

Prostate cancer screening practices and barriers to seeking information and medical care related to prostate cancer among males in rural communities in southern Nigeria

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Background: Prostate cancer is one of the most prevalent cancers affecting men worldwide. It is a significant public health concern. In developing countries, prostate cancer is mostly diagnosed at a late stage, indicating the need for better detection programmes. This study examines the existing gaps in knowledge, perceptions, screening practices, and barriers to seeking information and medical care related to prostate cancer among males in rural communities in southern Nigeria.

Materials and methods: This was a descriptive, cross-sectional study among 312 men aged 30 years and above, selected by a multistage sampling technique. The knowledge, perceptions, screening practices, and barriers to seeking information and medical care related to prostate cancer among males in rural communities in southern Nigeria were studied. A pro forma was used to collect data. All statistical analyses used IBM Statistical Package for Social Sciences (SPSS) version 21. Associations between the variables were tested for statistical significance using appropriate statistical tools. At a 95% confidence level, *p*-values less than 0.05 were considered significant.

Results: Overall, only 27.2% demonstrated good knowledge of prostate cancer symptoms, with 66.7% showing a poor overall perception of vulnerability to prostate cancer. Only 23.7% have heard of prostate cancer screening tests, and 7.7% have had a prostate-specific antigen (PSA) test. Barriers to seeking information and medical care include fear of the diagnosis (67%), treatment side effects (12.5%), stigma (23.7%), and a lack of trust in the health system (11.9%).

Conclusion: This study underscores the urgent need for targeted interventions to enhance knowledge, dispel misconceptions, and overcome barriers to prostate cancer awareness and screening practices. The diverse beliefs within the community emphasise the importance of tailored educational campaigns.

Keywords: prostate cancer, screening practices, barriers, rural communities, Nigeria

Introduction

Prostate cancer is the second most frequently diagnosed cancer in men, with approximately 1.4 million new cases reported annually.¹ The incidence varies across regions.²⁻⁵ This disparity can be attributed to differences in screening practices, genetic predisposition, and lifestyle factors.⁶⁻⁹ Mortality rates are higher in developing countries, where access to early detection and prompt management options are limited.^{7,10}

Efforts to reduce the burden of prostate cancer involve various strategies, including early detection, improved treatment options, and public health interventions.^{7-8,11} Screening programmes, such as PSA testing, have been implemented in many countries to detect prostate cancer at an early stage.^{3,5-7} However, the effectiveness of these programmes remains a topic of debate due to concerns regarding over-diagnosis and over-treatment in developed countries and poor knowledge and perception in developing countries.¹²

Rural communities often face numerous health challenges due to limited access to healthcare facilities, lower socio-economic status, and inadequate health education.¹³ These factors contribute to a lack of awareness and knowledge about various health conditions, including prostate cancer.^{12,13}

Improving the knowledge and perception of prostate cancer is necessary for early detection, prompt treatment, and better outcomes. However, limited research has been conducted on the knowledge and perception of prostate cancer among males in rural communities in sub-Saharan Africa. By identifying the gaps in knowledge and perception among males in rural communities, this research will inform the development of targeted health education campaigns and raise awareness about risk factors, screening methods, and seeking prompt medical care.

Materials and methods

This was a descriptive, cross-sectional study. The study duration was 20 weeks. Adult males aged 30 years and above in the selected communities who gave consent and were willing to participate were recruited into the study. Those with a similar age range who were already diagnosed with prostate cancer and those who were not willing to participate in the study were excluded.

The sample size was estimated using Cochran's formula for cross-sectional surveys, where *p* was the proportion of respondents with good knowledge of prostate cancer (24%) from a previous study at a confidence limit of 95%.^{14,15} The calculated sample size was adjusted for non-response, missing, incorrect, or incomplete questionnaires, and a total of 312 was obtained.

The participants were selected through multistage sampling. Stage 1: a simple, random sampling method (balloting) was adopted. The names of the various communities in the study area were written on pieces of paper and placed inside a container. The container was shaken, and twenty communities were selected at random. Stage 2: stratified sampling involving proportional allocation of men aged 30 years and above from the selected communities. A pretested, well-structured questionnaire was used to obtain information about the study participants' socio-demographic characteristics, their knowledge and awareness of prostate cancer, their prostate cancer screening practices, and barriers to seeking information and medical care related to prostate cancer.

Data were entered in a spreadsheet and analysed using IBM SPSS version 21. Chi-square was used to determine the relationship between the primary outcome variable and potential predictors. The level of statistical significance was set at $p < 0.05$.

The knowledge of prostate cancer was measured using 12 questions on the cause, symptoms, signs, and treatment. The question is scored on a three-point Likert scale of "yes", "no", and "I don't know". The scale is scored as yes = 1, no = 0, and I don't know = 0. This gives a maximum score of 12 points. Those who scored > 8 of 12 points were considered as having "good" knowledge, those who scored 4–7 of 12 points were regarded as having "fair" knowledge, while those with < 4 of 12 points were graded as having "poor" knowledge.

The perception variables were measured on a four-point Likert-type scale with responses such as "strongly agree", "agree", "disagree", and "strongly disagree". These responses are coded so that a low value in the perception domain represents little or no perception of the vulnerability and seriousness of the disease. Perception items are aggregated to create a measurement scale on a 30-point scale. For the positive statements, the scale is "strongly agree" = 3, "agree" = 2, "disagree" = 1, and "strongly disagree" = 0. For the negative statements, the scale is "strongly disagree" = 3, "disagree" = 2, "agree" = 1, and "strongly agree" = 0. Respondents with a score > 20 of 30 points are considered as having a "good" perception, those with a score of 11–19 points were regarded as having a "fair" perception, while those with a score < 10 have little or no perception.

The screening practices were measured on a maximum of a 16-point scale of items regarding screening practices. A low aggregate score was assigned to little or no screening practices, whereas a maximum score was assigned to regular screening practices. The score was graded as follows: > 12 of 16 points had "good" screening practices, 7–11 points were assigned "fair" screening practices, while those who scored < 6 were regarded as having little or no screening practices.

Ethical clearance and approval were obtained from the Health Research Ethics Committee of Irrua Specialist Teaching Hospital, Irrua.

Results

A total of 312 respondents participated in the study with a 100% response rate. The age distribution was predominant in the 31–40

age group (40.7%), followed by the 41–50 age group (27.6%). Table I shows the socio-demographic characteristics of the study participants.

Table I: Socio-demographic characteristics of the respondents

Variable	Frequency (n = 312)	Per cent (%)
Age group (years)		
30–40	127	40.7
41–50	86	27.6
51–60	51	16.3
61–70	42	13.5
> 71	6	1.9
Religion		
Christianity	263	84.3
Islam	37	11.9
Other	12	3.8
Level of education		
Primary	75	24.0
Secondary	143	45.8
Tertiary	80	25.6
Quranic school only	14	4.5
Marital status		
Married	245	78.5
Single	45	14.4
Divorced	12	3.8
Separated	10	3.2
Occupation		
Trader	120	38.5
Commercial motorbike rider	57	18.3
Taxi driver	27	8.7
Businessman	62	19.9
Teacher	15	4.8
Electrician	5	1.6
Mechanic	10	3.2
Barber	13	4.2
Other	3	1.0

Concerning the knowledge and awareness of prostate cancer, only 128 (41%) respondents had previously heard of prostate cancer, while the remaining 184 (59%) had not heard of it. Table II shows the participants' knowledge and awareness level regarding prostate cancer.

Regarding the perceived risks of prostate cancer, participants identified factors such as increasing age (37.8%), family history (26.0%), being black (14.4%), obesity (2.9%), and the consumption of fatty foods (6.1%) as potential contributors to disease development (Table II).

In terms of overall knowledge and awareness of prostate cancer assessment, 85 (27.2%) exhibited a good understanding of prostate cancer symptoms, 43 (13.8%) had a fair level of knowledge, and 184 (59.0%) showed poor knowledge.

The assessment of participants' perception of vulnerability to prostate cancer and their views on the seriousness of the disease yielded

Table II: Assessment of knowledge and awareness of prostate cancer

Variable	Frequency	Per cent (%)
Have you ever heard of prostate cancer? <i>n</i> = 312		
Yes	128	41.0
No	184	59.0
Through which medium? <i>n</i> = 128		
Radio/television	14	4.5
Newspaper/magazine	6	1.9
Friends/relatives	44	14.1
Health workers	62	19.9
Church/mosque	2	0.6
Risks of prostate cancer* <i>n</i> = 312		
As age increases (old age)	118	37.8
Family history of prostate cancer	81	26.0
Being black	45	14.4
Obesity	9	2.9
Consumption of fatty foods	19	6.1
Symptoms/signs of prostate cancer*		
A need to urinate frequently, especially at night	120	38.5
Difficulty starting urination or holding back urine	108	34.6
Weak or interrupted flow of urine	70	22.4
Difficulty in having an erection	30	9.6
Painful urination or ejaculation	101	32.4
Blood in urine or semen	38	12.2
Pain in the pelvic area or bones	124	39.7
Overall knowledge		
Good	85	27.2
Fair	43	13.8
Little	184	59.0

* More than one response

interesting insights (Table III). A considerable number (40.4%) firmly believed that if they were not aware of prostate cancer, they could not have it, while 36.8% strongly disagreed with this notion. Additionally, almost half of the participants (48.1%) strongly agreed that prostate cancer is a deadly disease, contrasting with 45.5% who strongly disagreed with this perspective.

In terms of misconceptions, a small percentage believed that prostate cancer could be transmitted sexually (9.6%), with the majority (76.0%) disagreeing with this idea. Regarding the curability of prostate cancer, 24.7% strongly agreed that it has no cure, while 61.6% disagreed with this statement.

Participants' views on vulnerability to prostate cancer varied. While 13.5% strongly believed the disease could not cause infertility, 39.7% strongly agreed that advancing age increased the risk. A small percentage (0.6%) thought prostate cancer only affected white people. Overall, 27.6% strongly believed all men are at risk.

The assessment of participants' perception of vulnerability to prostate cancer reveals a notable belief that prostate cancer does not lead to fatality, with a combined 56.3% expressing agreement. Specifically, 77.6% strongly agreed that there is considerable

Table III: Assessment of perception of vulnerability to prostate cancer and the seriousness of the disease

Variable	Frequency (<i>n</i> = 312)	Per cent (%)
If I am not aware of prostate cancer, I cannot have it		
Strongly agree	126	40.4
Agree	14	4.5
Disagree	57	18.3
Strongly disagree	115	36.8
Prostate cancer is an infection which can be transmitted sexually		
Strongly agree	14	4.5
Agree	16	5.1
Disagree	237	76.0
Strongly disagree	45	14.4
Prostate cancer has no cure		
Strongly agree	77	24.7
Agree	17	5.4
Disagree	192	61.6
Strongly disagree	26	8.3
Prostate cancer cannot make me infertile		
Strongly agree	42	13.5
Agree	37	11.9
Disagree	158	70.5
Strongly disagree	13	4.2
Any male of advancing age can have prostate cancer		
Strongly agree	124	39.7
Agree	28	9.0
Disagree	158	50.6
Strongly disagree	2	0.7
Prostate cancer does not kill		
Strongly agree	12	3.8
Agree	164	52.5
Disagree	28	9.0
Strongly disagree	108	34.6
I perceive great benefit in going to the clinic regularly for a medical check-up		
Strongly agree	242	77.6
Agree	52	16.7
Disagree	4	1.3
Strongly disagree	14	4.4
Overall perception		
Good	72	23.1
Fair	32	10.3
Little	208	66.7

benefit in regular medical check-ups, while 66.7% perceived their overall vulnerability to prostate cancer as little.

Participants' overall perception of vulnerability to prostate cancer presents a diverse spectrum. A notable 23.1% view their vulnerability as "good," indicating a positive outlook. Meanwhile, 10.3% consider it "fair," suggesting a moderate perception. The majority, constituting 66.7%, perceive their vulnerability as "little," reflecting a cautious or limited understanding of the risks associated with prostate cancer.

Table IV: Assessment of prostate cancer screening practices

Variable	Frequency (n = 312)	Percent (%)
Have you ever heard of a prostate cancer screening test?		
Yes	74	23.7
No	238	76.3
Screening test for prostate cancer*		
Pap smear test	10	3.2
Mammography	10	3.2
Digital rectal examination	55	17.6
PSA	69	22.1
Requirements for prostate cancer screening*		
Go for an appointment with a doctor	84	26.9
Give the doctor your urine sample	48	15.4
A blood sample is taken	72	23.1
Physical examination	69	22.1
Take body temperature	54	17.3
Have you ever had a PSA blood test done for you?		
Yes	24	7.7
No	288	92.3
Reasons for the test n = 24		
It was recommended by the doctor	24	100.0
Reasons for not doing PSA test n = 288		
I am not aware of a PSA test	213	74.0
I do not need it, as I am not at risk of developing prostate cancer	46	16.0
The test is not available	15	5.2
The test is costly	10	3.5
I have passed the recommended age for PSA test	4	1.4
Overall screening practices		
Good	18	5.8
Fair	67	21.5
Little/no	227	72.8

PSA – prostate-specific antigen; * = More than one response

In the evaluation of prostate cancer screening practices among 312 participants, it was revealed that 23.7% of them have heard of prostate cancer screening tests, while the majority, accounting for 76.3%, have not (Table IV). When asked about specific screening tests, 17.6% recognised digital rectal examination, and 22.1% identified PSA as a screening method. Interestingly, some participants mistakenly associated a pap smear (3.2%) and mammography (3.2%) with prostate cancer screening.

Regarding perceived requirements for prostate cancer screening, participants commonly acknowledged the need to go for an appointment with a doctor (26.9%), provide a urine sample (15.4%), have a blood sample taken (23.1%), undergo a physical examination (22.1%), and take body temperature (17.3%). Regarding personal experiences, only 7.7% of participants have had a PSA blood test done for them, while the majority (92.3%) have not undergone this specific screening procedure.

Examining the prostate cancer screening practices among 312 participants showed that all individuals who underwent the PSA test

did so at a doctor's recommendation. Most of those who had the PSA test done did it once, with smaller percentages having it twice or thrice. The timing of the most recent PSA tests varied, with 58.3% having it less than a year ago, 29.2% two years ago, and 12.5% more than two years ago.

For those who did not undergo the PSA test (n = 288), the predominant reason was a lack of awareness (74.0%), followed by the belief that they did not need it as they considered themselves not at risk (16.0%). Some participants mentioned unavailability of the test (5.2%), cost implications (3.5%), or the perception of having surpassed the recommended age for the test (1.4%).

Assessing the overall screening practices, a small proportion (5.8%) were considered to have good practices, 21.5% had fair practices, while the majority (72.8%) were categorised as having little to no screening practices.

Table V: Assessment of barriers to seeking information and medical care related to prostate cancer

Variable	Frequency (n = 312)	Per cent (%)
Impact on willingness to seek information or medical care for prostate cancer*		
Fear of the diagnosis	209	67.0
Concerns about treatment side effects	39	12.5
Stigma associated with prostate cancer	74	23.7
Lack of trust in healthcare system	37	11.9
Lack of awareness about symptoms	178	57.1
Cultural or religious beliefs	16	5.1
Financial constraints	252	80.8
Lack of health facilities for prostate cancer management in my LGA	8	2.6
Have you ever faced challenges in accessing healthcare services?		
Yes	34	10.9
No	278	89.1
The challenges faced* n = 34		
Long waiting in the hospital	5	14.7
Unorganised health system	2	5.9
Lack of equipment	2	5.9
How comfortable do you feel discussing prostate health with your healthcare provider?		
Very comfortable	146	46.8
Somewhat comfortable	119	38.1
Not comfortable at all	47	15.1
Have you ever experienced communication barriers with your healthcare provider?		
Yes	23	7.4
No	289	92.6
Are you aware of preventive measures for prostate cancer, such as regular screening?		
Yes	67	21.5
No	245	78.5

LGA – local government area

In examining the barriers to seeking information and medical care related to prostate cancer among the 321 participants, several

challenges were evident (Table V). The most prominent barrier was the fear of the diagnosis, affecting 67.0% of participants. Other significant factors included concerns about treatment side effects (12.5%), stigma associated with prostate cancer (23.7%), lack of trust in the healthcare system (11.9%), lack of awareness about symptoms (57.1%), and financial constraints (80.8%). Additionally, 2.6% faced the challenge of the absence of health facilities for prostate cancer management in their local government area.

Approximately 10.9% of participants reported facing challenges in accessing healthcare services. Specific obstacles included long waiting times in the hospital (14.7%), an unorganised health system (5.9%), and a lack of equipment (5.9%).

Regarding comfort in discussing prostate health with healthcare providers, 46.8% felt very comfortable, 38.1% felt somewhat comfortable, and 15.1% did not feel comfortable at all. A minority (7.4%) experienced communication barriers with their healthcare provider, while the majority (92.6%) did not.

Only 21.5% of participants were aware of preventive measures, such as regular screening, while the majority (78.5%) lacked awareness. The level of education was noted to significantly affect the level of knowledge of prostate cancer ($p = 0.020$), perception of vulnerability to prostate cancer ($p = 0.000$), and prostate cancer screening practices ($p = 0.000$).

Discussion

Prostate cancer is a significant cause of reproductive and sexual health challenges for elderly men worldwide.^{1,7} In sub-Saharan Africa, it is a major contributor to the public health burden; with insufficient data on prostate cancer in our environment, the actual burden remains unknown.^{13,15-19} Currently, curative treatment of prostate cancer is only feasible with early screening and diagnosis of the disease when it is still confined to the prostate.²⁰⁻²²

The findings in this study indicated a low level of knowledge and awareness of prostate cancer among men in rural communities in southern Nigeria, with a vast majority (59%) having no prior knowledge of it (Table II). This result is similar to the outcome of previous studies among males in various parts of Africa, where all indicated poor knowledge.^{16,17,23,24} This indicates the poor sensitisation and highlights the need for public awareness campaigns, using both print and electronic media to ensure early detection and prompt treatment.

This study's findings contrast with the results of a previous study done by Ibebuikwe et al.¹⁶ among more informed participants, where 88.7% of the men admitted to having heard of prostate cancer, while 75.2% had undergone screening. One of the main reasons for the high mortality rate among patients with prostate cancer, particularly in the rural areas in Nigeria and in sub-Saharan Africa in general, is this lack of knowledge and awareness regarding prostate cancer and prostate cancer screening tools.²⁵⁻²⁷ To reduce the mortality rates in these rural areas, raising awareness among the population about the disease, screening tools, and the benefits of screening is essential. This will result in early prostate cancer diagnosis and management, particularly in the high-risk age group.

Perceptions and beliefs play a major role in men's attitudes towards prostate cancer and greatly influence the uptake of prostate cancer screening.^{22,24} This study's findings revealed intriguing participant perceptions that awareness is a prerequisite for having prostate cancer. While about two-fifths of the study population strongly agreed with this perception, a little above a third strongly disagreed, emphasising diverse beliefs within the community (Table III).

Furthermore, misconceptions about prostate cancer in the rural areas of southern Nigeria are high, with two-thirds perceiving their overall vulnerability to prostate cancer as little and a considerable percentage firmly believing that prostate cancer can be sexually transmitted. This study also revealed, like other similar studies in the West African sub-region, the general belief that cancer is an incurable disease and that if they are not aware of prostate cancer, they cannot have it.¹³⁻¹⁶ This underscores the need for targeted education to dispel misconceptions about prostate cancer and prostate cancer screening.

This study's findings also stress the challenges in promoting screening practices. Only about one-fifth of respondents were aware of screening tests, with digital rectal examination and PSA recognised by a limited proportion (Table IV). Although those who underwent screening did so at a doctor's recommendation, barriers such as lack of awareness, perceived low risk, and unavailability were reported by a significant number. These findings agree with the study done in different parts of West Africa, where the uptake of prostate cancer screening tests was 18.2%, indicating low utilisation.^{22,24-27}

The findings in this research revealed critical barriers to seeking information and medical care related to prostate cancer (Table V). These include the fear of diagnosis, financial constraints, and limited awareness about symptoms. Also, poor knowledge, ranging from not knowing anything about prostate cancer, poor knowledge of the existing screening tools, lack of knowledge about the existence of prostate cancer screening facilities, and a lack of knowledge on when and where to go for prostate cancer screening are major barriers implicated in this study. A significant number of participants reported communication barriers with healthcare providers, suggesting the need for improved provider-patient interactions. These barriers were also noted in studies carried out in Nigeria and other rural communities in sub-Saharan Africa.^{13-16,27}

In this study, there was a close association between a low level of education, knowledge of prostate cancer, perception of vulnerability to prostate cancer, and prostate cancer screening practices. This finding concurs with Ebuehi and Otumu, who observed that awareness of prostate cancer screening tests increases with the educational level and occupation.¹⁷ Participants with higher levels of education are more aware of prostate cancer screening practices and tools than those with a lower education level.

Study limitation

Most of the study participants are younger than 50 years old, a young population less affected and less concerned about prostate cancer.

Conclusion

The poor awareness, low knowledge levels, and prevalent misconceptions of prostate cancer and screening tests identified in this study highlight the urgency for educational initiatives aimed at bridging these gaps in rural communities. Addressing misconceptions and fostering a comprehensive understanding is essential for early detection, effective management, and the overall well-being of the community members.

Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

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