Rural Population and Prostate Cancer Screening Exercise in Southeast Nigeria: Implication to Public Health Policy and Sustainable Development

Edwin IZUEKE,[1] Samuel OKAFOR,[2] Okezi OBARA,[1] Emeh IKECHUKWU,[1] Modesta OKOLO,[1] Isah ABDULROUF,[1] Rose OBETA,[1] Akindele OGUNLEYE[3]

[1]Department of Public Administration and Local Government, University of Nigeria, Nsukka-*Nigeria*
[2]Department of Sociology/Anthropology, University of Nigeria, Nsukka-*Nigeria*
[3]EI Paso Educational Leadership and Foundations, University of Texas, Texas-*USA*

OBJECTIVE

Awareness and screening exercise on prostate cancer health related issues among the rural population is still interfered with by the socio-cultural and economic challenges affecting the developing nations. This is yet to be empirically explored in some regions such as southeast Nigeria. The paper explored prostate cancer awareness and screening exercise among some 1080 men (30+) in rural southeast Nigeria.

METHODS

The study was guided by Health Belief Model, while survey design and quantitative data gathering techniques were deployed in collecting data from the respondents. Descriptive and inferential statistics were utilized in probing the prevalence of awareness about prostate cancer/screening practices, and the relationship of these and other variables.

RESULTS

According to the findings, there is a poor awareness about prostate cancer and related symptoms (31.2%) and poor regular prostate cancer screening practices among the respondents (11%). Prostate cancer awareness is significantly correlated with age (p<0.000, b=-0.618, Exp(B)=0.539), marital status (p<0.000, b=1.239, Exp(B)=3.452), occupation (p<0.000, b=-2.474, Exp(B)=0.084), education (p<0.000, b=1.239, Exp(B)=3.452), income (p<0.002, b=-0.476, Exp(B)=0.621) and having seen someone living with prostate cancer (p<0.000, b=3.927, Exp(B)=50.742). Regular screening exercise is predicted by age (p<0.000, b=0.054, t=4.706), marital status (p<0.000, b=-0.110, t=-5.309), education (p<0.02, b=0.047, t=2.557), occupation (p<0.000, b=0.090, t=4.484) and source of prostate cancer awareness (p<0.02, b=0.052, t=2.366).

CONCLUSION

The study concludes that prostate cancer screening practices are heavily dependent on the socioeconomic realities among the population.

Keywords: Regular prostate cancer screening; prostate cancer awareness; sustainable development; rural health; men health.

Dr. Okezi OBARA
Department of Public Administration and Local Government,
University of Nigeria,
Nsukka-Nigeria
E-mail: obara.okezi@unn.edu.ng

INTRODUCTION

Prostate cancer is one of the domineering cancers among other cancers such as the breast cancer, cervical cancer, liver cancer, colorectal cancer, etc., which are currently global health burden. Prostate cancer across the globe is responsible for the global health burden of quite a significant magnitude as can be observed in the trends of the disease in different parts of the globe. From the available data across the globe, the incidence of prostate cancer is quite significant. In Eastern Europe, the available data showed the incidence of prostate cancer as 168/100,000 Persons' Year (PY), this is about 24.3–52.8/100000 PY in Africa and in the Middle East, and about 7.0/100000 PY in Asia. In North America, the incidence of prostate cancer is about 141.0–106.7/100000 PY; this is about 186.7/100000 PY in Central and South America.[1–3] While the trend and the impact of the disease are felt across the globe,[4,5] the specific causative factor(s) is yet to be empirically established warranting, the need for proactive measures such as dictating and management of the problem.

There is a remarkable differences in prostate cancer mortality and morbidity rates across the globe showing an evidence of inequality in the public health institutions and infrastructures between the developing and developed nations. Among the developed nations, the morbidity rate is higher while the corresponding mortality rate is lower, compared to the developing nations where the morbidity rate is lower but the mortality rate is higher.[6–9] Although comprehensive data are lacking on the factors responsible for the disparity, some studies have shown some evidence of lack of regular prostate cancer check up among the population, poor registry, poor public health institutions etc. in the developing nations as possible factor.

Prostate cancer screening practices among the developing nations have been connected to the public perception of the disease as well as access to, and familiarity with the public health system among the population.[10–18] While socioeconomic conditions have affected the extent of willingness and commitment to regular prostate cancer check up and screening mostly among the population in the lower quartile of socioeconomic rating among the developing nations, in other contexts, this has been connected to ignorance of the disease as well as poor knowledge of the necessary actions to prevent, dictate and manage the problem.[19,20] As a matter of fact, some studies showed that most people diagnosed with prostate cancer in Nigeria come at the advanced stage of the problem, and majority of such people died shortly after being diagnosed with the disease due to the complicated stage before the diagnosis.[21–23]

Observation from Nigeria showed lower morbidity and high mortality rates of prostate cancer among men, which invariably showed the evidence of dearth of screening register as well as willingness among the population to go for prostate cancer screening.[24–26] While few private and public health facilities are available with relatively poor equipment and procedures in the screening and management of prostate cancer, much of the population are wallowing in the ignorance, social stigma of the disease as well as the fear of unaffordable nature of the procedures and treatment among the public and private health facilities.[27–30]

Beyond the socioeconomic complexities and ignorance of the disease, a study conducted by Kaninjing, Lopez, Nguyen, Odedina and Young[31] showed that utilization of alternative medicine among the population in the developing nations is affecting their perception and management of prostate cancer. Owing to poor public health system and infrastructures, the local population are drifting towards the traditional healers who are using alternative medicine to manage different health issues. Practice and utilization of alternative medicine operate in multiple dimension such as cultural practices connected to health management, belief about health issues embedded in the traditional understanding of health matters as well as traditional healers applying herbs and other fetish elements in controlling health issues. In some cases, these practices appear to be serving the needs and expectations of the patient and the practitioners alike. However, a number of studies have proved local alternative medicine counterproductive as far as prostate cancer is concerned owing to the fact that what appear as symptoms of prostate cancer can be misconstrued.[32,33] In most of these Contrary to the United Nations Sustainable Development Goal-3 emphasizing comprehensive health and wellbeing among the global population, the significant proportion of Nigerian population (males-107million), who are potentially at risk of prostate cancer are not properly captured in the extant public health policies. This is more complicated among the rural population who are characterized by poor public health awareness, socioeconomic status and lack of resources needed for proactive measure for optimal healthcare. The rural population are vulnerable to socioeconomic poverty compared to their urban counterparts in Nigeria.[34,35] This is evident in their access to health services, education and other life supporting social amenities

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for sustainability. Prostate cancer is one of the health issues men in rural southeast Nigeria. Southeast Nigeria is one of the regions with high prevalence of prostate cancer from the available information.[36,37] However, there seems to be at the same time, the prevalence of ignorance, social stigma and poor perception of prostate cancer screening and maintenance among the population, prompting the need for further empirical investigation to understand the underlying factors to these. Although other scholars have explored the issue of prostate cancer among men from other dimensions, the issue of awareness and regular screening for sustainable men health in rural southeast Nigeria is lacking in the available literature on prostate cancer and public health. Against this backdrop, the present study examined the prevalence of awareness about prostate cancer and the extent of commitment to regular prostate cancer screening exercise. This was guided by the following research questions

i. What are the factors associated with awareness of prostate cancer screening exercise among men in rural southeast Nigeria?

ii. What are the factors associated with regular prostate cancer screening exercise among men in rural southeast Nigeria?

MATERIALS AND METHODS

Study Period and Population

The study was carried out between July and September 2023 among the remote communities in southeast Nigeria, involving men 30 years and above. Southeast Nigeria is one of the six geopolitical zones of the federal republic of Nigeria, which comprises five administrative states of which each of the states comprised at least three senatorial zones and 26 local councils. Each of the local councils contains at least thirteen communities/villages, making up a complex administrative and population units. Categories of the health facilities followed the federal, state and private owned health facilities with cost implications according to the category of ownership.

Population Sampling

The study applied survey design with focused on men from 30 years and above who are living in the rural communities. The study followed multistage, clustered and simple random sampling techniques in the selection of states, senatorial zones, local councils, local communities and the respondents for the study. Three states from the southeast geopolitical zone were randomly selected

for the study, while six senatorial zones were randomly selected from the three states. From the six senatorial zones, 36 local councils were selected for the study following clustered sampling techniques due to the nature and locations of these councils and their implication to the purpose of the study; 108 communities were selected from the 36 local councils with the application of systematic random sampling technique, while 1080 respondents (10 men from each of the communities) were selected for the study. The communities were also grouped into clusters to capture the communities with rural characteristics.

After grouping the communities into clusters, the study selected from the communities with rural characteristics. The study selected wards and households following the political delineation of electoral wards, which captured small groupings of families and households in the area. From each of the communities, five wards were selected using simple random sampling while, ten households were selected following 5th term in the order of residential arrangements. From each of the households, the study applied purposive sampling to select individual men from the age of 30 years and above.

Instrument for Data Collection

Questionnaire instrument was utilized in collecting data for the study; the questionnaire was designed to include elements developed by other researchers and substantive issues peculiar to southeast Nigerian population such as literacy, awareness and familiarity with the indicators of prostate cancer.

The questionnaire contained socio-demographic indicators, knowledge, perception, attitude towards prostate cancer and regular prostate cancer screening. The elements of the questionnaire instrument followed the indicators of awareness of prostate cancer the nature, appearance and health implication of prostate cancer among the potential victims (men), and regular screening for prostate cancer captured on monthly, quarterly, on six-months basis or even annually among men whether they are prostate cancer patient or not.

Instrument Validation, Data collection Procedure and Analysis

The instrument for data collection from the respondents was reviewed by the University of Nigeria, Nsukka faculty of the social sciences human research ethical review board and was cleared after series of evaluations showed the method and instrument for data collection met the set ethical standards. 120 copies of the questionnaire instrument were taken to the field for pilot study aiming at understanding the familiarity with the

instrument by the potential respondents. 112 copies of the questionnaires (93.3%) were returned, properly filled by the respondents. The overall consistency of the questionnaire items according to Cronbach alpha value is (0.89). During the main data collection, the questionnaire instrument was giving to the respondents through house-to-house visit by the research assistants who were recruited for the study from the local communities because of their familiarity with the terrain. The data collected for the study were analysed using SPSS version23 as well as descriptive and inferential statistics such as percentages, logistic and linear models.

RESULTS

From the study, about five percent of the respondents are in the age category of 30–35 years, about eight percent of the respondents are between 36 and 40 years, about eight percent are equally within the age range of 41 to 45 years, while 20.1% are within the age bracket of 46 to 50 years. 14.4% are in the age bracket of 51 to 55 years, 20% are in the age category of 56 to 60 years, while 22.9% are in the age category of 61years and above. 11.3% of the respondents are single, 57.2% are married, 11.5% are divorced, while 20% of the respondents are separated. About 25% of the respondents had no formal education, 25.8% had only basic primary education, 20% had secondary/high school education, while 28.5% had tertiary education.

From the study, 34.3% of the respondents are farmers, 28.6% are traders, 22.8% are public servants, while 14.4% are artisans. Majority of the respondents (60%) are Christians, about eight percent are in Islam, 22.9% are African Traditional Religion adherents, while about eight percent of the respondents are non religion adherents. About 14% of the respondents are on monthly income of at least, 10000NGN to 40000NGN, 31.5% are on monthly income of 41000NGN to 66000NGN, 17.2% of the respondents are on the income range of 77000–92000NGN, about two percent are in the income range of 93000–110000NGN, while 32.4% of the respondents are in the income range of 110000NGN and above. Among the respondents, 74.3% have heard about prostate cancer, while 25.7% indicated otherwise; equally, majority of the respondents (61.2%) indicated the knowledge of the symptoms of prostate cancer, while 38.8% of the respondents indicated otherwise however, only 31.8% of the respondents have heard about prostate cancer screening practices, while only 11.4% indicated that they are involved in regular prostate cancer screening.

The logistic regression on awareness of prostate cancer is supported by the explanatory power of 54.5% (Cox & Snell) and 80.2% (Nagel kerke) (Table 1). From the regression, awareness about prostate cancer is predicted by age of the respondents, marital status, occupation, education, income and having seen someone living with prostate cancer. Nevertheless, the positive predictors, which are supportive to awareness of prostate cancer, are the marital status of the respondents and observing someone living with prostate cancer. These two factors hinged on their information provision values in the life of men at various ages. Majority of the men who are involved in the study are married and this points to the fact that through some networks of interactions, men get to know about prostate cancer issues. These networks of interactions included extended family networks as it is obtainable in this part of the world, extended relationships of colleagues in the network of the wife and the likelihood of marrying someone with extended network of medical knowledge. Equally, observing someone with prostate cancer problem is a powerful awareness picture and experience.

Linear regression on the chances of going for regular prostate cancer screening, a number of factors appeared as predictors of regular prostate cancer screening (Table 2). From the regression, factors such as the age of the respondents, marital status, education, occupation, source of prostate cancer awareness and seeing someone living with prostate cancer all appeared to be predictors of going for regular prostate cancer screening among the respondents. However, according to the dimensions of relationship, only age of the respondents, educational level and source of prostate cancer awareness appeared to be related with regular prostate cancer screening practices positively.

DISCUSSION

From the findings of the study, there are some pressing issues pointing other complex relationship of variables; about 74% of the respondents indicated that they are aware of prostate cancer, while only about 11% have participated in any type of cancer screening exercise. This finding re-echoed the stigmatization and poor public health aware issues associated with prostate cancer awareness and screening as showcased by the findings of other studies.[38,39] The relative awareness about prostate cancer among the men has not translated into proactive action against prostate cancer such as going for prostate cancer screening on regular basis. For instance,

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Table 1 Logistic regression on awareness about prostate cancer and other variables

	B	SE	Wald	Df	Sig.	Exp(B)
Age	-0.618	0.095	41.962	1	0.000	0.539
Marital status	1.239	0.201	38.172	1	0.000	3.452
Education	-0.512	0.204	6.322	1	0.012	0.599
Occupation	-2.474	0.250	97.723	1	0.000	0.084
Religion	0.139	0.143	0.942	1	0.332	1.149
Income	-0.476	0.153	9.738	1	0.002	0.621
Seeing Prostate Cancer patient	3.927	0.372	111.328	1	0.000	50.742
Constant	-0.583	0.939	0.385	1	0.535	0.558

N=1080; p=0.05; χ^2 value=851.629 (df7); Cox & Snell R^2=54.5; Nagel kerke R^2=80.2. B: Coefficient of the constant; SE: Standard error; Df: Degrees of freedom; Exp (B): Odd ratio

Table 2 Coefficients of going for regular prostate cancer screening and other variables

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% confidence interval for B	
	B	SE	Beta	T	Sig.	Lower bound	Upper Bound
(Constant)	1.824	0.142		12.857	0.000	1.545	2.102
Age	0.054	0.012	0.163	4.706	0.000	0.032	0.077
Marital status	-0.110	0.021	-0.169	-5.309	0.000	-0.150	-0.069
Educational	0.047	0.018	0.091	2.557	0.011	0.011	0.084
Occupation	0.090	0.020	0.158	4.484	0.000	0.051	0.130
Religious affiliation	-0.007	0.017	-0.013	-0.397	0.691	-0.041	0.027
monthly income	-0.001	0.014	-0.001	-0.038	0.970	-0.027	0.026
Prostate cancer awareness	-0.110	0.075	-0.080	-1.464	0.143	-0.257	0.037
Source of prostate cancer awareness	0.052	0.022	0.121	2.366	0.018	0.009	0.095
Seeing someone with prostate cancer	-0.187	0.035	-0.279	-5.393	0.000	-0.255	-0.119
Knowing the symptoms of prostate cancer	0.083	0.068	0.060	1.221	0.222	-0.050	0.215

Dependent Variable: Going for regular prostate cancer screening. R=0.810 (65.6%); F=84.825, p=0.05. B: Coefficient of the independent variable; SE: Standard error; T: t-value

more than 60% of the respondents are aware of the symptoms of prostate cancer however, only about 30% are aware of prostate cancer screening. Other studies in Nigeria and elsewhere have given much attention to the public knowledge and perception of prostate cancer confirming the present finding.[40,41] This highlights the issue of poor public health orientation among the rural population, which is surfacing in different dimensions of human health problems. Other studies on prostate cancer and related public health issues have shown that the possible gap between awareness and implementations among the rural dwellers are connected with the quality of the health practitioners available among the rural communities especially in the developing nations.[42,43]

Age of the respondents according to the regression test showed negative correlation with prostate cancer

awareness. this by implication points to the possible lack of opportunities of enlightenment on public health issues in the early stage of their adulthood. there is no positive correlation between educational qualification and prostate cancer awareness, which in any case, showed that the weakness of educational institutions in public health awareness and orientation. The situation here projects to the researching community, the underlying impacts of isolated education in relation to public health knowledge, which is obvious in most developing nations, where education is yet to broadly accommodate some specific knowledge at various stages of education especially the basic elementary and high school education. Meanwhile, the finding supports the findings by other researchers whose studies confirmed the inalienable role of edu-

cation in the management of awareness and practices towards prostate cancer.[44,45]

Occupation is another factor in the model with further implication to the overall awareness and prostate cancer screening practices. Apart from education as a source of basic and allied knowledge for the members of the society, career path is expected to generate opportunity for public enlightenment on such critical matters as public health as obtainable in some developed nations,[46–48] however, there seems to be a lacuna between the expected and the realities perhaps for other extraneous variables not treated here. This is equally the situation with the level of income and awareness of prostate cancer among the men. Higher income levels did not translate to awareness and of prostate cancer and prostate cancer screening exercise. The finding here further revealed that seeking for quality healthcare of which involves prostate cancer screening invariably, is dependent on the knowledge and enlightenment about health and public health matters order than socioeconomic class. Other studies such as the ones by Enemugwem et al.[12] and Ilic have confirmed the contradiction between socioeconomic status and willingness for prostate cancer screening among men in the rural communities and the work places. Meanwhile, two factors such as marital status of the men and observing people with prostate cancer showed positive correlation with prostate cancer awareness. Awareness of prostate cancer among men seems to be stronger among men with a partners possibly because partners' exposure to health issues and curiosity to protect their partners. This confirms the study by Ogunsanya et al.,[35] which revealed that men who are married are more likely to be exposed to health issues such as prostate cancer, than those who have not married. Observing people living with prostate cancer appeared to be powerful information to the men living in the rural communities. This is because; with a clinical confirmation of the presence of the disease and the daily experience of the patients, every man around has a clear message of the existence of prostate cancer and its excruciating impacts.

Going for regular prostate cancer screening among the men living in the rural communities in the southeast Nigeria is dependent on a number of factors. Age is one of the factors affecting or determining the willingness to go for prostate cancer screening among the men. This relationship is showing age of the respondents as a contributing factor to their going for regular prostate cancer screening. The finding here supported the findings by Kohestani, Chilov and Carlsson[49] and Cata-

lona[50] who discovered the role of age in prompting people to seek for medical attention among the developing nations. Due to the unattractive nature of health facilities in the rural communities, seeking for medical attention seems to be secondary matter in the scale of preference of in the population in the rural communities. For instance, even though marital status is a contributing factor to awareness about prostate cancer, it is negatively correlated with prostate cancer screening practices among the men. This can be explained by the socioeconomic atmosphere around the men.

Education and occupation of the respondents showed positive correlation with regular prostate cancer screening practices. This can be explained by other factors such as exposure and conviction and the existence and impact of prostate cancer. When an individual has opportunity to learn the realities of certain phenomenon, it usually trigger the person to take action according to the Health Belief Model,[51,52] equally, weighing the two options of using the available resources to confront the situation and allowing the situation to escalate, the individual usually prevent the undesirable by taking the first option.[53–55] This is further explained by the source of prostate cancer awareness among the population, which in the model showed positive correlation with regular prostate cancer screening practices. Seeing someone living with prostate cancer can be a trigger to regular prostate cancer screening practices possibly because of fear and belief.

CONCLUSION

Prostate cancer issue among the developing nations is yet to be properly addressed especially among the rural population. This hinges on the challenges of the commitment of the rural population in taking responsibility in the clinical and behavioural dimensions of the issue. Although the level of awareness among the surveyed population appeared to be high, the corresponding commitment to regular screening exercise among the population is far lower showing the presence of other extraneous factors. The present study has revealed the challenges as they are obtainable in the area and by implication, calls for policy intervention in the areas of public awareness and access to healthcare facilities among the rural population. This is in connection with the socioeconomic factors as indicators of poor willingness to go for regular prostate cancer screening among the population.

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Ethics Committee Approval: The study was approved by the Faculty of the Social Sciences University of Nigeria Ethics Committee (no: ORD/FSS/UNN/23/061, date: 28/08/2023).

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