

## Knowledge of Symptoms, Signs and Risk Factors of Prostate Cancer Among Male Senior Staff of University of Uyo and Teaching Hospital

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### ABSTRACT

*This study is aimed at assessing the level of knowledge of symptoms, signs and risk factors of Prostate cancer among male senior staff of University of Uyo and Teaching Hospital. Data from this descriptive cross sectional study were collected through a self-administered questionnaire to consenting male senior staff of University of Uyo and University of Uyo Teaching Hospital over a period of one (1) month in 2021. There was a total of 182 respondents. The mean age was 50.5 years with the majority of respondents being within 51- 60 years age group (50.0%). Majority of the respondents were University Lecturers (61.5%). A total of 70 respondents were knowledgeable of the warning symptoms and signs of Prostate cancer (38.5%). Staff of Teaching hospital were more knowledgeable about the warning symptoms and signs of Prostate cancer than staff of the University of Uyo (21.5% vs 17.0%). Nocturia was the leading worrisome symptom of change in urinary pattern acknowledged by the respondents (42.9%). Acute urinary retention was the leading recognized symptomatic complication (50.0%). Over thirty percent (31.3%) of respondents were knowledgeable of the risk factors for Prostate cancer with a larger proportion of respondents correctly acknowledging a red meat enriched diet as the main contributory factor (24.6%). University staff were more knowledgeable about risk factors relative to those in the Teaching hospital (52.6% vs 47.4%). In conclusion knowledge about Prostate cancer warning signs and risk factors was poor.*

**Keywords:** Knowledge, Adult males, Warning symptoms, Risk factors, Prostate cancer

### INTRODUCTION

Although prostate cancer is the second leading cause of cancer-related mortality worldwide, after lung cancer,<sup>1-7</sup> it remains the most common cancer among adult males in Sub-Saharan Africa including Nigeria.<sup>3,4,5,8,10</sup>

Poor awareness of cancer symptoms and risk factors resulting in delayed presentation as well as low availability of screening programs and limited access to healthcare services contribute to cancer-related deaths in developing countries.<sup>1,5</sup> Prostate cancer screening via digital rectal examination, serum Prostate specific antigen concentration, and transrectal ultrasound scan (TRUS) with biopsy, has been shown to reduce prostate disease-related mortality.

These screening methods detect some potentially curable asymptomatic localized prostate cancers before development of complications including metastasis, and thus enables early diagnosis.<sup>1-5,9,11,12</sup>

Risk factors contributing to the development of Prostate cancer include age, race, family history of Prostatic and Breast cancer, cigarette smoking, alcohol consumption, consumption of red meat and diets rich in fat and poor in fibres.<sup>2,13,14</sup> Furthermore, it has been shown that the risk of Prostate cancer is higher in black men than in white men worldwide; thus underscoring the supportive evidence of an increase in predisposing genetic mutations among black men influenced by environmental factors such as diet and migration.<sup>4,14</sup>

Genetic abnormalities including 8q24, 17q, novel loci on chromosomes 3,6,7,10,11,19 and X as well as hormones including Testosterone and Dihydrotestosterone have been shown to have a contributory role in the aetiopathogenesis of Prostate cancer.<sup>14-17</sup> Thus, effective public health interventions may be required to

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address knowledge deficits on warning signs and risk factors of Prostate cancer and emphasize the importance of seeking medical attention for ongoing symptoms.

The aim of this study was to examine the knowledge of male senior staff of University of Uyo and University of Uyo Teaching Hospital, Uyo, Nigeria with regard to symptoms, signs and risk factors of Prostate cancer.

## MATERIALS AND METHODS

### Survey Design and Administration

This descriptive, cross sectional study was conducted from August 18 through September 17, 2021. Respondents were consenting male senior staff of University of Uyo and her Teaching Hospital, Uyo, Akwa Ibom State and were recruited via a variety of methods, including online interactive systems such as WhatsApp and Facebook, postal mail, and telephone advertising and invitations. A total of 200 respondents were recruited by systematic random sampling and the sample size was estimated using the formula:  $n = \frac{z^2 pq}{d^2}$  (where:  $n$  = desired sample size when population > 10,000,  $z$  = level of significance at 95% CI (=1.96),  $p$  = proportion of the study population who are aware of Prostate cancer and screening from similar previous study = 0.22 [11],  $q = 1 - p = 0.78$  and  $d$  = degree of accuracy desired, usually set at 0.05). Sample size ( $n$ ) =  $\frac{z^2 pq}{d^2} = \frac{(1.96)^2 \times (0.22) \times (0.78)}{(0.05)^2} = 3.84 \times 0.22 \times 0.78 / 0.0025 = 0.6589 / 0.0025 = 264$ . The minimum sample size required for this study was reduced from 264 to 200 for convenience as well as a necessity to reduce the impact of spread of 3<sup>rd</sup> to 4<sup>th</sup> waves of COVID-19 Pandemic.

Survey items included respondent demographic information, and knowledge questions about symptoms, signs and risk factors of Prostate cancer. Demographic information included age, marital status, ethnicity, religion, socio-economic factors, occupation, and education. Age was measured as categories of age group 31-40 years, 41-50 years, 51-60 years, and 61-70 years. Highest education obtained by respondents was measured as Doctor of Philosophy (PhD), Master Degree (M.Sc), Bachelor Degree,

Higher National Diploma (NHD), Ordinary National Diploma (OND) and Secondary School Certificate Examinations.

Knowledge questions of warning symptoms and signs of Prostate cancer were assessed by asking respondents to identify warning symptoms and signs suggestive of urinary pattern change, urinary obstruction and complications (“How knowledgeable are you about prostate cancer?”)

Identification of risk factors of Prostate cancer was assessed by knowledge questions: respondents were asked to judge whether the following 9 items were risk factors of Prostate cancer: consumption of red meat enriched diet, consumption of white meat enriched diet, consumption of dairy product enriched diets, consumption of vegetable impoverished diet, consumption of fruit impoverished diet, prolonged alcohol consumption, smoking, increased sexual activity and family history of Prostate cancer and other cancers. Responses included 'Yes', 'No' or 'Not sure/Do not know', with 'Yes' indicating that they identified the items to be risk factors.

Inclusion criteria for the study population were consenting male senior staff of University of Uyo and Teaching Hospital who were older than 30 years. Non-consenting, oncologic patients on treatment for Prostate cancer and individuals younger than 30 years were excluded from the study. In addition, we categorized the respondents into two major groups viz: University and Teaching hospital staff to limit bias as health workers may likely be knowledgeable about this disease.

### Ethical Consideration

Ethical approval to conduct the study was obtained from the Health Research and Ethics Committee of the University of Uyo Teaching Hospital. Written informed consent was obtained from all respondents before embarking on the study. Brief education on the purpose and nature of the study was given to all respondents. All respondents were assigned a unique code to ensure

confidentiality. Only the lead researcher had access to the information linking the identity of the study respondents to the study codes to ensure anonymity. This allowed for easy identification and prevention of risk of stigmatization. Respondents were reliably informed that information provided shall be strictly kept secret and he is at liberty to withdraw from the study at any time without any negative consequence to them. The study was fully supported by TETFund Institutional Research based funds.

### Statistical Analysis

Statistical Analysis was performed using Statistical Packages for the Social Sciences (SPSS) statistical software for Windows, version 20 (IBM). Descriptive analyses with calculated measures of central tendency and variation were computed, along with frequency tables for categorical variables as well as presentation of data in figures were carried out. All knowledge variables were treated as outcomes, applied and p-values < 0.05 were considered significant.

## RESULTS

### Socio-demographic characteristics

There was a total of 182 respondents with a resultant response rate of 91.0%. The mean age was  $50.5 \pm 0.45$  years with the majority of respondents being within 51-60 years age group (50.0%). Respondents aged 41 to 50 years were the 2<sup>nd</sup> most commonly seen in this study (n = 70, 38.5%). Respondents aged 50 years and above were slightly over-represented being 53.8% compared to respondents aged below 50 years old accounting for 46.2% (Figure 1). Majority of the respondents were University Lecturers (n = 112, 61.5%) with PhD being the predominant terminal qualification (57.7%). Teaching hospital staff accounted for the remaining 38.5% of total respondents. Clinical Health Professionals and Non-clinical Health professionals were responsible for 23.1% and 15.4% of respondents respectively (Figures 2 & 3). Christianity was the most preponderant religion (96.2%). Islam and Eckankar accounted for 2.7% and 1.1% of other religions respectively.

### Knowledge of Respondents on the warning symptoms and signs of prostate cancer

A total of 70 respondents were knowledgeable of the warning symptoms and signs of Prostate cancer (38.5%), whereas over half of respondents (57.7%) were found to lack knowledge about warning symptoms and signs of Prostate cancer (n = 105). Among the Teaching hospital staff, 21.5% of respondents were knowledgeable of the warning symptoms and signs of Prostate cancer whereas 17.0% of University staff were knowledgeable of the warning symptoms and signs of Prostate cancer.

Over 20 percent of respondents expressed good knowledge of symptoms of urinary pattern change (n = 42, 23.1%) whereas majority of respondents were not knowledgeable of symptoms of change in urinary pattern (73.1%). Nocturia was the leading worrisome symptom of change in urinary pattern acknowledged by the respondents (42.9%) with respondents from the Teaching hospital having a higher knowledge of nocturia and urinary frequency (28.6% vs 21.4%) compared to those in University of Uyo (14.4% vs 11.9%). However, staff of University of Uyo had a higher knowledge of urinary urgency relative to those in the Teaching hospital. (4.8 % vs 0.0%). (Table 1).

Regarding warning obstructive urinary symptoms and signs of Prostate cancer, fifty-six (30.8%) respondents recognized obstructive symptoms with most respondents listing aggregate of poor stream, intermittency and feeling of incomplete bladder emptying (28.6%). Respondents from the University of Uyo were relatively more knowledgeable about obstructive symptoms than those in Teaching Hospital (55.3% vs 44.7%) (Table 2).

Overwhelming majority of respondents claimed that they have never heard about any suggestive symptomatic complications of Prostate cancer (76.9%). Forty-two respondents were knowledgeable about suggestive symptomatic complications of Prostate cancer (23.1%). Of these, 21 respondents recognized acute urinary

retention (50.0%) as the predominant worrisome suggestive symptomatic complication while low back pain was acknowledged by 15 respondents (35.7%). Only 6 respondents acknowledged weight loss as recognized suggestive symptomatic complication (14.3%).

Among respondents acknowledging symptomatic complications, 76.2% were aware of co-morbid conditions while 23.8% of respondents did not identify any co-morbid condition. Of those who identified suggestive symptomatic complications and co-morbid conditions, Hypertension was the leading co-morbid condition (59.4 %); this was followed by Diabetes mellitus (34.4%). The least identifiable co-morbid condition was Cerebrovascular accident; recognized by 2 respondents (6.2%).

**Knowledge of respondents on the risk factors of prostate cancer**

Among respondents, 68.7% were not knowledgeable about risk factors of prostate cancer while 31.3% of respondents were knowledgeable of the risk factors for Prostate cancer. University staff were relatively more knowledgeable about the risk factors of prostate cancer compared to those of Teaching hospital (52.6% vs 47.4%). Majority of respondents correctly acknowledged red meat enriched diet as the main contributory factor (n = 14; 24.6%) with respondents from the University of Uyo exhibiting higher knowledge than those in Teaching Hospital regarding identification of red meat enriched diet (15.8% vs 8.8%). Nine respondents identified white meat enriched diet as the 2<sup>nd</sup> leading risk factor (15.8%). Smoking and vegetable impoverished diet were also recognized in 14.0% and 10.5% respectively (Table 3).

Table 1: Good Knowledge of warning symptoms of change in urinary pattern suggestive of Prostate cancer by workplace of the respondents.

Warning Symptoms and Signs of Urinary Pattern Change	Staff of University of Uyo n (%)	Staff of University of Uyo Teaching Hospital n (%)	Total number of Respondents n (%)
Nocturia	6(14.3)	12(28.6)	18(42.9)
Urinary frequency	5(11.9)	9(21.4)	14(33.3)
Urinary urgency	2(4.8)	0(0.0)	2(4.8)
Frequency and nocturia	4(9.5)	4(9.5)	8(19.0)
Total	17(40.5)	25(59.5)	42(100.0)

Table 2: Good Knowledge of warning obstructive symptoms suggestive of prostate cancer by work place among the respondents.

Warning Obstructive Urinary Symptoms	University of Uyo n (%)	University of Uyo Teaching Hospital n (%)	Total number of Respondents n (%)
Poor stream only	4(7.1)	2(3.6)	6(10.8)
Urinary intermittent only	2(3.6)	4(7.1)	6(10.8)
Feeling of incomplete voiding	4(7.1)	3(5.4)	7(12.5)
Poor stream + incomplete voiding	5(8.9)	2(3.6)	7(12.5)
Poor stream + incompletely voiding+ intermittency	9(16.1)	7(12.5)	16(28.6)
Poor stream + Straining + Feeling of incomplete bladder emptying	4(7.1)	3(5.4)	7(12.5)
Poor stream + Intermittency + Urgency + Feeling of incomplete bladder emptying	3(5.4)	4(7.1)	7(12.5)
Total	31(55.3)	25(44.7)	56(100.0)

Table 3: Good knowledge of Risk factors of Prostate cancer by place of work of the respondents.

Risk factors	University of Uyo n (%)	Univer sity of Uyo Teaching Hospital n (%)	Total number of Respondents n (%)
Red meat enriched diet	9(15.8)	5(8.8)	14(24.6)
White meat enriched diet	5(8.8)	4(7.0)	9(15.8)
Cigarette smoking	4(7.0)	4(7.0)	8(14.0)
Vegetable impoverished diet	2(3.5)	4(7.0)	6(10.5)
Family history of cancer	2(3.5)	3(5.3)	5(8.8)
Fruit impoverished diets	3(5.3)	2(3.5)	5(8.8)
Alcohol consumption	2(3.5)	3(5.3)	5(8.8)
Dairy products (Cow milk) enrich diet	2(3.5)	1(1.7)	3(5.3)
Sexual intercourse	1(1.7)	1(1.7)	2(3.4)
Total	30(52.6)	27(47.4)	57(100.0%)

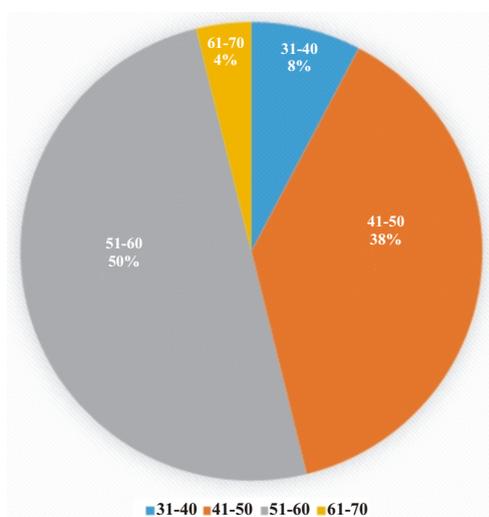


Figure 1: Age Distribution of Respondents (years)

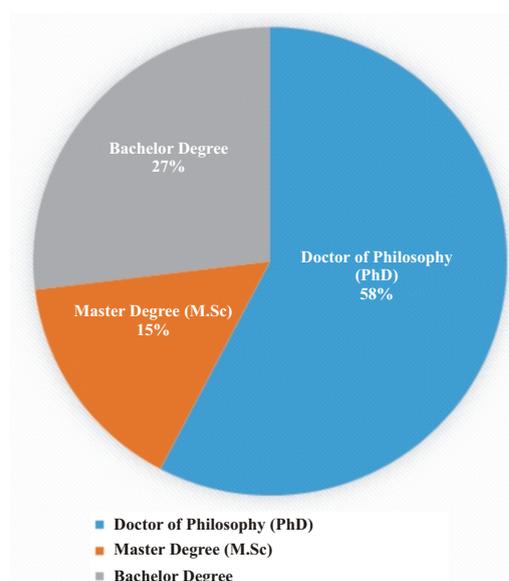


Figure 2: Academic Qualifications of Respondents

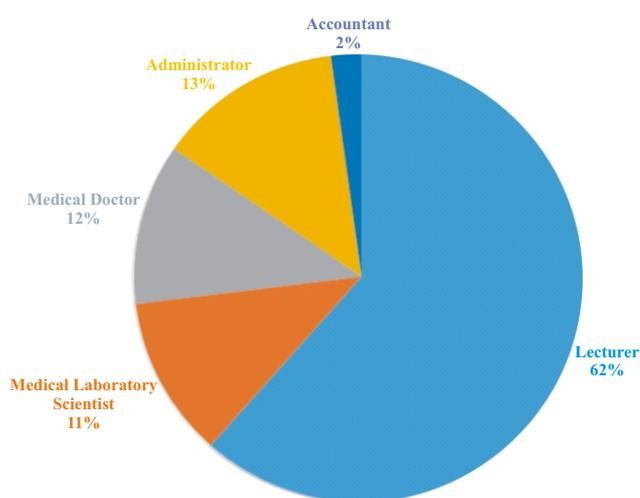


Figure 3: Occupation of Respondents

## DISCUSSION

This study was carried out to explore knowledge about symptoms and risk factors of Prostate cancer among male staff in the tertiary health and educational institutions in our locality. Literature review however showed paucity of publications in this context.<sup>18</sup> The response rate for our study was 91.0%. This is however, slightly lower than the response rates of 93.5% and 100.0% reported in Enugu, South East Nigeria and Brong-Ahafo, Ghana by Adibe *et al* and Yeboah-Asiamah *et al.* respectively.<sup>18,19</sup> This fairly impressive response rate in our study may be adduced to a desire to know more

about their health status as some of the respondents work in health care institution or mere coincidence. In addition, the two tertiary institutions where respondents were drawn from, accommodate individuals of upper socio-economic class owing to their level of education and location within the capital city of Uyo which is the seat of socio-economic, political and administrative power of Akwa Ibom State.

In the index study, a larger proportion (50.0%) were in the 51-60 years age group relatively confirming with a mean age of 50.5 years. This result conflicts with findings of similar studies in Nsukka, Enugu State, South Eastern Nigeria and Brong-Ahafo, Ghana where majority of respondents were in the 31-40 years (32.1%) and 45-50 years age group (68.1%) respectively.<sup>18,19</sup> From the foregoing, it is obvious that predominant age group of respondents may vary from region to region and there is a likely possibility that knowledge on Prostate cancer may be influenced by age and other factors.

Only a minority of respondents (38.5%) were knowledgeable about the warning symptoms and signs of Prostate cancer with University staff being less knowledgeable about the warning symptoms and signs of prostate cancer than those staff of the Teaching hospital (17.0% vs 21.5%). This finding is however lower than a good knowledge score of 58.7% reported in Enugu, South Eastern Nigeria. It is may not be too surprising that despite the fact that larger proportion of respondents were University Lecturers with PhD (57.7%), poor knowledge score for symptoms and signs of Prostate cancer in our study underscores the need to unravel more contributing factors for the poor knowledge of symptoms and signs of Prostate cancer in this socio-economic class. They may include ignorance about symptoms and risk factors, cultural belief, ineffective health insurance scheme, and non-availability of awareness programme on prevention, prompt diagnosis and treatment of cancer.

Nocturia was the leading worrisome symptom of change in urinary pattern acknowledged by the respondents (42.9%) with respondents from the Teaching hospital

having a higher knowledge of nocturia (28.6%) compared to those in University of Uyo (14.4%). This finding may be explained by the fact that knowledge of staff working in the Teaching hospital are likely to be influenced by the pre-employment academic training on health related subjects as well as cognitive experience acquired on the job as a health worker. Nevertheless, knowledge on Prostate cancer may be acquired by the two major categories of staff through mass media, printing media, internet and health talks in churches and other social events.

Regarding warning obstructive urinary symptoms and signs of Prostate cancer, 56(30.8%) of respondents recognized obstructive symptoms with respondents from the University of Uyo being relatively more knowledgeable about obstructive symptom than those in Teaching Hospital (55.3% vs 44.7%). This finding may be coincidental or uphold the view that University Lecturers are likely to be well exposed to e-learning beyond areas of sub-specialization. Our finding is also corroborated by a similar study in Ghana where staff of the University of Nigeria were reported to have appreciable knowledge regarding Prostate cancer.<sup>18</sup>

Minority of respondents were knowledgeable about suggestive symptomatic complications of Prostate cancer (23.1%) with acute urinary retention being the leading recognized symptomatic complication (50.0%). From the foregoing, it is obvious that poor knowledge of suggestive symptoms of urinary pattern changes (23.1%), urinary obstruction (30.8%) and symptomatic complication (23.1%) was prevalent in the index study. This compares relatively with findings from other studies.<sup>2,13</sup> In addition, aggressive awareness campaign for Prostate cancer should be instituted at all levels of health care system, public and corporate places including churches, mosques, schools, markets.

Among respondents, 68.7% were not knowledgeable about risk factors of Prostatic cancer whereas 31.3% of respondents were knowledgeable about risk factors of Prostatic cancer. Red meat enriched diet was the

leading risk factor recognized in the index study (24.6%). Similar to other studies, many contributory factors to development of Prostate cancer have been identified. These include red meat enriched diet, white meat enriched diet, smoking, vegetable impoverished diet, family history of Prostate cancer, fruit impoverished diet, prolonged alcohol consumption, dairy product enriched diets, and increased sexual activity. The exact mechanisms by which these risk factors culminate in the development of Prostate cancer is however controversial, thus, further research in this area may be necessary.<sup>2,4,13-17</sup>

Even though, aforementioned risk factors are recognized in varying proportions in our study, the general knowledge of risk factors of Prostate cancer is still low in the index study (31.3%) which compares relatively with findings of 24.6% and 26.3% of respondents having a good knowledge of risk factors of Prostate cancer in a study conducted by Fidelis *et al.* and Olarewaju *et al.* respectively.<sup>3,7</sup> Furthermore, the results of these studies were in accordance with other reports collaborating a good knowledge of poor diet, environmental conditions, aging, race and genetics as recognized risk factors of Prostate cancer by some respondents.<sup>2,13,14</sup>

It is worthy of note that few studies have demonstrated that the risk factor of Prostate cancer is higher in black men than in white men worldwide; this finding could probably be explained by increased number of predisposing genetic mutations in black men influenced by environmental factors such as diets and migration.<sup>4,14</sup> Furthermore, some studies have shown that low knowledge about the disease including symptoms, signs and risk factors of Prostate cancer as well as Prostate cancer screening methods play an important role in cancer screening uptake.<sup>3-7</sup> From this, it infers that contributing factors such as age, ethnicity, religion, education level, income and cultural beliefs play a key role in influencing the knowledge of populace on risk factors of Prostate cancer<sup>10</sup>, which

suggests that there is an immense need to create awareness on timely, decisive and reportable identification of risk factors of Prostate cancer and correct almost all misconceptions associated with poor healthcare-seeking attitude of populace.<sup>3,5,10</sup> This is also supported by our result showing that University staff were relatively more knowledgeable about the risk factors of Prostate cancer compared to those of Teaching hospital (52.6% vs 47.4%).

## CONCLUSION

This study indicates that knowledge about warning symptoms and signs as well as risk factors of Prostate cancer is poor among respondents. Respondents from the Teaching hospital were more knowledgeable about the warning symptoms and signs of Prostate cancer, whereas respondents from the University were relatively more knowledgeable about the risk factors of Prostate cancer. In this regard, there is an immense need to conduct awareness campaign related to warning signs and risk factors avoidance and modification as well as early Prostate cancer detection, as drivers of prevention and improved outcomes among the vulnerable public.

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