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Awareness and Attitudes of Nigerian Men Living in Abuja on Prostate Cancer and Screening

Paraskevi A. Farazi[1] · Mohammad Siahpush[1] · Shannon Maloney[1] · Danae Dinkel[2] · Arthur Michalek[3] · Rahama John[4] · Olabode Oluwole[5]

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Abstract

Prostate cancer (PCa) is the most commonly diagnosed cancer among Nigerian men. The prevalence of PCa varies within Nigeria, with the highest prevalence of 1046 per 100,000 in men over the age of 40 reported in Lagos. Unfortunately, 40% of these men are diagnosed with locally advanced disease and 35% with metastatic disease. Given the ability to screen for PCa among high-risk individuals, late stage diagnosis of PCa could be potentially reduced through education of men so that they seek screening. Along these lines, it is important to assess a population's knowledge and awareness on PCa and screening. Our study addresses this issue by evaluating awareness and attitudes of Nigerian men in Abuja on PCa and screening. Our results revealed gaps in awareness and perception of susceptibility to PCa and low levels of PCa screening. Factors such as age, education level, and income affected PCa awareness. In conclusion, our study points to the need to educate younger men of lower education and socioeconomic status in Nigeria with the aim to increase screening and earlier detection of PCa.

Keywords Prostate cancer · Awareness · Screening · Nigeria

Introduction

Prostate cancer (PCa) is the second most commonly diagnosed malignancy and the fifth leading cause of cancer death in men globally [1]. Racial and ethnic disparities are apparent in PCa incidence and mortality, with African American men (AAM) showing higher age standardized PCa incidence and mortality rates compared to European American men (EAM) [2, 3]. In addition, black men in the United Kingdom (UK) have been reported to have two–three times higher risk of developing PCa compared to Caucasian men [4].

The burden of PCa in Africa is not fully known due to poor health management information systems. The overall pooled PCa incidence in Africa was 21.95 per 100,000, which is lower than predicted [5]. However, studies in Nigeria have shown incidence rates in both extremes in different areas. The lowest PCa incidence of 3.8 per 100,000 men was reported in Lagos (southwest Nigeria) [6, 7] and the highest PCa incidence of 182.5 per 100,000 men was reported in Ile-Ife (southwest Nigeria) [8]. Lower incidence rates of PCa in some African countries may reflect limited health care access. PCa is the most commonly diagnosed cancer among Nigerian men. A community-based screening study in Lagos revealed a prevalence of 1046 per 100,000 men over the age 40, with 40% of those men diagnosed with locally advanced disease and 35% with metastatic disease [7].

PCa screening involves a digital rectal exam (DRE) and prostate-specific antigen (PSA) test. PCa screening practices are controversial due to reports of PCa overdiagnosis with PSA testing [9]. The American Cancer Society recommends that men should have a discussion with their primary care physician to make an informed decision of their individual need for PCa

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✉ Paraskevi A. Farazi
evi.farazi@unmc.edu

[1] College of Public Health, University of Nebraska Medical Center, Omaha, NE 68198-4395, USA

[2] College of Education, University of Nebraska at Omaha, Omaha, NE, USA

[3] School of Public Health and Health Professions, University at Buffalo, Buffalo, NY, USA

[4] Department of Life and Health Sciences, University of Nicosia, Nicosia, Cyprus

[5] University of Abuja Teaching Hospital, Abuja, Nigeria

screening. This requires that men are aware of PCa and screening [10]. Several studies have been conducted in Greece, USA, UK, Burkina Faso, Cameroon, Uganda, Spain, Hawai'i, Barbados, and Nigeria among others addressing awareness and knowledge on PCa and screening [11]. A Greek study [12] reported that a total of 31% of males between 45 and 54 years and > 50% of men above 60 years of age undergo PSA tests annually in Athens and Thessaloniki. PCa screening was associated with higher educational level and socioeconomic stability. In a focus group study in Uganda, the majority of the men were not aware of PCa. Many of them did not pay attention to symptoms relating to their urinary system and they usually confused PCa with gonorrhea. Of these men, 45.9% had no idea what PCa is. Of the 54.1% that knew what it was, only 10.1% knew up to four symptoms, screening methods, and some risk factors for PCa [13]. In Nigeria, a survey carried out in a rural community in Ogun State reported that only 39.2% had heard of PCa before and 16.6% knew where the prostate gland was in the human body. While 64.6% of the men recognized that PCa is a deadly disease, only 2.0% of the men had been screened for PCa within 2 years of the research. However, 68.8% of them were willing to get screened in the future [14].

The aforementioned low level of awareness in certain communities may be the result of much more focused attention on other common cancer types, such as breast cancer [15]. Presently in Nigeria, there is no organization responsible for raising awareness on PCa and screening nor are annual PSA tests or other screening tests for PCa routinely performed [11]. With lack of awareness, the incidence and mortality rate of PCa will remain high, especially since health conditions such as obesity, hypertension, and diabetes, which are highly associated with PCa, are very common in Nigeria [16]. Despite the lack of attention on PCa, a survey of Nigerian men in Ogun State between 2005 and 2008 revealed positive attitudes towards PCa screening [11].

Considering the importance of awareness on PCa and screening in Nigeria, our aim was to investigate the awareness level regarding PCa and screening among men living in Abuja, the capital of Nigeria as well as to identify factors affecting awareness. The latter would provide information on how PCa awareness can be improved.

Materials and Methods

Study Design

This was a cross-sectional study on awareness and attitudes of men in Abuja regarding PCa and screening using a validated questionnaire. The study population consisted of 600 men in the Federal Capital Territory, Abuja, Nigeria. Data collection took place during March–April, 2015. Abuja was chosen because it is the capital of Nigeria and its population of 2.245 million (in 2012) consists of people who originate from the 36 various states in Nigeria (The Federal Capital Territory Administration 2014).

Assessment Tool

The validated questionnaire consisted of 42 questions and was used in a previous study in the Ilishan Community, Nigeria. Permission to use the questionnaire was obtained from the primary author of the study (Atulomah, Olanrewaju et al. 2010). The questionnaire is available online in the published article of Atumolah et al. The questionnaire was delivered in the English language. The interviewer was Native Nigerian and therefore provided translation when necessary. The questionnaire includes four sections. The first section contains five questions on demographic characteristics such as age, educational level, and occupation. This is followed by a section containing 15 questions on the participant's knowledge and awareness about the prostate gland and PCa, with questions such as the location of the prostate gland and symptoms of PCa. The next section containing ten questions including susceptibility, impact of PCa, and the benefits of being aware of PCa. Questions of the latter section are related to knowledge and beliefs. The last section of the standard questionnaire contains six questions on PCa screening, such as whether participants have been screened and whether they know what the screening procedure involves. A supplemental questionnaire was also used to collect additional information such as average monthly income to assess socioeconomic status and family history of PCa.

Scoring

A coding system was used to score the questions from the questionnaire with a correct/wrong answer. Each section of the questionnaire was scored according to the scheme of Atumolah et al. [14]. Questions that required the participant to answer in his own words were excluded from the scoring. For example, for the question "Have you heard about PCa before? Yes () No ()," the participant who chose "yes" received a score of 1 while the participant who chose "no" received a score of 0. To assess the level of awareness on PCa, all questions relating to the topic were scored and the assigned scores were added to obtain a total score of awareness as shown in Supplemental Table 1. For questions with multiple correct answers, 1 point was given to each correct answer. Therefore, if there were two correct answers in that question, someone who only ticked one of the two would get 1 point (partially correct answer) and someone who ticked both correct answers would get 2 points. Section A: Demographics was simply coded. Section B: Knowledge and awareness was scored on a 16-point scale. Section C: Perception of susceptibility and impact of PCa was scored on a 30-point scale while section D: screening behavior was scored on a 9-point scale

where a low score reflects little or no screening in the last 2 years and a maximum score indicates regular and recent screening within the last 2 years. All sections combined had a maximum score of 55. The scoring was based on dividing the maximum score into tertiles.

Sampling

Multi-stage sampling based on the Primary Health Scheme in Nigeria was used to select participants for this study since a database with details of the population living in Abuja was not available. By laying out the map of Abuja, we selected (with the guidance of our local collaborator and co-author Dr. Olabode Oluwole) certain districts that were representative of the entire population in both the inner city and peripheral community. These included districts such as Garki, Wuse, and Maitama for the inner city and Lugbe, Utako, and Apo for the peripheral districts. We randomly chose 20 streets from each district and sampled five houses from each street. This was done in an effort to make the sample population more representative of the entire population of Abuja.

Statistical Analysis

Descriptive statistics were performed to identify mean, standard deviation, and percentages. Data analysis was performed using both numerical and categorical scales. Categorical scales were used to divide awareness into low, medium and high level by dividing the scores in tertiles based on the maximum possible score. Numerical scale for awareness involved use of the scoring system with numbers. We investigated the percentages of participants attaining scores in the different categories, as well as compared fractions of participants answering individual questions correct vs wrong using the chi-square test. ANOVA test was used when we assessed the impact of various demographic factors (age, education, and income) on PCa awareness. The significance level was set at a p value 0.05. All statistical analysis was performed using SPSS software on Windows.

Results

The demographics of the study population are shown in Supplemental Table 2 with the age distribution of the participants reflecting the age structure of the population in Nigeria based on the population pyramid published in CIA World Facts (2014). The majority of participants (81.6%) had a tertiary level education and had a monthly income in the lowest three income categories (26.4% had income of less than $245/month, 27.9% had income of $245–490/month, 30.8% had income of $490–980/month).

The mean score achieved for the entire questionnaire was 27.110. The total score was divided into low (0–18), medium (19–36), and high (37–55) score categories. The majority of participants (81.7%) received a medium score of awareness, 10.5% received a low score, and only a minority (7.8%) received a high score total score.

Awareness and Specific Knowledge

Section B, "Awareness and Specific Knowledge," was scored from 0 to 16, with the highest score achieved being 14 and the lowest score achieved being 0. The mean score for this section was 7.56. The level of awareness was split into low, medium, and high with scores in the range of 0–5, 6–11, and 12–16, respectively. The majority of participants (66.7%) received a medium score of awareness (Fig. 1). Alarmingly, only 25.8% of participants knew where the prostate gland was located, 79.5% did not know the main factors that cause PCa (28.8% gave a fully incorrect answer and 50.7% provided only one correct answer), and 75% were not familiar with the symptoms of PCa (Table 1). More men had heard about breast cancer (93.8%) than PCa (79.2%), and 89.8% correctly reported which gender is affected by breast cancer more compared to 77% correctly reporting which gender is affected by PCa (Table 1).

Perception of Susceptibility and Impact of PCa

Section C of the questionnaire "Perception of Susceptibility and Impact of PCa" had a maximum possible score of 30 with a mean achieved score of 17.06. The level of perception of susceptibility and impact of PCa was split into low, medium, and high with scores in the range of 0–10, 11–20, and 21–30, respectively. The majority of participants (66.6%) received a medium score (Fig. 1). Interestingly, 53.5% of participants felt that they could not have PCa if they are unaware of it, 37.2% thought PCa is a sexually transmitted infection, 63.4% thought PCa only affects

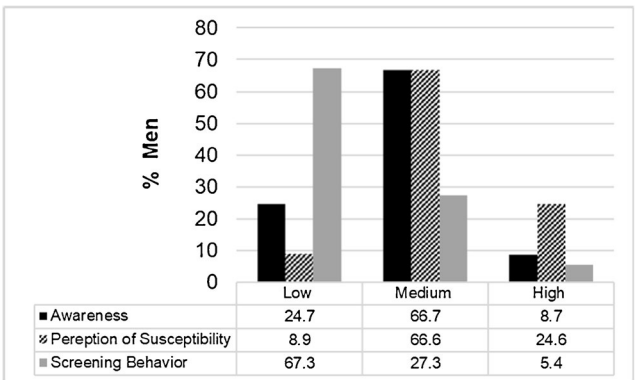

Fig. 1 Awareness/specific knowledge, perception of susceptibility, and screening behavior of PCa in the study population. The figure shows the percentages of participants that achieved the various score ranges (low, medium, and high) in the three sections. PCa prostate cancer

Table 1 Answers to individual questions

Question	Answers	%
Where is the prostate gland located	Under bladder	25.8
	Incorrect answer	74.2
Factors that cause PCa	Incorrect answer	28.8
	One correct answer	50.7
	Two correct answers	20.5
Familiar with PCa symptoms	Yes	25
Heard about breast cancer	Yes	93.8
Heard about prostate cancer	Yes	79.2
Which gender affected by breast cancer more?	Females	89.8
	Males	10.2
Which gender affected by prostate cancer?	Males	77
	Females	23
I cannot have PCa if I am unaware of it	Yes	53.5
PCa is a sexually transmitted infection	Yes	37.2
PCa only affects white people	Yes	63.4
PCa does not kill	Yes	43.6
Medical checkup is beneficial	Yes	53.9
Screened in the last 2 years	Yes	14
Intention of getting screened in near future	Yes	72.8
Familiar with PCa screening procedure	Yes	26.8

The table shows the percentage of participants that have answered specific questions from the three sections. *PCa* prostate cancer

white people, 43.6% thought PCa does not kill, and 53.9% thought a medical check is beneficial (Table 1).

Screening Behavior

Section D of the questionnaire "Screening Behavior" had a maximum possible score of 9 with a mean achieved score of 2.73. The level of screening behavior was split into low, medium, and high with scores in the range of 0–3, 4–6, and 7–9, respectively. The majority of participants (67.3%) received a low score (Fig. 1). Fourteen percent reported having been screened in the past 2 years, 72.8% reported an intention of getting screened in the near future, and 26.8% were familiar with PCa screening procedure (Table 1). We also examined screening behavior in the past 2 years by the age group. Only 29.4% of participants over 46 years of age (recommended age of screening) reported being screened in the past 2 years (Table 2).

Factors Impacting PCa Awareness

We next examined whether some factors affect overall PCa awareness. Our results revealed a higher level of awareness with increasing age (Supplemental Fig. 1A; $p = 0.002$), higher education (Supplemental Fig. 1B; $p < 0001$) and higher monthly income (Supplemental Fig. 1C; $p < 0.0001$). Interestingly, the proportion of men over 46 years of age who had been screened in the past 2 years appeared to be increasing with higher monthly income (Supplemental Fig. 1D; $p < 0.0001$).

Discussion

Our study revealed gaps in awareness regarding PCa and screening in an urban population in Nigeria, with significant gaps in knowledge about risk factors and symptoms of PCa. This lack of awareness and knowledge on PCa implies that these men would not seek medical attention regarding their prostate, which would contribute to the late diagnosis of PCa observed in Nigeria [7]. More men were aware of breast cancer than PCa, reflecting the country's cancer prevention and control efforts for breast cancer but lack of similar programs for PCa.

Table 2 Screening behavior regarding prostate cancer. The table shows the percentages of participants by age groups that were screened in the past 2 years

Age (years)	% respondents who have been screened in the past 2 years
15–25	0
26–35	11.2
36–45	11.8
46+	29.4

We also assessed perception of susceptibility and impact of PCa, which reflects on how likely these men think they will develop PCa and the severity of its health effects. The majority of participants scored at a medium level in this section. A little over 50% of participants actually felt that they could not have PCa if they are unaware of it, reflecting cultural and religious beliefs. In other words, if one does not know and worry about PCa, many of these men believe it will not happen to them. This requires the development of education programs that take into consideration such cultural and religious beliefs.

Despite the fact that PCa is actually more common in black men compared to Caucasian men, a little over 60% of Nigeria men thought PCa only affects white people. Only when men begin to appreciate their increased risk for PCa, would they attend to their prostate health and embrace discussion with their medical doctor regarding screening. In addition, a little over 40% thought PCa does not kill (which is not the case when diagnosed at a late stage, as is the case in Nigeria [7]. This points to the fact that these men do not consider PCa as a major health problem in their community and consequently PCa screening is undermined. In fact, only 29.4% of participants over the age of 46 years reported being screened in the past 2 years. Of course, we cannot exclude socioeconomic factors precluding these men from getting screened. We did observe a higher proportion of men over 46 years old getting screened among higher income individuals.

Several factors affected PCa awareness in the study participants. More specifically, increasing age, higher education, and income were associated with higher level of awareness, indicating that lower socioeconomic groups should be especially targeted for PCa education. In addition, financial barriers to screening could be addressed by providing financially supported programs for PCa screening among individuals of lower socioeconomic status. This would reduce the burden of PCa in Nigeria.

Finally, we compared our results with those of Atumolah et al., which took place in a rural area of Nigeria. Interestingly, there were differences in PCa awareness among the two populations, with the urban population showing higher levels of awareness. Whereas, 79.2% of the participants in our study (urban area) reported having heard about PCa, only 39.2% of the men in the rural area of Nigeria reported having heard about PCa. Furthermore, 20.5% of the men in the urban area knew the factors that cause PCa compared to 9% of the men in the rural area. A striking difference was observed in men's familiarity with PCa symptoms with 25% of men in the urban area being familiar with the symptoms and only 1.51% of the men in the rural area being familiar with the symptoms. This comparison further points to the need to target rural populations for cancer education. In addition to financial barriers to screening, access to care issues could be addressed in rural populations, ensuring that people living in more remote areas are reached and screened. Perhaps mobile "PCa prevention" clinics could address such issues.

In conclusion, our study points to the need of developing PCa prevention and control education programs in Nigeria that should especially target younger men of lower socioeconomic status and education as well as men living in rural areas. Such programs would increase awareness to PCa and screening, ultimately reducing the burden of advanced cancer in Nigeria through earlier diagnosis.

References

1. Center MM, Jemal A, Lortet-Tieulent J, Ward E, Ferlay J, Brawley O, Bray F (2012) International variation in prostate cancer incidence and mortality rates. Eur Urol 61(6):1079–1092
2. Siegel R, Ma J, Zou Z, Jemal A (2014) Cancer statistics, 2014. CA Cancer J Clin 64(1):9–29
3. Wu I, Modlin CS (2012) Disparities in prostate cancer in African American men: what primary care physicians can do. Cleve Clin J Med 79(5):313–320
4. Jones AL, Chinegwundoh F (2014) Update on prostate cancer in black men within the UK. Ecancermedicalscience 8:455
5. Adeloye D, David RA, Aderemi AV, Iseolorunkanmi A, Oyedokun A, Iweala EEJ, Omoregbe N, Ayo CK (2016) An estimate of the incidence of prostate cancer in Africa: a systematic review and meta-analysis. PLoS One 11(4):e0153496
6. Popoola A, Omodele F, Oludara M, Ibrahim N, Igwilo A, Makanjuola S (2013) Prevalence and pattern of cancers among adults attending a tertiary health institution in Lagos, Nigeria. IOSR-JDMS 6(3):68–73
7. Ikuerowo SOO, Ajala M, Mordi C, Esho J (2013) Prevalence and characteristics of prostate cancer among participants of a community-based screening in Nigeria using serum prostate specific antigen and digital rectal examination. PAMJ 15(129)
8. Badmus TA, Adesunkanmi ARK, Yusuf BM, Oseni GO, Eziyi AK, Bakare TIB, Adetiloye JA, Badmus SA (2010) Burden of prostate cancer in southwestern Nigeria. Urology 76(2):412–416
9. Etzioni R et al (2002) Overdiagnosis due to prostate-specific antigen screening: lessons from U.S. prostate cancer incidence trends. J Natl Cancer Inst 94(13):981–990
10. ACS (2016) American Cancer Society Recommendations for Prostate Cancer Early Detection. [cited 2017 10/18]; Available from: https://www.cancer.org/cancer/prostate-cancer/early-detection/acs-recommendations.html
11. Akinremi TO, Ogo CN, Olutunde AO (2011) Review of prostate cancer research in Nigeria. Infect Agent Cancer 6(Suppl 2):S8
12. Stamatiou K, Lardas M, Kostakos E, Koutsonasios V, Lepidas D (2009) Prostate cancer screening in Greece: current facts. Urol J 6(3):157–161
13. Nakandi H, Kirabo M, Semugabo C, Kittengo A, Kitayimbwa P, Kalungi S, Maena J (2013) Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. Afr J Urol 19(4):165–170
14. Atulomah N et al (2010) Level of awareness, perception and screening behavior regarding prostate cancer among men in a rural community of Ikenne Local Government Area, Nigeria. Primary Prevention Insights 2:11–20
15. Fitzpatrick JM, Kirby RS, Brough CL, Saggerson AL (2009) Awareness of prostate cancer among patients and the general public: results of an international survey. Prostate Cancer Prostatic Dis 12(4):347–354
16. Ejike CE (2011) Towards the prevention and management of prostatic diseases in Nigeria: a framework. MJMS 18(3):65–70