurable upon diagnosis, which, according to the report, is a death rate that is more than double that of North America.

Most men are unaware they have prostate cancer since it typically progresses slowly and they never experience any symptoms. In other men, however, prostate cancer can be fast growing and need treatment to prevent or delay spread outside of the gland. The main signs of prostate cancer are blood in urine, weak or decreased urine flow, increased urination frequency especially at night, the sensation that the bladder has not emptied, urinating with difficulty, incontinence, and urgency. Men who experience these symptoms might decide against seeing a doctor because they think the symptoms are a natural part of aging. Although the exact causes of prostate cancer are unknown, it is thought that aging, family history, lifestyle (such as diet high in testosterone levels), environment, genome changes (such as changes in BRCA type 1 and 2, RB1, WT1, and other genes), and race (being black, for example) are among the significant risk factors (CTCA n.d; So *et al*., 2014; Jeihooni *et al*., 2015). As long as there is no local progression or metastasis to other parts of the body, prostate cancer typically doesn't cause any symptoms (Madu and Lu, 2010), and by the time symptoms do appear, the disease has typically already progressed to its final stages. This is a major obstacle in the fight against the disease. According to research, early detection is a key factor in determining cancer's prognosis, especially that of prostate cancer. Therefore, early disease detection through screening, which is the study's main objective, can reduce the mortality rate of the condition in asymptomatic men and provide an opportunity for the use of efficient and affordable treatment options (Paiva *et al*., 2011; Conde *et al*., 2011, Smith *et al*., 2014). Factors that have been cited as screening barriers include negative beliefs; fears; and socioeconomic status, including limited education and anxiety. These circumstances have an impact on the men's health and lives, as well as the children, families, communities, and the

country as a whole. Specifically, this review's objective is to investigate barriers to prostate cancer screening and recommendations on how to improve them in Nigeria.

PROSTATE CANCER SCREENING

Screening is the presumptive detection of unidentified diseases or defects through tests, examinations, or other procedures that can be applied rapidly (Agbo, 2016). Cancer screening implies searching for any cancer before the development of symptoms. The main reason for screening for cancer is to figure out if there is an abnormal growth, and if its growth may have a high risk of spreading if not handled effectively (Center for Disease Control and Prevention[CDC], 2022). The American Cancer Society (ACS) recommends that men should make an informed decision with their health care providers about whether to be screened for prostate cancer. Screening options for prostate cancer include a digital rectal exam (DRE) and the assessment of prostate-specific antigen (PSA) levels (Ezenwa *et al.*, 2012).

The digital rectal exam involves healthcare personnel putting a lubricated gloved finger into a man's rectum to check for any abnormality on the prostate that might be cancerous (CDC, 2022). According to Niang *et al.* (2011), DRE of the prostate gland is a reliable technique with a high predictive value for cancer screening. It is recommended to be carried out during annual physical examinations. Before the discovery of PSA in the mid-1980s, DRE was the first and only diagnostic technique used to diagnose prostate cancer. However, this test has considerable interexaminer variability and the majority of cancers detected using digital rectal examinations are at an advanced stage (Agbo, 2016).

PSA test which is the most commonly used screening method is a blood test that measures the level of PSA in the blood. PSA is a protein that is produced by cells in the prostate gland. It is mostly found in semen, although it is also present in the blood in trace amounts. Nanogram per millilitre of blood (ng/ml) is the general method for measuring the PSA level. There is no particular level of PSA that is stated to be normal. The reading differs for different men and the level usually increases as one gets older. In most cases, most men have a PSA level of less than 3ng/ml. The level of PSA can be higher in men with prostate cancer; they can also increase due to some other factors such as age and race (CDC, 2022). PSA levels can also be affected by certain medical procedures, some medications, enlarged prostate (benign prostatic hyperplasia), prostate infection (prostatitis) and there is the risk of false positives. Because many factors can affect PSA levels, a specialist is the best person to interpret the PSA test results.

Suspicion of prostate cancer due to abnormalities found on digital rectal examination (DRE) or by serum prostate-specific antigen (PSA) elevations often results in a recommendation for further tests (Shariat and Roehrborn, 2008). Such tests include; a magnetic resonance imaging (MRI) scan, Prostate Biopsy, CT scan, and bone scan. The progression of each test depends on the previous test (Cancer Research UK [CRU], 2022).

Magnetic resonance imaging (MRI) is a type of scan that uses a magnetic field, radiofrequency pulses, and a computer to produce detailed pictures of the body. Specialists use prostate MRI to evaluate the extent of prostate cancer and determine whether it has metastasized. They may also use it to help diagnose prostate infection or an enlarged prostate. Some examiners may use an endorectal coil, a thin wire covered with a latex balloon. The specialist inserts the coil a short distance into the rectum. Prostate MRI does not use radiation. It provides clearer and more detailed images than other imaging methods.

Multiparametric magnetic resonance imaging (Mp-MRI) commonly used for prostate cancer is an advanced form of imaging. It uses three MRI techniques namely T2-weighted, dynamic contrast-enhanced, and diffusion-weighted MRI. It uses these techniques to provide anatomical pictures and information on the function of the prostate gland. Mp-MRI assesses water molecule motion (called water diffusion) and blood flow (called perfusion imaging) within the prostate (Taneja, 2004). This helps the doctor to tell the difference between diseased and normal prostate tissue. Mp-MRI helps differentiate between low-risk/slow-growing and high-risk/aggressive prostate cancers. It also helps ascertain if cancer has spread beyond the prostate level. The result only does not mean that prostate cancer has been confirmed but it is likely present. Not all cancers are seen in the Mp-MRI scan, so a further test is required which is biopsies (Murphy *et al.*, 2013).

Biopsy of prostate cancer involves taking out a tissue from the prostrate and viewing the sample under the microscope to check for cancer. There are two major methods, which include; transrectal ultrasound scan (TRUS) guided biopsy and transperineal biopsy. The most presently valid method of biopsy to ensure accurate sampling of prostate tissue in men with a high risk of prostate cancer is the Transrectal ultrasound (TRUS)-guided, systematic needle biopsy (Shariat and Roehrborn, 2008).

When a biopsy is completed and it is confirmed that there is a cancer cell in the prostate, the patient will then be taken for further tests called staging in cancer. This test is carried out to determine the extent of the disease, that is; the exact location, if it has spread to other parts of the body and how big the tumor is. Computed Tomography (CT) scans and bone tests are the tests usually carried out during the staging period. CT scan uses an x-ray and a computer to create a comprehensive image of the body to show if cancer has spread in the body. CT scans are the fastest and uses cheaper hardware, so it is affordable to use but has high radiation dose which may lead to adverse effect if used for a long time (Korevaar *et al.*, 2021). The bone scan is used to detect any changes or abnormalities in the bone, and to know if cancer has spread to the bone (Formenti *et al.*, 2021). The results of various screening tests will help to know the right treatment method to initiate.

PERCEIVED BARRIERS
Perceived barriers refer to the negative effects of health-promoting behavior (Champion, 1999). Perceived barriers are elements that prevent someone from engaging in behaviors as a result of their beliefs about illness and disease. The methods through which barriers hinder prostate cancer screening have been studied by various researchers. According to Mutua *et al.* (2012), PCA screening hurdles include fatalistic beliefs, lack of knowledge about prostate cancer and risk factors, fear of screening being uncomfortable and family influence. Again, Kolade (2017) investigated how 130 Nigerian male workers aged 40-65 years regarded prostate cancer screening and discovered that a low level of knowledge about prostate cancer, misconception towards prostate cancer screening, and no encouragement from the service provider are the perceived barriers. Also, Oranusi *et al.* (2012) in a cross-sectional study conducted on 652 men aged 20–69 noted that the absence of a national cancer center, credibility of health promotion campaigns, fear of being diagnosed with cancer, and no national policies on prostate cancer screening is associated with barriers to screening, whereas Awosan *et al.* (2018) cited lack of knowledge about cancer of the prostate, lack of knowledge about prostate-specific antigen screening, cost of screening and no health insurance cover as significant barriers to screening among 300 men aged 40–84 years from Sokoto, Nigeria. Oladimeji *et al.* (2010) identified barriers in a different study as limited knowledge about prostate cancer and lack of awareness of screening tests. A growing body of literature suggests that, even among immigrants, barriers can deter

individuals from getting screened for the disease (Akpuaka *et al.,*2013; Boyd *et al.,*2001). For example, (Akpuaka *et al.,* 2013) conducted a study of 22 Nigerian male immigrants to the United States to explore their barriers and beliefs towards PCA screening of Nigerian male immigrants residing in the Washington DC metropolitan area. Participants cited embarrassment, masculinity, and lack of information as barriers to screening for PCA, and the authors concluded that cultural beliefs, lack of health insurance, and social norms might have influenced participants' decisions about PCA screening. The majority of the studies revealed that a low level of knowledge hinders Nigerian men from screening for prostate cancer. The lack of knowledge ranges from not knowing anything about prostate cancer (Awosan *et al.,* 2018; Mutua *et al.*, 2017), lack of knowledge about the existing screening methods and campaigns (Awosan *et al.*, 2018; Kolade, 2017), and lack of knowledge about the existence of prostate cancer screening facilities (Oladimeji *et al.*, 2010).

RECOMMENDATION

This review has shown that there is a low level of prostate cancer awareness among Nigerian men. There should be creation of information leaflets containing short information on the common disease, advantages of early screening in different language and distributed to both the urban and rural part of the country (Ogundele and Ikuerowo, 2015). The media authority should make sure that the right information about prostate cancer, risk factors, screening and treatment are being shared so as to remove the false believe among Nigerian men and help them with necessary information to seek for help when there is need to. Health workers should organize seminars and workshops to enlighten most people about the prostate cancer and the benefits of early screening (Ogundele and Ikuerowo, 2015). Intervention measures aiming at increasing knowledge about prostate cancer and screening services need to be scaled up alongside ensuring that screening services are freely available for easy access among individual both in rural and urban area (Fidelis *et al.*, 2019).

The major factor in the changing prevalence of prostate cancer is the effect of screening. Nigeria screening program is underdeveloped which has led to the low outcome of screening process (Ogunbiyi and Shittu, 1999). The right resources should be channeled to the health sector to improve the efficiency of the screening program in Nigeria. The cost of screening should be reduced to make it more affordable for people on low incomes.

There is need for Nigeria government to promote prostate awareness and screening. This will reduce mortality rate and in turn improve the economy of the country.

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