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Knowledge and Attitude towards Prostate Cancer Screening amongst Male Adults in Selected Communities in Rivers State

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Abstract

In this study, male adults in Kula Kingdom (Akulga) and Rumuodor (Obalga) in Rivers State were asked about their knowledge and attitudes regarding prostate cancer awareness and screening. A descriptive survey technique was used. The population of male adults in Kula Kingdom (Akulga) and Rumuodor (Obalga) were estimated 1000. Taro Yamane's approach yielded a sample size of 286 respondents (149 from the Kula Kingdom and 137 from Rumuodor) which was determined using a purposeful sampling technique and data were gathered using a well-structured questionnaire which had a reliability coefficient of 0.81 was found. Z-test was used to test the hypothesis. Results showed that the adult men of Kula Kingdom (Akulga) and Rumuodor (Obalga) had knowledge of prostate cancer through television, radio and health workers. Also, the attitude of the adult males towards prostate cancer screening enhanced early detection, improved the chances of recovery and saving of lives. It was recommended that more awareness on prostate cancer and screening campaign should be done at least every quarter in all the local government areas in the state.

Keywords: knowledge, attitude, prostate cancer, male adults

Introduction

The World Health Organization (WHO, 2011) claimed that prostate cancer is the second most frequent cause of cancer in adult males globally. A walnut-sized gland called prostate is a component of the male reproductive system. It is placed in front of the rectum and under urinary bladder. The prostate's job is to produce fluid that feeds and hides the sperm cells in the semen. The testicles create a hormone called androgen (testosterone), which regulates the prostate's activity and growth (Prostate Cancer, 2014). In addition, Ngugi and Magoha (2017) estimated that there are 0.9 million new occurrences of prostate cancer each year, along with 0.26 million fatalities. According to Ferlay et al. (2010) and Akinremi et al. (2011), prostate cancer accounts for 28,000 (11.3% of all male cancer fatalities) and 40,000 (13%) of all adult male cancer occurrences and deaths in Africa. Its incidence and prevalence in black men is in multiples of those from other races in several studies. The cause of this is not yet known, however investigations involving black men from various populations to determine if there is an enhancing element related with the racial origins of these guys may provide an explanation for the gap (Akinremi, et al., 2011). Advancements in diagnosis and treatment, death rate from prostate cancer dropped by 3.5% year from 2003 to 2012 (American Cancer Society, 2016).

Akinremi et al. (2011) defined prostate cancer as a cluster of malignant cells that typically begin in the prostate's outer layer. Men may experience aches and pains in their bones, pelvis, hips, ribs, and back as early prostate cancer without treatment, progresses to adjacent lymph nodes, bones, or organs. Although the specific etiology of prostate cancer is unclear, a variety of risk factors have been linked to it. Prostate cancer risk rises in men.

Anosike (2016) reported in developed countries due to early detection, while in developing countries, most cancer victims are diagnosed with late stage, incurable tumors, pointing to the need for education schemes and better detection programs.Prostate cancer screening is an attempt to detect

prostate cancer in men who are asymptomatic. Digital rectal examination (DRE) and the measurement of blood prostate specific antigen (PSA) are the pillars of prostate cancer screening (Nakandi et al., 2013). In men with moderately and poorly differentiated illness, large population-based trials have shown that early treatment of prostate cancer improves survival when compared to no active therapy (Lu-Yao & Yao, 2017). Cancer is over twice as likely to be diagnosed in wealthy countries as in undeveloped countries. Late presentation by patients affected is a common challenge (Joe et al., 2013). This has primarily been attributed to ignorance, poor health education, a dearth of prostate cancer screening programs, poverty, subpar healthcare facilities, and an absence of specialized urological treatment (Eke & Sapira, 2012; Olapade-Olaopa et al., 2018). However, malignancies that affect men have received considerably less attention in Nigeria than cancers that affect women, particularly breast and cervical cancer. Currently there is no official prostate cancer program, which may help to explain why fewer people are conscious of the condition. This study is necessary since it will act as a starting point for the responsible parties' precise planning given those adult men who work in academic settings probably access to greater knowledge. It would also give a hint as to what might be expected in the general community. Based on a study, African-American men postponed treatment after receiving a cancer diagnosis because they thought it was a death sentence. In another study among African American men, embarrassment and the fear of a positive diagnosis were barriers to screening. Finnish participants in a randomized population-based screening trial stated previous screening, forgetfulness and not wanting to think about PC as reasons for not being screened. A study in Uganda reports that many participants failed to undergo PC screening because they did not consider PC as serious as HIV; HIV testing was considered more important than PC screening (American Cancer Society, 2016).

In Nigeria, health promotion is concerned about prostate cancer. Prostate cancer was named the most common cancer in Nigerian men and accounted for 11% of all masculine malignancies examined in a recent study, which confirmed that it is the most common malignancy among Nigerian men. Furthermore, this conclusion backs up a previous study from Enugu that identified the condition as the most frequent among the urinary tract tumors evaluated. This illness has a high rate of morbidity and mortality, with 20,000 deaths per year and a hospital incidence of 127/100,000 patients (American Cancer Society, 2016). Prostate cancer and benign prostate hyperplasia significantly increase morbidity and death among male Nigerians, according to a second study conducted in the northern Nigerian city of Zaria. According to a study titled "A Twelve-year Review of Urological Tumors of the Genito-urinary Tract in Ibadan" that used cancer registry records from the University College Hospital in Ibadan, Nigeria, from 1960 to 1979, prostate cancer had the highest frequency rate of all the urological tumors studied, with a frequency rate of 46.7%. According to a more recent review of data from the same Nigerian cancer registry, prostate cancer incidence increased between 1960 and 1996 and currently makes up 11% of all male malignancies. As shown in a Nigerian study, the median age of men with prostate cancer is 67.5 years old (WHO, 2014). The average age of men in this study was found to be 68.3 years old (9.4). Apart from age, other characteristics discovered were family history, health care access and dietary influences. The national prostate cancer risk has been estimated to be 2% (Haidula, 2014).

There are mixed results regarding the advantages of early PC screening to lower mortality. One European study indicated a 20% decrease in mortality associated to PCs. A US research, however, was unable to detect any decline in PC-related fatalities. However, it is impossible to overstate the advantages of early screening to determine cancer status, start early treatment, and lower PC-related fatalities. Approximately 75% of PC cases in Ghana are reported late to health centers at advanced stages, despite the substantial morbidity of the disease. It is suggested that inadequate understanding of PC, the availability of alternative medicines, and delayed reporting for PC screening and treatment is the causes (WHO, 2014). However, it is still true that very little research has been done to investigate perceptions..

According to research by the World Health Organization (WHO, 2014), the success of cancer treatment is significantly impacted by early diagnosis. However, it continues to be true that very little research has been done to investigate perceptions. According to Capik (2014), in Turkey and other nations, routine cancer screening programs do not contain early diagnostic tests; instead, they are performed exclusively on the advice of a doctor and only when indicated. In Nigeria, the

Demographic Health Survey (DHS) of 2013–2014 was used in earlier research to evaluate public understanding of cancer, although it omitted information on specific cancer kinds, such as prostate cancer. Prostate cancer screening, in particular, has fallen short of expectations. The Cancer Association of Nigeria (CAN) reports that because of how the examination is conducted, the majority of Nigerian men are reluctant to undergo prostate cancer screening. As a result, it's important to educate the public about prostate cancer and raise awareness of prostate cancer screening. In line with a recent article in the Villager newspaper (Moses, 2015), prostate cancer is the second-leading cause of death in Nigeria after HIV (23%) and screening tests are not widely promoted there. Instead, prostatectomy is the primary recommended course of action. The African Organization for Research and Training in Cancer (AORTIC) is dedicated to encouraging research, education, and advocacy on a number of levels to raise awareness of cancer in Africa as a result of the rising cancer burden (Cancer in Africa," 2011). According to research, prostate cancer is becoming more widely acknowledged as a serious public health issue in Africa. Prostate cancer knowledge, attitudes, and practices (KAP) were evaluated as part of the Nigerian demographic health survey that took place between 2013 and 2014. According to the study, 64% of males between the ages of 40 and 64 said they had heard of prostate cancer. Based on the DHS report (2014), only 33 (7%) men from the Oshana region had undergone a prostate cancer screening throughout the time period. Despite the fact that men in Nigeria are generally well-informed about prostate cancer, Oshana region has one of the lowest rates of males who have even heard of the disease (DHS, 2014). It is generally known that screening behavior is significantly influenced by one's level of information regarding prostate cancer (Pendleton et al., 2018).

According to anecdotal data, men in urban and rural areas are only offered the chance to get checked for prostate cancer when the doctor suspects a dangerous case. It is extremely difficult to treat if the cancer has already spread, which accounts for the high proportion of cancer fatalities (Bangma et al, 2017). It is obvious that prostate cancer is a severe public health issue that needs additional attention when the prevalence of the disease is compared to the population of Nigeria. In order to find out whether there have been any improvements in men's knowledge, attitudes, and screening practices about prostate cancer in Nigeria, the current study will look at both urban and rural areas in Rivers State (Ferlay et al., 2015).

Statement of Problem

Prostate cancer is one of the most commonly diagnosed cancers in males worldwide. When an abnormal, malignant growth of cells - which is called a tumor - forms in the prostate, it is called prostate cancer. Different parts of the body may become infected with this malignancy. Because the cancer in these situations is formed of prostate cells, it is still referred to as prostate cancer. Based on the Cancer Association of Nigeria's projection for 2022, one in eight men in Nigeria would acquire prostate cancer at some point in their lives, with the majority of men receiving a diagnosis after the age of 50. So because prostate surrounds the urethra and is situated beneath the bladder, urinary issues are frequent. Due to its location, a tumor on the prostate may press on the bladder or urethra and cause issues if it expands. The lack of adequate access to medical care, decreased documentation and reporting of cases are crucial factors contributing to late detection of the disease. Additionally, the likelihood that prostate cancer will be discovered in its advanced stages is increased by the restricted resources available for screening and detection. Furthermore, the fact that medical care and assistance are not widely accessible especially in developing countries like Nigeria may give a possible explanation for the high mortality. One of the best ways to detect cancer before any symptoms appear is to undergo a screening test. The earlier you find cancer, the easier it may be to treat. The researcher discovered limited information on prostate cancer knowledge and attitudes in certain communities in Rivers State and throughout Nigeria. Prostate cancer educational programs are being run in the neighborhood, but it's unclear whether the participants have access to the information being shared. As a follow-up, this study will evaluate the knowledge and attitudes of men in urban and rural populations in Rivers State regarding prostate cancer awareness and screening.

Objectives of the Study

The purpose of this study is to assess the level of knowledge and attitude of prostate cancer and screening amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State. The following specific objectives were used to guide the study:

1. to assess the level of knowledge of prostate cancer amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State.
2. to determine the extent to which attitude of adult males influence prostate cancer screening in Kula Kingdom(Akulga) and Rumuodor (Obalga) in Rivers State.

Research Questions

1. What is the level of knowledge of prostate cancer amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State.?
2. To what extent does attitude of adult males influence prostate cancer screening in Kula Kingdom and Rumuodor (Obalga) in Rivers State?

Hypotheses

The null hypotheses guided the study:

1. There is no significant difference between the mean ratings of adult males in Kula Kingdom in Akuku-Toru Local Government Area and Rumuodor in Obio-Akpor with regards to the level of knowledge of prostate cancer amongst adult males.
2. There is no significant difference between the mean ratings of adult males in Kula Kingdom in Akuku-Toru Local Government Area and Rumuodor in Obio-Akpor with regards to the influence of attitude toward prostate cancer screening amongst adult males.

Methodology

The study adopted a descriptive survey design. The study was carried out in Kula Kingdom (Akulga) and Rumuodor (Obalga), Rivers State. The population of the study consisted of 1000 adult males from the study areas. From the study population, a sample size of 286 adult males was randomly selected, using the Taro Yamane's formula. The instrument used was a structured questionnaire tagged 'Knowledge and Attitude on Prostate Cancer Screening amongst Adult Males Questionnaire' (KAPCSAMQ) and structured in a four point rating scale. The researchers' personally administered the instrument on the selected respondents. Among the 286 questionnaire administered, 286 retrieved was which gave a hundred percent (100%) rating. The instrument was validated by two experts to determine its adequacy and appropriateness for the study and for its proper wordings. The Pearson Product Moment Correlation Statistics method was used for the reliability test and yielded reliability co-efficient of 0.81. The data collected from the study were analyzed using mean and standard deviation. Mean value less than 2.50 was rejected while mean value equal or greater than 2.50 was accepted for the research questions. Decision rule for the test of hypothesis was accepted if the calculated value of Z is less than the critical value and if the calculated value of Z is greater than Z critical the null hypothesis was rejected.

Results

Research Question One: What is the level of knowledge of prostate cancer amongst adult males in Kula Kingdom and Rumuodor (Obalga) in Rivers State?

Table 1: Summary of mean scores on the level of Knowledge of Prostate Cancer amongst Adult Males

		Kula adult males 149			**Rumuodor adult males 137**		
				Remarks			**Remarks**
	Items Statement	X	SD		X	SD	
1.	You are aware of prostate cancer	3.83	2.01	Agreed	3.82	2.00	Agreed
2.	You got the information through television and radio	3.81	1.99	Agreed	3.80	1.98	Agreed
3.	Health worker told you about prostate cancer	3.81	1.99	Agreed	3.80	1.98	Agreed
4.	Community town Announcer gave the information about prostate cancer	2.59	1.30	Agreed	2.58	1.29	Agreed
5.	You have experienced prostate cancer screening	2.49	1.29	Disagreed	2.52	1.29	Agreed
6.	Prostate cancer screening was said to be bad	3.21	1.53	Agreed	3.10	1.47	Agreed
7.	Your knowledge can provide improvement in other adult males	3.03	1.43	Agreed	3.05	1.44	Agreed
8.	**Grand Mean**	**3.25**	**1.64**		**3.24**	**1.64**	

Field survey 20221

The result from the research question 1 as presented in table 1 reveals that majority of the respondents from Kuta Kingdom group to items 1-4 and 6 to 7, while item 5 was rejected. Also, all the items 1 to 7 on the Rumuodor community axis were all accepted. In the same vein, the grand mean of the both sections were 3.25 and 3.24 which is above the criterion mean of 2.50. Hence, all adult males accepted that standard knowledge on prostate cancer is highly desired in Kula Kingdom in Akuku-Toru Local Government Area and Rumuodor in Obio-Akpor Local Government Area Rivers State.

Research Question Two: To What extent does attitudes of adult male influence prostate cancer screening in Kula Kingdom (Akulga) and Rumuodor (Obalga Rivers State?

Table 2: summary of mean scores on the extent to which attitude of adult males influences prostate cancer screening

		Kula adult males 149		**Rumuodor adult males 137**		**Remarks**
S/N	Items Statement	X	SD	X	SD	
9.	Busy schedule of adult male in hinders prostate cancer screening	3.80	2.01	3.80	1.98	
10.	Superstition makes adults males to refuse prostate cancer screening.	3.83	2.01	3.82	2.00	
11.	Prostate cancer is believed to be old males disease	3.03	1.45	3.80	1.98	
12.	Adult males are always afraid of the unknown about prostate cancer screening	3.21	1.53	3.10	1.49	
13.	Lack of income makes most adult males to be scared of prostate cancer screening	2.59	1.30	2.58	1.29	
14.	Illiteracy is also another inhibitor to adult male accessing prostate cancer screening	3.81	1.99	3.05	1.41	
		3.38	1.72	3.36	1.69	

Field Survey, 2022

The result from Research Question 2 indicated that all respondents accepted the views in items 8-13. Hence, since the grand mean of 3.38 and 3.36 are above the criterion mean of 2.50, both adult males form Kula and Rumuodor accepted to a high extent that, attitude influence prostate cancer screening in Rivers State.

Table 3: Z-test on the influence of level of knowledge on prostate cancer amongst adult males

Respondents	**X**	**SD**	**N**	**DF**	**Z-cal**	**Z-crit**	**Decision**
Kula Kingdom adult male	3.25	1.65	149				
				284	0.05	1.96	Accepted
Rumuodor Adult males	3.24	1.64	137				

Research data output, 2022.

The results in table 3 reveal that adult males of Kula kingdom had mean scores and standard deviation score of 3.25 and 1.65 respectively, whereas, adult males of Rumuodor had mean and standard deviation score of 3.54 and 1.64 respectively. In the basis of Z-comparison, the Z-calculated value of 0.05 is lesser than the Z-critical table value of 1.96, hence, the hypothesis was accepted. Therefore, the null hypothesis of influence of level of knowledge on prostate cancer amongst adult males in Kula kingdom and Rumuodor does not differ significantly, is retained for insufficient empirical evidence.

Table 4: Z-test on the influence of attitude towards prostate cancer screening amongst adult males

Respondents	X	SD	N	DF	Z-cal	Z-crit	Decision
Kula Kingdom adult male	3.38	1.72	149				
				284	0.1	1.96	Accepted
Rumuodor Adult males	3.36	1.69	137				

Research data output, 2022.

The results in table 4 shows that adult males of Kula Kingdom had mean and standard deviation scores of 3.38 and 1.72 respectively, while adult males of Rumuodor had mean and standard deviation scores of 3.36 and 1.69 respectively. On the basis of Z-comparison, the calculated Z-ratios of 0.1 is lesser than the critical table value (1.96), the hypothesis was accepted. Therefore, the null hypothesis of influence of attitude towards prostate cancer kingdom and Rumuodor does not differ significantly is retained for insufficient evidence

Discussion Findings

The findings in research question 1 indicated that, there is awareness of prostate cancer, information gotten through television and radio, community town announcer, experienced prostate cancer screening, prostate cancer screening was said to be a bad and knowledge can provide improvement in other adult males these are some of the means through which, the level of knowledge on prostate cancer are reached amongst adult males. The study's findings corroborated those of the World Health Organization (WHO, 2014), which recommended that in addition to education (disease awareness), encouragement of participation (practice), and habits that reduce the risk of contracting cancer, other steps should be taken to ensure early diagnosis. Moses (2015) further supports the conclusion that men should be educated about prostate cancer and encouraged to get screened, as was recently stated in the local newspaper. As a result, the revised hypothesis 1's findings indicate that there is no substantial difference between Kula Kingdom (Akuku) and Rumuodor (Obalga) Rivers States' mean ratings of adult males' influences on their awareness of prostate cancer.

The findings in research question 2 revealed that busy schedule of adult males hinders prostate cancer screening, superstition makes adult male to refuse prostate cancer screening, prostate cancer is believed to be old males disease, adult males are always afraid of the unknown about prostate cancer Screening, lack of income makes most adult males to be scared of prostate cancer Screening and illiteracy is also another inhibitor to adults males accessing prostate cancer Screening, the findings is in line with Yeboah- Asiamah (2017) with the view that negative attitudes and perceptions toward prostate cancer may influence screening and treatment for prostate cancer in both developed and developing nations. Kanungo *et al.,* (2015) also affirmed to the findings that a good knowledge of disease is generally associated with a better health seeking attitude and behaviour. Consequently, the null hypothesis 2 of influence of attitude towards prostate cancer screening amongst adult males in Kula Kingdom and Rumuodor does not differ significantly, is retained for insufficient evidence.

Conclusion

From the findings, it was summarized that prostate cancer is a deadly condition domiciled amongst adult males in developing and developed nations of the world. Hence, all hands must be on deck to fight to a stand-still prostate cancer through sincere conscientization process which will definitely produce pragmatic and macro communities

Recommendations

Based on the findings the following recommendations were made:

1. All stakeholders, which comprises of individuals families, different kinds of communities and not excluding the staff members of cemetery communities to effectively carryout awareness campaign on prostate cancer, its screening process and benefits at least quarterly in every community.
2. The social mobilization agencies of government NGOs and Faith-based Organization build up a positive attitude toward prostate cancer and screening in males beginning from the late adolescent age unto early adulthood (less than 40 years).

References

Adibe, M. O, Aluh, D. O, Isah, A, & Anosike, C. (2017). Knowledge, attitudes and perception of prostate cancer among male staff of the University of Nigeria. *Asian Pac J Cancer Prev*, 2017; 18(7):1961–6.

African Organization for Research and Training in cancer (AORTI, 2011)

Agho A. O & Lewis, B. (2017). Correlates of actual and perceived knowledge of prostate cancer among African

Akinremi T. O, Ogo C. N, & Olutunde A. O (2011) Review of prostate cancer research in Nigeria. *Infect Agent Cancer* 2: 58.

Akpuaka, S. O, Clarke-Tasker V. A, Nichols-English G. J, Daniel M. G, & Akpuaka A. I. (2013) Knowledge and perceptions of prostate cancer among Nigerian male immigrants. *ABNF J*, 24(1),23–7.

America Cancer Association (2016)

American Cancer Society, (2016) Knowledge and attitudes of men about prostate cancer. *Med J Aust*, 189,312–14.

Anderson, O. Wallace, A., & Jolly, (2015). Public Education about Cancer in Nigeria, in Cancer in Nigeria.

Atulomah N. O, Motunrayo F. O, Ademola M. A, & Omotoyosi A. (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.

Bambury, A & Gallagher, C. (2012).Knowledge of Prostate Cancer among the Male staff of the University of Ibadan: Nigeria. GHF Poster Presentation, Research Project.

Brooks, T., Wolf, F. Smith, B. Dash, K. & Guessous, C. (2010). Proceedings of the Nigerian Cancer Society Conference, December 1979, Ibadan University Press Publishing House, Ibadan, Chap. 25, 203–208.

Capik (2014) Turkey and Mary early diagnosis for cancer

Davis C. M, Maliski S, Kwan L, Fink A, Connor S. E, & Litwin M. S. (2010). Prostate cancer knowledge among low-income minority men. *J Urol*, ; 177:1851–5.

Dawan, D., Rafindadi, A. H., Kalayi, G. D.(2010). Benign Prostate Hyperplasia and Prostate Carcinoma in Native Africans, *British Journal of Urology International*, 85,9, 1074–1075

Duffy, E. (2011). The Changing Pattern of Prostate Cancer in Nigerians: Current Status in Southeastern States, Journal of the National Medical Association, 94, 7,619–627.

Ebuehi, O.M. & Otumu , .U. (2011) Prostate Screening Practices Among Male Staff of the University of Lagos, Lagos, Nigeria. *African Journal of Urology* 17, No. 4, 122 122-134

Eke, N., Sapira, M. K. (2012). Prostate Cancer in Port Harcourt, Nigeria: Features and Outcome, *Nigerian Journal of Surgical Research*, 4, 1–2, 33–44.

Eo M., Eton D. T, & Lepore S. J (2014). Prostate cancer and health-related quality of life: a review of the literature. Psychooncology 11: 307-326.

Etzioni R, Tsodikov A, Mariotto A, Szabo A, & Falcon S. (2008) Quantifying the role of PSA screening in the US prostate cancer mortality decline. *Cancer Causes Control* 19: 175-181.

Ferlay J, Shin H. R, Bray F, Forman D, Mathers C, & Parkin D. M. (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer*, 127(12), 2893–917.

Haidula, L. (2014). A Twenty-year Review of Urologic Tumours of the Genito-urinary Tract in Ibadan, in Cancer in Nigeria.

Hall, M. I., Lambert S, Fearing A, Bell, D. & Newton M. A (201). Comparative study of prostate screening health beliefs and practices between African American and Caucasian men. *ABNF J,* 13,61–3.

Joe et al (2013) Late Presentation of Prostate cancer

Kanungo S, Bhowmik K, Mahapatra T, Mahapatra S, Bhadra U.K, & Sarkar K. (2015). Perceived morbidity, healthcare-seeking behavior and their determinants in a poor-resource setting: observation from India. PLoS One, 10(5):e0125865.

Liang, D. U., Thompson, M. & Turner, H. (2012). Attitudes of African Americans regarding screening for prostate cancer. *J Natl Med Assoc*, 88(4):241–6.

Lu-Ya, C.D. & Yao, A.D. (2017). The burden of disease and mortality by condition: Data, methods and results for 2001. Global Burden of Disease and Risk Factors, Oxford University Press, New York: 45-240.

Moses (2013) Villager Newspaper. Awareness of prostate cancer screening

Mutetwa Oranusi C. K, Mbieri U. T, Oranusi I. O, & Nwofor A. M. E. (2010). Prostate cancer awareness and screening among male public servants in Anambra state, Nigeria. *Afr J Urol*; 18:72–4.

Nakandi H, Kirabo M, & Semugabo C. (2013). Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. *Afr J Urol,* 19:165–70.

Ngugi, Y. & Magoha, M. (2017). Knowledge of prostate cancer and screening among multi-ethnic black men. *AJMH*, 11(4):1008–18.

O'Lawrentschuk, O. & Perera,G. (2016). Cancer in Nigerians: Facts and Non-Facts, *Journal of Urology*, 157: 4, 1340–1343.

Odedina F. T, Ogunbiyi J. O., & Ukoli F. A. (2016) Roots of prostate cancer in African-American men. *J Natl Med Assoc* 98: 539-543.

Ogunbiyi, J. O., & Shittu, O. B. (2019). Increased Incidence of Prostate Cancer in Nigerians, *Journal of the National Medical Association*, 91, 159–164.

Ojewola R. W, Oridota E. S, & Olanrewaju, S. B. (2017). Knowledge, attitudes and screening practices regarding prostatic diseases among men older than 40 years: a population-based study in Southwest Nigeria. *Pan Afr Med J*, 27:151.

Oladimeji O, Bidemi Y. O, Olufisayo J. & Sola A. O.(2010). Prostate cancer awareness, knowledge, and screening practices among older men in Oyo State, Nigeria. *Int Q Community Health Educ*, 30:271–86.

Olapade-Olaopa E. O, Owoaje E. T, Kola L, Ladipo M. M, Adebusoye L, Adedeji T. G. (2018). Knowledge and perception of Nigerian men 40 years and above regarding prostate cancer. *J West Afr Coll Surg*, 4(1):1–16.

Paiva,O. Catarina, A. & Harter, S. (2010). Transrectal Biopsy of the Prostate Gland in Ibadan. *Nigerian Journal of Surgical Research*, 3:3,159–164.

Pendleton Smith G. E, DeHaven M. J, Grundig J. P. & Wilson G. R. (2018). African American males and prostate cancer: assessing knowledge levels in the community. *J Natl Med Assoc*, 89:387–91.

Prostate Cancer in Africa, (2014). What we thought we knew: African American males' perceptions of prostate cancer and screening methods. *ABNF J*, 13:56–60.

Rebbeck TR, Rogers A. Enemugwem, Beatrice A. Eze, Ukamaka Ejike, &Eme O. Asuquo (2013). Prostate cancer screening: assessment of knowledge and willingness to screen among men in Obio Akpor LGA, Rivers State, Nigeria. *African Journal of Urology* volume 25, 11

Rufus Wale Ojewola, (2017)K Knowledge, attitudes and screening practices regarding prostatic diseases among men older than 40 years: a population-based study in Southwest Nigeria. 9 May - Published: 30 Jun 2017

Tasian, Steginga SK, Occhipinti S, McCaffrey J, Dunn J, (2012). Men's attitudes toward prostate cancer and seeking prostate-specific antigen testing. *J Cancer Educ* 16: 42-45.

Ukamaka , U &Eme, O. (2019). Prevalence of elevated serum prostate-specific antigen in rural Nigeria. I*nt J Urol* 10: 315-322.

World Health Organization (WHO, 2011)

World Health Organization (WHO, 2014a)

World Health Organization (WHO, 2014b)

Xu, A. Neale, O. Dailey, Eggly, & Schwartz, E. (2012). Men's knowledge and beliefs about prostate cancer: education, race, and screening status. *PMC*, 19(2):199–203.

Young Yeboah-Asiamah B., Yirenya-Tawiah D., Baafi D., & Ackumey M. M. (2015). Perceptions and Knowledge about prostate cancer and attitudes towards prostate cancer screening among male teachers in Sunyani Municipality, Ghana. *Afr J Urol,;* 23(3):184–91.

Zhou, M. & Magi-Galluzzi, P. (2018). Patterns and Management of Urinary Tract Cancers among Nigerian Igbos, *International Urology and Nephrology*, 21: 5, 449–454.