



THE LEVEL OF AWARENESS AND RISK FACTORS OF PROSTATE CANCER AMONG MARITIME WORKERS IN PORT HARCOURT PORT, RIVERS STATE NIGERIA.

Author: Edidiong Ekong, Department of Public Health, Imo state University, Owerri, Nigeria. (edikemini@gmail.com)

Dr. (Mrs.) Nonye Onuzulike, Department of Public Health, Imo State University, Owerri, Nigeria

Okonkwo Christian Chiemeka, Department of Maritime Business and International Logistics, University of Nigeria Nsukka. (chiemekaokonkwo50@gmail.com)

Abstract

Prostate cancer is the number one cancer in males in Africa, both in terms of incidence and mortality, accounting for 40,000 (13%) male cancers and 28,000 (11.3%) male cancer-associated deaths. In the developed world, the probability of being diagnosed with cancer is more than twice as high as in developing countries. In developing countries, most cancer victims are diagnosed at late stage, with incurable tumours, pointing to the need for education schemes and better detection programs. The main purpose for this study is to find out the level of awareness and risk factors of prostate cancer among maritime workers in Port Harcourt, Rivers state. Cross-sectional descriptive approach was used for this study, Data was collected using structured questionnaires and summarised using descriptive statistics and presented in tables and pie charts.

Respondents were within the ages of 30 and 54 years and above. The most frequently reported source of information about prostate cancer was the mass media 78 (24.84%) and multiple sources 105 (33.44%). 207 (65.92%) of the respondents had good knowledge of prostate cancer. 128 (40.76%) takes fat and 186 (59.24%) does not take fat. 132 (42.04%) of the respondents takes cigarette smoking and 182 (57.96%) does not take cigarette, 194 (61.78%) takes Alcohol and 120 (38.22%) does not take alcohol. Maritime workers (Men) from this study generally displayed a positive knowledge and attitude toward prostate cancer, as about two-third of them highlighted risk factor that promote prostate cancer and how to prevent it. A significant proportion of staff however, exhibited poor knowledge and negative attitude and knowledge of prostate cancer screening and treatments. This is an indicator to the need for more intensive educational programs which encourage screening behaviour and early presentation. As this is a major key to reduce massive morbidity and mortality of Prostate cancer. For early detection and treatment to be feasible, the level of knowledge possessed by the average Nigerian must increase exponentially. This would in turn lead to positive perception and attitude towards screening and treatment of this disease.

Keywords: Prostrate cancer, maritime, Port Harcourt Port.

Introduction

Prostate cancer (PC) occurs when abnormal cells develop and multiply uncontrollably in the prostate. This uncontrolled growth sometimes spread outside the prostate into nearby or distant parts of the body (Moul, 2004). Prostate cancer is a public health concern among black men globally, and it is the second most common cause of cancer deaths in men after lungs cancer (Baade, Youlten & Krnjacki, 2009). While over 1.1 million cases were recorded in 2012 (Ferlay, Soerjomataram, Dikshit, Eser, Mathers and Rebelo) The disease accounted for about 8% of all new cancer cases worldwide and 15% of cancer cases in men (Osegbe, 1997). It is more common in blacks and men of mixed race compared to Caucasians and Asians.

Asia recorded low incidence of PC yearly, while the highest incidence is seen in North America and Scandinavia, especially among African-Americans (Crawford, 2003). In Nigeria, prostate cancer is the most commonly diagnosed malignancy among men and a hospital prevalence of 182.5 per 100,000 male admissions was recorded in 2010 in Osun State (Mohammed, Edino, Ochicha, Gwarzo&Samaila 2008; Badmus, Adesunkanmi, Yusuf, Oseni, Eziyi& Bakare, 2010).

The incidence rate has also increased in ages between 15 and 40 years and globally at a steady rate of 2% yearly since 1990 ($P < .01$) (Archie, Filippo, & Ronald , 2019). Nigeria lacks good health data on PCa, Most PCa incidence is mostly based on self-reports (Mohammed, Edino, Ochicha, Gwarzo, & Samaila, 2008). In 2014, the World Health Organization (WHO) reported 30,400 cancer-related deaths in Nigeria and 31.7% were due to prostate cancer (WHO 2014), compare to high-income countries, where mortality rate is low as a result of routine screening leading to early detection, majority of the cases in low and middle-income countries such as Nigeria are diagnosed among men with symptoms at advanced stages which result to increase mortality (Ebuehi, & Otumu, 2011).

Prostate cancer generally has a long incubation period and most men with low grade prostate cancer live for many years without symptoms and without it spreading and becoming life-threatening (CCA, 2016). The American Cancer Society in 2004 established that all men are at risk of developing prostate cancer from age 50(Moul, 2004). There is some evidence that prostate cancer may develop at earlier ages in African-Americans than in other races. Well-known risk factors associated with prostate cancer are age, race/ethnicity, geography, family history, gene changes, vasectomy, diet, sexually transmitted infections and inflammation of prostate (ACS, 2016).

Prostate cancer screening aim is to diagnose PCa in asymptomatic men. This includes the measurement of serum prostate specific antigen (PSA) and digital rectal examinations (DRE) (Ikuerowo, Omisanojo, Bioku, Ajala, Mordi & Esho, 2013). Despite the increased awareness of prostate cancer screening globally, the uptake has remained low especially in developing countries. Qualitative methods of data collection are necessary in exploring knowledge and barriers to health-seeking practices in target populations (Sutton & Austin, 2015).

Purpose of the Study

The main purpose for this study is to find out the level of awareness and risk factors of prostate cancer among maritime workers in Port Harcourt, Rivers state.

Specifically, the objectives of this study include the following:

1. to ascertain the level of awareness amongst men in the maritime industry of Port Harcourt, Rivers State about prostate cancer.
2. to ascertain the knowledge of prostate cancer amongst men in the maritime industry of Port Harcourt, Rivers State.
3. to ascertain the attitude of men on prostate cancer amongst maritime workers in Port Harcourt, Rivers state.
4. to determine the influence of dietary intake on prostate cancer among maritime workers.

Summary of literature review

Approximately 5 to 1 percent of all prostate cancers are known to be attributed to an inherited DNA change, such as the cancer susceptibility gene. Recent researches have pointed out that, there is a set of common DNA variations that lead to a higher risk of inherited prostate cancer in African American men (Peter & Michael, 2010). The fear or stigma that come with having prostate cancer can be overwhelming to most men. Prostate cancer is the most common cancer among men. But the interesting part is that it can be cured if detected early enough.

There seems to be a close link between a family history of prostate cancer and a man's risk of developing it. In a recent research carried out by some scientists at Johns Hopkins, showed the undeniable link between a family history of prostate cancer and man's probability of developing the disease. The study showed that if your father or brother has prostate cancer, your risk is two times greater than the average American man's which is about 13 percent. Having a father or brother with prostate cancer increases the probability of having it. The risk becomes very high for men with several affected relatives, particularly if the relatives were young at the time of diagnosis. Geneticists have succeeded in dividing families into three groups, based on the number of men with prostate cancer and their ages were put into consideration, these include the followings:

Hereditary - Prostate cancer is grouped under this if more than three relatives are affected within a nuclear family. Researchers have shown that five to 10 percent of prostate cancer cases are considered hereditary.

Sporadic - The word sporadic means to occur by chance, a family with prostate cancer present in one man, at a typical age of onset is grouped under this class.

Familial - This has to do with having more than one person in a family with prostate cancer, but with no definitive pattern of inheritance.

If your family history suggest to you that there is hereditary prostate cancer (HPC) which can also be inherited from either your father or your mother, it becomes important to find out from your parents about the history of prostate cancer in their family if there was any. Men in a

family with prostate cancer have 50 percent chance of having it. Men are advised to carry out a test yearly to check for prostate cancer (Hilary, 2009).

As it was earlier mentioned that scientists don't know precisely what causes prostate cancer, but it's clear that a number of factors are involved such as age, race, hormones, diet, environment etc. In general, all men are at risk of having prostate cancer. However, there are specific risk factors that increase the likelihood that certain men will develop the disease, these include the followings but not limited to these:

1. **Age:** It is one of the risk factor for prostate cancer, most men that are above 50 years are likely to be affected. More than 70 percent of all prostate cancers are diagnosed in men over the age of 65.
2. **Race:** About 60 percent of African-Americans are likely to be affected with prostate cancer while Japanese and Chinese men have the lowest rates of prostate cancer.
3. **Diet:** This is another risk factor, epidemiological data suggests that the diet consumed in most industrialized Western nations can also be one of the most important contributory factors for developing prostate cancer. Some diets have higher risk for prostate cancer, diets such as fat, Fiber, Soy protein, Vitamin E and selenium, Carotenoids. Research has shown that men who consume high-fat diet expose themselves to a greater chance of developing prostate cancer. High intake of dietary fiber can also influence the circulating levels of testosterone, and which in turn, may decrease the progression of prostate cancer. Soy contains isoflavone which in several studies have been found to inhibit the growth of prostate cancer. Vitamin E, an antioxidant, combined with selenium, has been shown to inhibit tumor growth in laboratory animals. Carotenoids containing lycopenes have also been shown to inhibit the growth of human prostate cancer cells in tissue cultures (cells grown in the laboratory). The primary source of lycopenes is processed tomatoes in tomato juice and tomato paste. Herbal preparations: some herbal preparations have been reported to have side effects such as venous thrombosis, breast tenderness, and loss of libido.
4. **Obesity:** Researches have shown that obesity does not only contribute to diabetes and high cholesterol, but has also been associated with some common cancers, including hormone-dependent tumors such as prostate, breast, and ovarian cancer.
5. **Environmental Exposures:** Few studies have shown that there are high chances for men who are into welding or electroplating and farming to have prostate cancer. However, additional studies into this are encouraged.
6. **Having a record of STD (sexually transmitted disease):** There are still researches going on to check whether men who have been exposed to a sexually transmitted disease are at increased risk for prostate cancer. Some studies suggest a link, while others do not support these claims (Walsh & Worthington, 1995).

Presentation of results and discussion of findings

Table 1: Socio-Demographic Profiles of the Study Respondent

Socio demographic Variable		Frequency (N=314)	Percentage	P-value
Age (years)	30 – 41	98	31.21	0.055
	42 – 53	152	48.41	
	≥ 54	64	20.38	
Educational Level	No formal education	14	4.46	0.060
	Primary school	23	7.33	
	Junior High School	52	16.56	
	Senior High School	76	24.20	
Marital Status	Tertiary	149	47.45	0.148
	Single	32	10.19	
	Married	198	63.06	
	Divorced	25	7.96	
	Widower	59	18.79	
Religion	Christian	141	44.90	0.056
	Muslim	96	30.58	
	Traditionalist	56	17.83	
	Others	21	6.69	
Monthly income	50,000-99,000	102	32.48	0.161
	100,000-199,000	189	60.19	
	>200,000	23	7.32	
Do you have family history of Prostate Cancer	Yes	199	63.38	0.166
	No	115	36.62	

Table 1 above shows the demographic characteristics of the respondents, 98 (31.21%) of the respondents are within the age range of 30 – 41 years, 152 (48.41%) are between 42 – 53 years and 64 (20.38%) are greater than 54 years. The level of association of the age group shows that there is a significant association between them with $P = 0.055$. The educational level of the respondents reveals that 14 (4.46%) of the respondents had no formal education, 23 (7.33%) had primary education, 52 (16.56%) had Junior high school, 76 (24.20%) had Senior high school and majority of the respondents had tertiary education with 149 (47.45%). The association of the educational level shows no association with $P = 0.60$.

Table 2: Knowledge and attitude of Prostate Cancer amongst Men in the Maritime.

		Frequency (N=314)	Percentage	P-value
Do you know the age at-risk of prostate cancer in men	<40 years	101	32.17	0.127
	>40 years	178	56.69	
	No idea	35	11.14	
Do you know cancer is treatable	Yes	153	48.73	0.045
	No	121	38.54	
	No idea	67	21.33	
Do you know that prostate cancer is preventable	Yes	189	60.19	0.167
	No	106	33.76	
	No idea	19	6.05	
Do you know of a person suffering from prostate cancer	Yes	177	56.37	0.102
	No	74	23.57	
	No idea	63	20.06	
Do you know of a person who has died from prostate cancer	Yes	198	63.06	0.157
	No	45	14.33	
	No idea	71	22.61	
signs and symptoms of prostate cancer	Difficulty in urinating	73	23.25	0.029
	Blood in urine	43	13.69	
	Loss of libido	21	6.69	
	Bone pain	129	41.08	
	Painful sex	23	7.32	
	Infertility	25	7.96	

Table 2 revealed information about knowledge and attitude of Prostate Cancer amongst Men in the Maritime. Based on if they know the age at-risk of prostate cancer in men, 101 (32.17%) of the respondents which are less than 40 years know the age at-risk of prostate cancer in men, 178 (56.69%) which are greater than 40 years know the age at-risk of prostate cancer in men and 35 (11.14%) had no idea of the age at-risk of prostate cancer in men. 153 (48.73%) of the respondents know that cancer is treatable, 121 (38.54%) did not know that cancer is treatable and 67 (21.33%) had no idea of cancer treatment. Larger percentage of the respondents with represents 189 (60.19%) know that cancer is preventable, 106 (33.76%) did not know that cancer is preventable and 19 (6.05%) had no idea if cancer is preventable. 177 (56.37%) of the respondents know a person suffering from prostate cancer, 74 (23.57%) did not know of a person suffering from prostate cancer and 63 (20.06%) had no idea of a person suffering from prostate cancer. 198 (63.06%) of the respondents know of a person who has died from prostate cancer, 45 (14.33%) did not know of a person who has died from prostate cancer and 71 (22.61%) had no idea of a person who has died from prostate cancer and lastly based on the signs and symptoms of prostate cancer, 73 (23.25%) had difficulty in urinating, 43 (13.69%) had blood in urine, 21 (6.69%) had loss of libido, 129 (41.08%) had bone pain, 23 (7.32%) had painful sex and 25 (7.96%) had infertility.

Table 3: Level of awareness amongst men in the maritime industry of Port Harcourt, Rivers State about prostate cancer

		Frequency (N=314)	Percentage	P-value
Prostate Cancer is a disease	Yes	207	65.92	0.185
	No	75	23.89	
	No idea	32	10.19	
Have you heard of prostate cancer?	Yes	254	80.89	0.352
	No	60	19.11	
Are you aware that prostate cancer affects only men?	Yes	267	85.03	0.389
	No	47	14.97	
Source of information about prostate cancer	Multiple sources	105	33.44	0.011
	Mass media	78	24.84	
	Acquaintances	54	17.20	
	Health practitioners	56	17.83	
	Don't remember	21	6.69	
prostate cancer treatment	Chemotherapy	153	48.73	0.066
	Radiotherapy	84	26.75	
	Surgery	24	7.64	
	Herbal medicine	53	16.88	

Methods prostate cancer prevention	Regular screening	56	17.83	0.031
	Proper diet	129	41.08	
	Avoiding multiple sexual partners	27	8.60	
	Genital hygiene	78	24.84	
How often do you visit the hospital for prostate cancer examination	Condom use	24	7.64	0.055
	Every 6 months	80	25.48	
	Yearly	78	24.84	
Prostate cancer it can be treated at its early stage	Never	156	49.68	0.246
	Yes	221	70.38	
	No	93	29.62	

As shown in table 3, Information about knowledge and attitude of Prostate Cancer amongst Men in the Maritime. 207(65.92%) workers are aware that prostate cancer is a disease, only 254 (80.89%) have heard about prostate cancer. Majority of 221(70.38%) know that early treatment of prostate cancer can help in the treatment. 129(41.08%) believe that proper diet can help to prevent prostate cancer. 78(24.84%) worker heard of prostate cancer through the mass media while 105(33.44%) worker heard of prostate cancer through multiple sources.

Table 4: INTAKE DIETARY INTAKE ON PROSTATE CANCER AMONG MARITIME

		Frequency (N=314)	Percentage	P-value
Fat intake	Yes	128	40.76	0.116
	No	186	59.24	
Cigarette smoking	Yes	132	42.04	0.101
	No	182	57.96	
Alcohol in-take	Yes	194	61.78	0.147
	No	120	38.22	

Table 4: shows information about intake dietary on prostate cancer among maritime, 128 (40.76%) takes fat and 186 (59.24%) does not take fat. 132 (42.04%) of the respondents takes cigarette smoking and 182 (57.96%) does not take cigarette, 194 (61.78%) takes Alcohol and 120 (38.22%) does not take alcohol.

Table 5: Association between knowledge and socio-demographic profiles

		Good knowledge, n (%)	Poor knowledge, n (%)	P-value
Age (years)	30 – 41	60(19.11)	38(12.10)	0.019
	42 – 53	111(35.35)	41(13.06)	
	≥ 54	35(11.15)	29(9.24)	
Religious	Christian	98(31.21)	43(13.69)	0.130
	Muslim	54(17.20)	42(13.38)	
	Traditionalist	37(11.78)	19(6.05)	
	Others	11(3.50)	10(3.18)	
Marital status	Single Married	130(41.40)	100(31.85)	0.216
	Divorced Widower	54(17.20)	30(9.55)	
Education Level	No formal education	10(3.18)	4(1.27)	0.871
	Primary school	16(5.10)	7(2.23)	
	Junior High School	37(11.78)	15(4.78)	
	Senior High School	48(15.29)	28(8.92)	
	Tertiary	103(32.80)	46(14.65)	
Income	50,000-99,000	87(27.71)	15(4.78)	0.000
	100,000-199,000	120(38.22)	69(21.97)	
	>200,000	15(4.78)	8(2.55)	

Table 5: shows association between knowledge and socio-demographic profiles of the respondent, it revealed that there is a significant association between Age group of the respondents and Knowledge with $P = 0.019$, there is no significant association between religious and knowledge with $P = 0.130$, between Marital status and Knowledge it shows that there is no significant association with $P = 0.216$, with Education level and Knowledge it shows that there is also no association between them with $P = 0.871$ and finally there is significant association between Income and Knowledge with $P = 0.000$.

Conclusion

Maritime workers (Men) from this study generally displayed a positive knowledge and attitude toward prostate cancer, as about two-third of them highlighted risk factor that promote prostate cancer and how to prevent it. This is in contrast with findings from the Ugandan study (Nakandi *et al.*, 2013). Again, this dissimilarity could be as a result of a good number of educated men in the University community where this study was conducted. Maritime staffs has a positive perception of prostate cancer screening and treatments. This is obviously because of information and knowledge on prostate cancer possessed by these individuals in this field of study (Foo *et al.*, 2014).

A significant proportion of staff however, exhibited poor knowledge and negative attitude and knowledge of prostate cancer screening and treatments. This is an indicator to the need for more intensive educational programs which encourage screening behaviour and early presentation. As this is a major key to reduce massive morbidity and mortality of Prostate cancer. For early

detection and treatment to be feasible, the level of knowledge possessed by the average Nigerian must increase exponentially. This would in turn lead to positive perception and attitude towards screening and treatment of this disease.

Recommendation

Based on the findings revealed in this study, it recommends that, awareness campaigns should be well structured to sufficiently address the negative attitudes of the men in maritime port and Nigeria men at large. Also, prevention of prostate cancer should be emphasized during subsequent campaigns paying serious attention on the causes of prostate cancer and how they can be prevented and treated, in addition, if preventive measures are taken seriously, survival rates will invariably increase since cure of cancer is not certain despite medical techniques and treatments available.

Also in line with The World Cancer Report (2011), this study also recommended that emphasis on the potential of early detection, treatment and palliative care should be taken serious by those in charge of the campaigns. Efforts to achieve earlier diagnosis should be taken to both the rural and urban parts of the country.

Dietary recommendation also requires close coordination by campaign planners with programs for the prevention of other related non-communicable diseases Policy makers should therefore make do with the latest information provided by the independent Expert Report on diet and chronic disease, released in March 2003 by WHO and FAO (Food and Agriculture Organization) in order to know which information will be most appropriate for them to base advice on prevention of cancer and other related diseases (World Cancer Report, 2011).

The study also recommends a healthy lifestyle as the best form of prevention. Frequent consumption of fruits and vegetables and physical activity can make a difference.

NGOs and other concerned association including the government need to make favorable policies which border on Promotion of health education on Prostate cancer, Establishment of centers for Prostate cancer screening and possibly, institution of free Prostate cancer screening services for Men aged 50 years and above. Periodic assessment of the level of knowledge and attitudinal disposition of Nigerians to screening and treatment of Prostate cancer would also be beneficial.

REFERENCES

- Adebajo, K. (2019). World Population Day 2019: How many people really live in Nigeria? international center for investigative reporting Nigeria ICIR. Date accessed on 12 July, 2021.
- Adeloye, D., David, R. A., Aderemi, A. V., Iseolorunkanmi, A., Oyedokun, A., Iweala, E. E. J., & Ayo, C. K. (2016). An estimate of the incidence of prostate cancer in Africa: A systematic review and meta-analysis. *Journal of PLoS ONE*, 11(4), 1–18
- Ajape AA, Babata A, & Abiola OO (2010) Knowledge of prostate cancer screening among native African urban population in Nigeria. *Nig Q J Hosp Med* 20(2):94–96
- Ajape AA, Babata A, Abiola OO (2010). Knowledge of prostate cancer screening among native African urban population in Nigeria. *Nig Q J Hosp Med*, 20, 94–6.
- American Cancer Society (2016). Prostate Cancer, Causes, Risk Factors , and Prevention.pp 0–9.
- American Cancer Society. (2016). Prostate Cancer Causes, Risk Factors, and Prevention, PP 0–9.
- American Cancer Society (2018). Early History of Cancer. Retrieved December 20, 2019 from <https://www.cancer.org/cancer/cancer-basics/history-of-cancer/what-is-cancer.html>
- American Cancer Society (2019) Cancer facts and figures, 2019. American Cancer Society, Atlanta.
- American Cancer Society, (2009). Cancer: Early detection. Date accessed on April 8th 2021 from <http://www.cancer.org/docroot/cric/content/cric.asp>
- Arnold-Reed DE, Hince DA,& Bulsara MK. (2008). Knowledge and attitudes of men about prostate cancer. *Med J Aust*, 189, 312–14
- Attah, C. (1989). Patterns and Management of Urinary Tract Cancers among Nigerian Igbos, *International Urology and Nephrology*, 21(5), 449-454.
- Atulomah NO, Olanrewaju MF, Amosu AM, Adedeji O (2010) Level of awareness, perception and screening behavior regarding prostate cancer among men in a rural community of Ikenne Local Government Area, Nigeria
- Awosan, K.J., Yunusa, E.U., Agwu. N.P & Taofiq, S. (2018) Knowledge of prostate cancer and screening practices among men in Sokoto, Nigeria, *Asian Journal of Medical Sciences*. 9(6):51–56.
- Baade PD, Youlten DR, Krnjacki LJ (2009) International epidemiology of prostate cancer: geographical distribution and secular trends. *Molecular Nutrition Food Research*, 53(2):171–184
- Badmus, T. A., Adesunkanmi, A-R, K, Yusuf, B.M., Oseni, G. O., Eziyi, A. K & Bakare, TIB. (2010) Burden of Prostate cancer in Southwestern Nigeria, *Journal of Urology* 76(2):412–416.
- Bandura, A. (2001). social cognitive theory, An Agentic Perspective Annual Review of Psychology, 52(1), 1–26.
- Barry, M. J., & Simmons, L. H. (2017). Prevention of Prostate Cancer Morbidity and Mortality. *Medical Clinics of North America*, 101(4), 787–806.
- Bowa K. (2010). An overview of the diagnosis and management of prostate cancer in Cancer Registries. *Ethiopia Journal of Health Development*, 17(2), 89-98

- Calys-Tagoe, B. N., Yarney, J., Kenu, E., Owusu Amanhyia, N. A. K., Enchill, E., & Obeng, I. (2014). Profile of cancer patients' seen at Korle Bu teaching hospital in Ghana (A cancer registry review). *Biomedical Research Notes*, 7(1), 577.
- Cancer Council Australia (2016). Understanding Prostate Cancer. A guide for people with cancer, their families and friends. 8–43
- Chan, J. M., Gann, P. H., & Giovannucci, E. L. (2005). Role of diet in prostate cancer development and progression. *Journal of Clinical Oncology*, 23(32), 8152-8160.
- Chustecka, Z. (2011). Cancer in Africa is 'Like a Runaway Train'. Medscape Medical News 2011 WebMD, LLC. Retrieved on 2nd December, 2011 from <http://www.medscape.com/viewarticle/736870>
- Clarke-Tasker VA, Wade R (2002). What we thought we knew: African American males' perceptions of prostate cancer and screening methods. *Journal of Association of Black Nursing Faculty*, 13, 56–60.
- Crawford, E. D (2003) Epidemiology of prostate cancer. *Journal of Urology* 62(6 Suppl 1):3–12
- Fayed, L. (2019). How Cancer Was First Discovered and Treated. Retrieved December 20, 2019 from <https://www.verywellhealth.com/the-history-of-cancer-514101>.
- Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C and Rebelo M I (2015) Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. *International Journal of Cancer*, 136(5):359–386
- Fitzmaurice, C., Allen, C., Barber, R. M., Barregard, L., Bhutta, Z. A., Brenner, H., & Naghavi, M. (2017). Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life years for 32 Cancer Groups, 1990 to 2015. *Journal of American Medical Association of Oncology*, 3(4), 524.
- Fitzmaurice, C., Allen, C., Barber, R. M., Barregard, L., Bhutta, Z. A., Brenner, H., Naghavi, M. (2017). Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Lifeyears for 32 Cancer Groups, 1990 to 2015. *Journal of America Oncology*, 3(4), 524.
- Folorunso, B.O, Balogun J.I, Ajape, A. A., Babata, A., & Abiola, O. O. (2010). Knowledge of prostate cancer screening among native African urban population in Nigeria. *Nig Q J Hosp Med*, 19(3): 145-147
- Foo J, Rathore P, Mancuso P, Wong M (2014). Assessing GP attitudes towards prostate cancer screening among 500 general practitioners in the Sydney south western local health district. *British Journal of Urology International*, 113, 114–15.
- GloboCan (2018). <http://globo-can.iarc.fr>.
- Globocan (2018). Nigeria Cancer Fact Sheets. The Global Cancer Observatory. Date accessed on 7 July 2021, from <http://gco.iarc.fr/today/data/factsheets/populations/566-nigeria-factsheets.pdf>
- Grover, P. L., & Martin, F. L. (2002). The initiation of breast and prostate cancer. *Carcinogenesis*, 23(7), 1095-1102
- Haas, G. P., Delongchamps, N., Brawley, O. W., Wang, C. Y., & de la Roza, G. (2008). The worldwide epidemiology of prostate cancer: perspectives from autopsy studies. *The Canadian Journal of Urology*, 15(1), 3866–3871.

- Haas, G. P., Delongchamps, N., Brawley, O. W., Wang, C. Y., & de la Roza, G. (2008). The worldwide epidemiology of prostate cancer: perspectives from autopsy studies. *The Canadian Journal of Urology*, 15(1), 3866–3871.
- Hilary, K (2009). Sexual behaviour, STDs and risks for prostate cancer, *British Journal of Cancer*, 82(3), 718–725
- Hsing, A. W., & Chokkalingam, A. P. (2006). Prostate cancer epidemiology. *Journal of Front Bioscience*, 11, 1388-1413
- Ifere, G.O., & Ananaba, G.A. (2012). Emergent trends in the reported incidence of prostate cancer in Nigeria. *Journal of Clinical Epidemiology*, 4: 19–32
- Ito, K. (2014) Prostate cancer in Asian men. *Journal of Nature Reverse Urology*. 11:197.
- Kenerson, H. (2010). prostate cancer screening knowledge, attitudes, and beliefs among veterans: does literacy make a difference? *Journal of Clinical Oncology*, 22(13), 2617-2622.
- Knowledge, attitudes, and screening practices among older men regarding prostate cancer. *Am J Public Health*, 90(10): 1595-1600.
- Kolahdooz, F., Jang, S. L., Corriveau, A., Gotay, C., Johnston, N., & Sharma, S. (2014). Knowledge, attitudes, and behaviours towards cancer screening in indigenous populations: A systematic review. *The Lancet Oncology*, 15(11), 504–516.
- Lambert S, Fearing A, Bell D, Newton M (2002). A comparative study of prostate screening health beliefs and practices between African American and Caucasian men. *Journal of Association of Black Nursing Faculty*, 13, 61–67
- Lavery, A., Kirby, R. S., & Chowdhury, S. (2016). Prostate cancer. *Journal of Medicine*, 44(1), 47–51.
- Lavery, A., Kirby, R. S., & Chowdhury, S. (2016). Prostate cancer. *Medicine*, 44(1), 47–51. <https://doi.org/10.1016/j.mpmed.2015.10.001>
- Lloyd, T., Shaffer, M. L., Christy, S., Widome, M. D., Repke, J., Weitekamp, M. R. & Paul, I. M. (2013). Health knowledge among the millennial generation. *Journal of Public Health Research*, 2(1), 38–41.
- Loud, J. T., & Murphy, J. (2017). Cancer Screening and Early Detection in the 21st Century. *Seminars in Oncology Nursing*, 33(2), 121–128
- Loud, J. T., & Murphy, J. (2017). Cancer Screening and Early Detection in the 21st Century. *Seminars in Oncology Nursing*, 33(2), 121–128.
- Maxwell, O. A., Deborah, O. A., Abdulmuminu, I., & Chibueze, A. (2017). Knowledge, Attitudes and Perceptions of Prostate Cancer among Male Staff of the University of Nigeria, *Asian Pacific Journal of Cancer Prevention*. 18 (7), 1961-1966
- McGinley, K. F., Tay, K. J., & Moul, J. W. (2016). Prostate cancer in men of African origin. *Nature Reviews. Journal of Urology*, 13(2), 99–107
- Mohammed A, Edino S, Ochicha O, Gwarzo A, Samaila A (2008) Cancer in Nigeria: a 10-year analysis of the Kano Cancer Registry. *Nigeria Journal of Medicine* 17(3):280–284.
- Morgentaler, A., Rhoden, E. L., Guay, A., & Traish, A. (2010). Serum testosterone is associated with aggressive prostate cancer in older men: results from the Baltimore Longitudinal Study of Aging. *International British Journal of Urology*, 105(6), 884-885
- Morlando, M., Pelullo, C.P., & Di Giuseppe G (2017). Prostate cancer screening: Knowledge, attitudes and practices in a sample of men in Italy. *Journal of PLoSOne*, 12(10):0186332

- Moul, J. W. (2004). The evolving definition of advanced prostate cancer. *Reviews in Urology*, 68(8), 10-17.
- Mutua K, Pertet AM,& Otieno C (2017) Cultural factors associated with the intent to be screened for prostate cancer among adult men in a rural Kenyan community. *Journal of BioMedical Centre of Public Health*, 17(1):1–8
- Nakandi H, Kirabo M, Semugabo C, et al (2013). Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. *Africa Journal of Urology*, 19, 165–70.
- Nakandi, H., Kirabo, M., Semugabo, C., Kittengo, A., Kitayimbwa, P., Kalungi, S & Maena, J. (2013) Knowledge, attitudes and practices of Ugandan men regarding prostate cancer. *Africa Journal of Urology*. 19(4):165–170.
- Ngugi, P. M., & Magoha, G. A. (2007). The management of early prostate cancer: a review. *East Africa Journal of Medicine*, 84(9), 24-30
- Njaka, S.R.N. (2016). A Systemic Review of Incidence of Cancer and Challenges to its Treatment in Nigeria. *Journal of Cancer Science & Therapy*, 8(12), 286-288.
- Ogunbiyi J. O. & Shittu, O. B. (1999) Increased Incidence of Prostate Cancer in Nigerians, *Journal of the National Medical Association*, 91,59-164.
- Ogundele S.O, & Ikuero, S.O. (2015). A survey of the awareness of prostate cancer and its screening among men attending the outpatient clinics of a tertiary health center in Lagos, Nigeria. *Nigeria Journal of Surgeon*, 21:115-118.
- Ogunsanya, M. E., Brown, C. M., Odedina, F. T., Barner, J. C., Adedipe, T. B., & Corbell, B. (2017). Knowledge of Prostate Cancer and Screening Among Young Multiethnic Black Men. *American Journal of Men's Health*, 11(4), 1008–1018.
- Oladimeji O, Bidemi YO, Olufsayo J-AY,& Sola AO (2010) Prostate cancer awareness, knowledge, and screening practices among older men in Oyo State, Nigeria. *Int Q Commun Health Educ* 30(3):271–286
- Olapade-Olaopa, E. O., Owoaje, E. T., Kola, L., Ladipo, M. M., Adebuseye, L., & Adedeji, T. G. (2014). Knowledge and Perception of Nigerian Men 40 years and above Regarding Prostate Cancer. *Journal of the West African College of Surgeons*, 4(1), 1–16.
- Oluwakemik A. K. (2017). Knowledge And Utilization Of Prostate Cancer Screening Services Among Male Civil Servants In Iseyin Local Government Area, Oyo State, Nigeria, *European Journal of Biology and Medical Science Research*. 5, (3)38-45.
- Osegbe, D. N (1997) Prostate cancer in Nigerians: facts and nonfacts. *Journal of Urology* 157(4):1340–1343
- Parchment, Y. D. (2004). Prostate cancer screening in African American and Caribbean males: detriment in delay. *Journal of Association of Black Nursing Faculty*, 15(6), 116-120.
- Prager, G.W. (2018). Global cancer control: responding to the growing burden, rising costs and inequalities in access. *ESMO Open* 2018; 3:e000285. doi:10.1136/esmoopen-2017-000285
- Saibu, (2017). Epidemiology and Incidence of Common Cancer in Nigeria. *Journal of Cancer Biology and Research*, 5(3), 1105
- Saibu, G.M. James, B. A., Adu, O. B., Faduyile, F. A., Fadaka, O. A., Iyabo, O., Soyemi, S. S., & Adekunle B. (2017). Epidemiology and Incidence of Common Cancer in Nigeria. *Journal of Cancer Biology and Research*, 5(3), 1105.

- Shah, S. R., Freedland, S. J., Aronson, W. J., Kane, C. J., Presti, J. C., Jr., & Amling, C. L. (2009). Exposure to Agent Orange is a significant predictor of prostate-specific antigen (PSA)-based recurrence and a rapid PSA doubling time after radical prostatectomy. *International British Journal of Urology*, 103(9), 1168-1172.
- Siegel, R., Naishadham, D., & Jemal, A. (2012). Cancer Statistics. *CA Cancer Journal of Clinical Medicine*, 62, 10–29.
- Siegel, R., Naishadham, D., & Jemal, A. (2012). Cancer Statistics , 2012. *CA Cancer Journal of Clinical Sciences*, 62, 10–29.
- So, W.K, Choi. K.C., Tang, W.P., Lee, P.C, Shiu, A.T.& Ho, SS. (2014) Uptake of prostate cancer screening and associated factors among Chinese men aged 50 or more: a population-based survey, *Cancer Biology Medicine*, 11(1):56–63.
- Stewart, B., & Wild, C.P. (2016). World Cancer Report 2014. International Agency Research on Cancer. Date accessed on 5th July, 2021 from <http://publications.iarc.fr/Non-Series-Publications/World-CancerReports/World-Cancer-Report-2014>.
- Stringhini, S., & Guessous, I. (2018). The Shift from Heart Disease to Cancer as the Leading Cause of Death in High-Income Countries: A Social Epidemiology Perspective. *Annals of Internal Medicine*, 169, 877–878. DOI: 10.7326/M18-2826
- Thomas, A (2011). The changing pattern of prostate cancer in Nigerians: Current status in the Southeastern states. *Journal of National Medicine Association*, 94(7), 619-27
- Walsh, P., & Worthington, J. (1995). The prostate: A guide for men and the women who love them. London: John Wiley & Sons, international.
- WHO. (2018). Latest global cancer data: Cancer burden rises to 18.1 million new cases and 9.6 million cancer deaths in 2018. Retrieved on 11 December, 2021 from <https://www.who.int/cancer/PRGlobocanFinal>
- World Health Organization (2011). WHO statistical information system. Geneva: World Health Organization. Retrieved April 20, 2012 from <http://www.who.int/cancer/final-advocacy-module%206>.
- World Population Review (2019). 2019 World Population by Country. Date accessed on on 12 July, 2021 from <http://worldpopulationreview.com>.
- Worldometers (2019). Nigeria Population. Date accessed on 12 July, 2021 from <https://www.worldometers.info/world-population/nigeria-population/>
- Wu, C. C., Pu, Y. S., Wu, H. C., Yang, C. Y., & Chen, Y. C. (2011). Reversed association between levels of prostate specific antigen and levels of blood cadmium and urinary cadmium. *Chemosphere*, 83(8), 1188-1191.
- Yeboah-Asiamah, B., Yirenya-Tawiah, D., Baafi, D., & Ackumey, M. M. (2017). Perceptions and knowledge about prostate cancer and attitudes towards prostate cancer screening among male teachers in the Sunyani Municipality, Ghana. *African Journal of Urology*, 23(3), 184–191
- Zeegers, M. P., Jellema, A., & Ostrer, H. (2003). Empiric risk of prostate carcinoma for relatives of patients with prostate carcinoma, *A metaanalysis Cancer*, 97(8), 1894-1903.
- Zeigler-Johnson, C. M., Rennert, H., Mittal, R. D., Jalloh, M., Sachdeva, R. & Malkowicz, S. B.(2008). Evaluation of prostate cancer characteristics in four populations worldwide. *Journal of Cancer and Urology*, 15(3), 4056-4064.

- Zhang, K., Bangma, C. H., & Roobol, M. J. (2017). Prostate cancer screening in Europe and Asia. *Asian Journal of Urology*, 4(2), 86–95
- Zhang, K., Bangma, C. H., & Roobol, M. J. (2017). Prostate cancer screening in Europe and Asia. *Asian Journal of Urology*, 4(2), 86–95.

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