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ORIGINAL ARTICLE

Assessment of Prostate Cancer Awareness and Screening Among Men in Gombe State, Nigeria

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Keywords

Knowledge,

Factors,

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ABSTRACT

Background: Prostate cancer is the number one cancer among Nigerian men, and there are screening methods that can be employed for early detection and reduction of mortality. The objective of this study was to assess the level of knowledge of prostate cancer and its screening practices among men in Gombe local government.

Methods: A descriptive cross-sectional study was carried out among men aged 40 years and older. The studied community was selected using a simple random sampling technique, and a semi-structured, interviewer-administered questionnaire was used to collect data, which was analysed using SPSS version 23 at a p-value of 5%.

Results: The mean age of the respondents was 55.87±13.40 years. The findings showed that only 2.5% of the respondents had good knowledge of prostate cancer. About 37.63% of the respondents had a high level of positive perception of prostate cancer. Very few respondents (2.5%) had good screening practices. There was a statistically significant relationship between age knowledge of prostate cancer (p-value 0.045), while level of education was found to be statistically associated with screening practice for prostate cancer (p-value 0.020).

Conclusion: The study showed that, despite poor knowledge and screening practices for prostate cancer, positive perceptions towards prostate cancer are encouraging. This calls for improving community awareness about the importance of prostate cancer screening by health authorities in Gombe State.

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INTRODUCTION

The prostate gland has the ability to undergo malignant changes resulting in prostate cancer, with more than 70% of cases of adenocarcinoma affecting men above the age of 65 years.[1] The well-established risk factors of prostate cancer are advanced age, ethnicity, genetic factors, and family history.[2] At the early stage, prostate cancer is usually asymptomatic, requiring minimal or even no health intervention.[2] According to GLOBACAN, in 2020, there were an estimated

1.4 million new cases and 375,000 deaths from prostate cancer worldwide, and the disease is the most common form of cancer among men in sub-Saharan Africa (SSA).[3,4] Available data reveal prostate cancer as the most commonly diagnosed cancer among Nigerian men.[5] In 2018, the World Health Organization (WHO) reported about 13,078 new cases of prostate cancer in Nigeria, with 5,806 deaths from the disease in Nigeria.[6]

Prostate cancer screening is recommended by the American Urological Association (AUA) and American Cancer Society (ACS) for men 50 years and older and starting 40-45 years among high-risk individuals.[7] In 2018, the United States Preventive Service Task Force (USPSTF) reported that in men aged 55-69 years, there is a benefit of decreasing deaths from prostate cancer with prostate-specific antigen (PSA) screening.[2] Such screening methods include PSA assay and digital rectal examination (DRE) of which PSA is widely used.[8,9] In Nigeria, many men are not aware of and willing to participate in screening; even with the availability of testing facilities, still much emphasis has been placed on cancers affecting women. [8,10] If adequate awareness of prostate cancer and its screening can be created, the present situation of late presentation can be reversed. Although prostate cancer screening remains one of the most controversial topics in urology, it is still regarded as a very important tool. [1,11-13] In Nigeria, there is no national policy on prostate cancer screening, and low screening rates will invariably translate into late presentation with reduced chances of survival, hence the need for this study.[8]

In a study conducted in Italy, 79.2% of the respondents had information about prostate cancer prevention, primarily through media, with 59.5% knowing the risk factors.[12] In Uganda, only 10.3% of the participants had good knowledge of its symptoms.[14] While in Zambia, 33.5% had heard of the disease, with up to 55.3% having heard from a doctor or nurse. Approximately 98.5% of participants in the study expressed favourable views on prostate cancer screening, while 13.0% reported being screened in the past two years.[15] In a study from Rivers State, only 14.9% of the participants had good knowledge of prostate cancer, while only 23.3% were able to identify the screening methods correctly.[16] In another study conducted in Ogun State, South Western Nigeria, 39.2% of respondents were aware of prostate cancer, 16.6% knew the anatomical location of the prostate gland, and only 2.0% of the participants had been screened within the previous 2 years. However, up to 68.8% expressed willingness to be screened.[17] In a study carried out on Awareness and Attitudes of Nigerian Men Living in Abuja on Prostate Cancer and Screening, about 66.7% of the respondents studied had a medium level of awareness, with only 25.8% able to identify the anatomical location of the prostate gland correctly. In comparison, 79.5% and 75% didn't know the risk factors and symptoms of the disease, respectively.[13] In a related study at the University of Nigeria, Nsukka, 79.7% of the participants had

good perception.[8] While in Abuja, about two-thirds (66.6%) of the respondents had a medium score on perception, with 53.5% of the respondents believing they can't have prostate cancer if they are not aware of it. [13]

From a study on knowledge, attitudes, and practices towards prostate cancer screening amongst men living in the southern Italian peninsula, 13.0% of the respondents studied were screened in the 2 years before the study.[12] While at the University of Lagos, 28.4% of the respondents had undergone prostate cancer screening at least once.[1] In urban Lagos, 21.2% of the participants have been screened for prostate cancer, and in Oyo State, 33% have been screened.[10,18] Related studies in Lagos, Abuja, and Iran revealed a statistical association between prostate cancer awareness and age and level of education.[1,13,19] However, another study conducted in Lagos showed that there was no statistically significant relationship between age, marital status, and level of awareness of prostate cancer.[6] Additionally, in Iran, there was a significant relationship between age, occupation, and educational level of the respondents and prostate cancer screening behaviour.[19] The objective of this study is to assess the level of prostate cancer awareness and screening among men in Gombe LGA.

Table 1: Socio-demographic characteristics of the respondents in Jekadafari, Gombe State

Variables	Frequency (%)
Age	
40-49	54(44.3)
50-59	32(26.2)
60-69	10(8.2)
70-79	18(14.8)
≥80	8(6.6)
Marital status	
Single	7(5.7)
Married	101(82.8)
Separated	2(1.6)
Divorced	12(9.8)
Religion	
Christianity	18(14.8)
Islam	104(85.2)
Educational level	
Primary	12(9.8)
Secondary	56(45.9)
Tertiary	38(31.1)
No formal education	16(13.1)
Occupation	
Artisan	24(19.7)
Civil servants	19(15.6)
Traders	33(27.0)
Unemployed	14(11.5)
Others	32(26.2)
Ethnicity	
Fulani	32(26.2)
Hausa	36(29.5)
Others	54(44.3)

METHODS

Gombe local government is a commercial, administrative town and the capital of Gombe State. The local government is located at latitude 10.2933° N and longitude 11.1669° E. In 2013, it had a projected population of 398,294. Gombe local government is a diverse, multi-religious, and multi-cultural community consisting of Muslims and Christians from various ethnic groups. A descriptive cross-sectional design was used, and men aged 40 years and older residents of Gombe local government were recruited. Individuals who are critically ill or have had prostatectomy were excluded from the study.

The minimum sample size was determined using Cochran's formula and found to be 122. A multi-stage sampling technique was used in this study: in Stage One, a simple random sampling technique by balloting was used to select Jekadafari Ward from the 11 wards in the LGA. In Stage two, Jekadafari North was selected from the communities in Jekadafari Ward. In stage three, the Jekadafari North community was studied as a cluster. A semi-structured interviewer-administered questionnaire was used for the collection of data. The questionnaire was structured to gather information on the participants' socio-demographic data, knowledge, perception, and prostate cancer screening practices. It was adapted from a study conducted at Ikenne LGA, Ogun State, on the Level of Awareness, Perceptions and Screening Behaviours Regarding Prostate Cancer Among Men.[17]

Electronic copies of questionnaires were made available in English using the KoBoCollect tool and administered by trained research assistants.

Knowledge was scored on a scale of 0-14. The level of awareness and specific knowledge was split into good and poor, with a score of 0-6 being poor and 7-14 being good. A total of ten questions relating to the respondents' perceptions of prostate cancer were asked, and each question was assessed using a Likert scale; the options were strongly agree, agree, disagree, and strongly disagree, with the most negative answer being 0 and the most positive scoring 3 points, giving a total score of 30 points graded in to low (0-10), medium (11-20), and high (21-30). On prostate cancer screening, respondents screened in the last 2 years are considered to have good screening practices, while others are considered to have poor screening practice habits.

The questionnaire was coded and analysed using the Statistical Package of Social Science Software (SPSS) version 23. Univariate data were analysed using frequency tables, while bivariate analysis was done using Pearson's Chi-square test with a p-value of <0.05 considered to be statistically significant at a 95% confidence interval. Ethical clearance was obtained from the Gombe State Ministry of Health Ethical and Research Committee, and permission to conduct the research was sought from the district head.

Table 2A: Knowledge of prostate cancer among respondents in Jekadafari, Gombe State

Variables	Frequency (%)
Respondents who heard about prostate cancer	
Yes	14(11.5)
No	108(88.5)
Location of prostate gland: *	
In front of the anus	2(1.6)
In the scrotum	8(6.6)
Under the bladder	14(11.5)
In the intestine	4(3.3)
Kidney	1(0.8)
Don't know	100(82.0)
Knew someone diagnosed with prostate cancer:	
Yes	10(8.2)
No	112(91.8)
Gender affected by prostate cancer:	
Men only	9(7.4)
Women only	1(0.8)
Both men and women	24(19.7)
Don't know	88(72.1)
Risk factors of prostate cancer: *	
Family history of prostate cancer	13(10.7)
Drinking alcohol	14(11.5)
Consuming excess vegetables	4(3.3)
Age	15(12.3)
Exercise	6(5.0)
Don't know	101((82.8)
Received information from doctor/healthcare provider about prostate cancer:	
Yes	3(2.5)
No	119(97.5)

*Multiple options are allowed

RESULTS

The average age of respondents was 55.87±13.40 years. Most were married (82.8%), Muslims (85.2%), Hausa (29.5%), and had a secondary education (45.9%). Also, about 33 (27.0%) of the respondents were traders. Table 1 shows the socio-demographic characteristics of the respondents, including their age, marital status, religion, level of education, occupation, and ethnicity.

Table 2 shows that up to 108 (88.5%) of the respondents had never heard of prostate cancer, with 100 (82.0%) not knowing the location of the prostate gland. Only 10 participants (8.2%) knew someone with a prostate cancer diagnosis, while about 88 participants (72.1%) were unaware of which gender is at risk of prostate cancer. Similarly, 102 (82.8%) don't know any risk factors for prostate cancer, and only 3 (2.5%) claimed to have heard about prostate cancer from a doctor or healthcare provider. Approximately 109 (89.3%) of the respondents are not aware of prostate cancer symptoms. Table 3 shows that the majority (97.5%) of the respondents had poor knowledge of prostate cancer.

Table 2B: Knowledge of prostate cancer among respondents in Jekadafari, Gombe State

Variables	Percentage
Those that are familiar with symptoms of prostate cancer:	
Yes	13(10.7)
No	109(89.3)
Symptoms associated with prostate cancer: *	
Excessive urination at night	11(9.0)
Headache	0(0.0)
Blood in urine	14(11.5)
High temperature	3(2.5)
Excessive eating	4(3.3)
Don't know	108(88.5)
Awareness of screening for prostate cancer:	
Yes	10(8.2)
No	112(91.8)
Knowledge about prostate cancer preventing factors: *	
High fatty diet	0(0.0)
Exercise	10(8.2)
Red meat	5(4.1)
Vegetables	13(10.7)
Low fatty diet	8(6.6)
Don't know	104(85.2)

*Multiple options are allowed

Table 4 illustrates respondents' views on prostate cancer, revealing that 83 (68.0%) strongly disagree with the notion that ignorance of the disease means immunity from it. Meanwhile, 58 (47.5%) acknowledge it as deadly, 38 (31.1%) believe it is sexually transmitted, and 30 (24.6%) think it has no cure. Likewise, 38 (31.1%) agree that prostate cancer cannot cause infertility; 31 (25.4%) disagree that advancing age is a risk factor, whereas up to 18 (14.8%) of the respondents believe that prostate cancer affects only Caucasians. About 46 (37.7%) of the respondents strongly agree that all men are at risk of the disease, with 49 (40.2%) and 93 (76.2%) believing that prostate cancer is a deadly disease and perceiving great benefit in visiting clinics for medical checkups, respectively.

Table 5 shows that the majority (37.63%) of the participants demonstrated a high level of positive perception towards prostate cancer, and Table 6 shows 2.5% have been screened for prostate cancer, with only 1.7% having been screened in the 2 years before the study.

Table 7 indicates a positive association between age and knowledge of prostate cancer, with the 60-69 age group having good knowledge compared to other age groups (p-value (0.045). However, it indicates no association between knowledge of prostate cancer and marital status, religion, or level of education.

Table 8 illustrates a positive correlation between respondents' education levels and their prostate cancer screening practices (p-value: 0.020). Interestingly, individuals with only primary

education were screened more frequently. Conversely, there is no observed link between prostate cancer screening and age, marital status, or religion.

Table 3: Grading of prostate cancer knowledge among men aged 40 and above in Jekadafari, Gombe State, 2022

Knowledge	Frequency (%)
Poor Knowledge	119.5(97.5%)
Good Knowledge	3(2.5%)

Table 4A: Perceptions of respondents towards prostate cancer in Jekadafari, Gombe State 2022.

Variable	Frequency (%)
Prostate cancer affects those that are aware of it only:	
Strongly Agree	3(2.5)
Agree	7(5.7)
Disagree	29(23.8)
Strongly disagree	83(68.0)
Prostate cancer is a deadly disease.	
Strongly Agree	23(18.9)
Agree	58(47.5)
Disagree	28(22.9)
Strongly disagree	13(10.7)
Prostate cancer is sexually transmitted infection:	
Strongly Agree	19(15.6)
Agree	38(31.1)
Disagree	42(34.4)
Strongly disagree	23(18.9)
Prostate cancer has no cure.	
Strongly Agree	8(6.6)
Agree	30(24.6)
Disagree	52(42.6)
Strongly disagree	32(26.2)
Prostate cancer cannot cause infertility:	
Strongly Agree	18(14.8)
Agree	38(31.1)
Disagree	46(37.7)
Strongly disagree	20(16.4)

DISCUSSION

The majority (44.3%) of the respondents were 40-49 years old, similar to the study population in Rivers, Enugu, and Lagos, 62.9%, 65.5%, and 32.0%, respectively.[16,1,8,] Unlike studies in Enugu and Ogun, this research found that most respondents (85.2%) identified as Muslims. This finding may be attributed to Gombe State being predominantly Muslim, similar to many other Northern Nigerian states. Additionally, most participants in this study (82.8%) were married, aligning closely with Enugu's 87.2% and Lagos's 77.4%. This trend may stem from the research focusing on community members within comparable age groups.[8,18]

Up to 97.5% of the respondents had poor knowledge of prostate cancer, which is similar to those in Uganda (89.7%), Zambia (63.8%), Rivers (85.1%), and Lagos (54.9%); this could be due to similarities in literacy level and poor

awareness among the respondents.[14-18] As with studies in Abuja and Ogun, most (88.5%) of the respondents could not correctly identify the location of the prostate gland.[13,17] The majority (91.8%) of the participants are not aware of anyone who had prostate cancer, same with Ogun State (89.4%); this might be secondary to poor knowledge of prostate cancer.[17]

Table 4B: Perceptions of respondents towards prostate cancer in Jekadafari, Gombe State 2022.

Variable	Frequency (%)
Advancing age is a risk factor of prostate cancer:	
Strongly Agree	46(37.7)
Agree	30(24.6)
Disagree	31(25.4)
Strongly disagree	15(12.3)
Only white people develop prostate cancer:	
Strongly Agree	11(9.0)
Agree	18(14.8)
Disagree	49(40.2)
Strongly disagree	44(36.1)
All men are at risk of having prostate cancer:	
Strongly Agree	46(37.7)
Agree	35(28.7)
Disagree	29(23.8)
Strongly disagree	12(9.8)
Prostate cancer does not kill:	
Strongly Agree	11(9.0)
Agree	22(18.0)
Disagree	40(32.8)
Strongly disagree	49(40.2)
Regularly medical check-up has great benefit:	
Strongly Agree	93(76.2)
Agree	18(14.8)
Disagree	8(6.5)
Strongly disagree	3(2.5)

Table 5: Grading of perception towards carcinoma of the prostate among men in Jekadafari, Gombe State. 2022

Perception	Frequency (%)
High	(37.63%)
Medium	(32.71%)
Low	(29.66%)

In this study, up to 91.8% of the participants could not correctly identify the gender affected by the disease. In contrast, in a related study in Abuja, the majority (77.0%) of the respondents were able to identify the affected gender correctly. This might likely be due to the higher literacy level of the respondents in Abuja compared to those in Gombe State.[13] Only 2.5% received information on prostate cancer from their doctor/healthcare provider, which is far lower compared to Zambia (55.3%), Italy (17.1%), Rivers (30.1%), and Ogun (16.9%). In this study, about 91.8% of participants were not aware of prostate cancer screening, which is far higher than in Ogun State (46.5%). The difference could result from the respondents'

higher literacy level and healthcare workers' commitment to raising awareness about the disease in Ogun State compared to Gombe State.[12,14-17]

Table 6: Prostate cancer screening practice among men in Jekadafari, Gombe State. 2022.

Variables	Frequency (%)
Respondents' who were screened for prostate cancer before:	
Yes	3(2.5)
No	119(97.5)
Duration of last screening:	
Last 2 years	2(1.7)
Within the last 5 years	1(0.8)
More than 5 years	0(0.0)
Never screened	119(97.5)
Screening method used:	
Blood sample.	3(100)
Stool sample.	0(0.0)
Inserted a gloved finger,	2(66.7)
Checked sperm count.	0(0.0)
Nothing was done.	0(0.0)
Intending to be screened in the nearest future:	
Yes	31(25.4)
No	91(74.6)

Table 7: Association between socio-demographic characteristics with prostate cancer knowledge among men in Jekadafari, Gombe State. 2022.

Variables	Poor knowledge n = 119	Good knowledge n=3	Chi-square Test	p-value	df.
Age					
40-49	53(98.1)	1(1.9)	7.246*	0.045	4
50-59	32(100.0)	0(0.0)			
60-69	8(80.0)	2(20.0)			
70-79	18(100.0)	0(0.0)			
≥80	8(100.0)	0(0.0)			
Marital status					
Single	6(85.7)	1(14.3)	7.841*	0.076	4
Married	100(99.0)	1(1.0)			
Separated	2(100.0)	0(0.0)			
Divorced	11((91.7)	1(8.3)			
Religion					
Christianity	17(94.4)	1(5.6)	-	0.383	NA
Islam	102(98.1)	2(1.9)			
Educational level					
Primary	12(100.0)	0(0.0)	4.671*	0.157	4
Secondary	56(100.0)	0(0.0)			
Tertiary	35((92.1)	3(7.8)			
No formal education	16(100.0)	0(0.0)			

*Fishers Exact Test, df.: Degree of freedom, NA: Not available.

Despite poor knowledge among the respondents from this study, the majority (37.63%) demonstrated a high level of positive perception towards prostate cancer and cancer in general, which is similar to studies in Enugu (79.7%) and Abuja (66.6%). This similarity may result from how the respondents regard cancers as very serious and lethal illnesses.[8,13] This study showed

that very few (1.7%) of the participants have been screened for prostate cancer in the last 2 years, which is less than that in Italy and Abuja at 13.0% and 29.4%, respectively, but slightly higher than in Ogun State (0.5%). The difference could be due to variation in the population being studied in Italy and Abuja, which have higher literacy rates than Gombe State, while in Ogun State, the study was carried out among rural dwellers.[13,15,17] In this study, the majority (74.6%) lack interest in screening in the future, unlike in Abuja and Ogun, where up to 72.8% and 68% were willing to screen in the future, respectively. This might be a result of the lower level of prostate cancer awareness of the respondents in Gombe State compared to those in Abuja and Ogun States.[13]

This study shows a statistically significant association between age and knowledge of prostate cancer (p-value 0.045), which is similar to the one in Abuja, which might be a result of elderly individuals being more prone to present to the hospital due to urinary tract-related illnesses.[13] However, there was no association between knowledge of prostate cancer and level of education. Similar to studies in Lagos and Iran, there was a statistically significant relation between prostate cancer screening behaviour and level of education (p-value 0.020). Surprisingly, in this study, individuals with a primary level of education were screened more. This could be a result of respondents with a primary education being of older age, which is positively associated with prostate cancer knowledge.[6,19]

Table 8: Association between socio-demographic characteristics with prostate cancer screening among men in Jekadafari, Gombe State. 2022.

Variables	Poor screening practice n = 119	Good screening practice n = 3	Chi-square Test	p-value	df.
Age					
40-49	54(100.0)	0(0.0)	5.845*	1.000	4
50-59	91(96.9)	1(3.1)			
60-69	10(100.0)	0(0.0)			
70-79	16(88.9)	2(11.1)			
≥80	8(100)	0(0.0)			
Marital status					
Single	7(100.0)	0(0.0)	1.886*	1.000	3
Married	98(97.0)	3(3.0)			
Separated	2(100.0)	0(0.0)			
Divorced	12(100.0)	0(0.0)			
Religion					
Christianity	18(100.0)	0(0.0)	-	1.000	1
Islam	101(97.1)	3(2.9)			
Educational level					
Primary	10(83.3)	2(16.7)	7.097*	0.020	3
Secondary	56(100.0)	0(0.0)			
Tertiary	37(97.4)	1(2.6)			
No formal education	16(100.0)	0(0.0)			

*Fishers Exact Test, df.: Degree of freedom.

However, there was no association between age, marital status, religion, or occupation and prostate cancer screening practices. Unlike in Iran and Lagos, where there was a positive association with occupation and level of education in Lagos and Iran, respectively.[1,19]

Limitations and strengths:

Most respondents do not understand English but use Hausa to communicate, making it a bit harder to administer the questionnaire. The research assistants were trained to administer the questionnaires in Hausa to avoid inappropriate passage of information. Another limitation was the difficulty accessing those in higher socio-economic class, as they may exhibit different awareness and screening behaviours regarding prostate cancer.

The study offers insights into prostate cancer awareness and screening in an under-researched Nigerian population. The findings establish a baseline for future research on awareness and screening trends, guiding targeted health interventions.

Implications for Policy:

The findings of this study have important implications for health policy in Nigeria, particularly regarding cancer prevention and control. The inadequate awareness and screening for prostate cancer necessitate immediate policy intervention. Health officials in Gombe State, and throughout Nigeria, must prioritize the creation and execution of awareness campaigns for prostate cancer. Additionally, it is crucial to enhance access to affordable screening services, particularly in rural and underserved regions.

Author's contribution: AUN – Conceptualization, data curation, data analysis, initial draft preparation, review and editing; IR – Conceptualization, investigation, methodology, review and editing; SA – Review and editing.

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