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Full Length Research Paper

Prostate cancer screening knowledge, attitudes, and beliefs among men in Bamenda, Cameroon

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In Cameroon, few population-based studies have examined factors associated with screening for prostate cancer. This cross-sectional study aimed to investigate prostate cancer-related knowledge, assess rates of prostate cancer screening, and explore factors influencing screening in Bamenda. Questionnaires were administered to a cluster random sample of 556 men. Logistic regression was used to estimate the effects of the factors on screening. A medium level of knowledge was found among 55.2% of participants regarding prostate cancer risk factors while the screening rate for that affection was 8.1% among the study population. The adjusted odds ratio (OR) and 95% confidence interval (CI) for prostate cancer screening among men who are 65 years-old and older as opposed to men aged 40 to 44 years-old was 4.4 [1.1 - 17.6]. Furthermore, 6.4 [1.9 – 20.9] was the adjusted OR and 95% CI for screening among men with income > 150,000.00 Francs relative to those with income < 50,000.00 Francs. The adjusted OR and 95% CI was 14.8 [6.6 – 33.4] for screening among men aware of screening tests relative to those not aware. Age, income, and awareness were the factors associated with prostate cancer screening among men in Bamenda where screening rate was low and knowledge level was average.

Keywords: Prostate cancer, screening, knowledge, awareness, attitudes and beliefs, Bamenda, Cameroon.

INTRODUCTION

Prostate cancer (CaP) is one of the leading causes of cancer death worldwide. It is the second most commonly diagnosed cancer among men around the world with an estimated 1.1 million cases in 2012 (Ferlay et al., 2015). Approximately, 307,500 deaths in 2012 were attributed to CaP making it the fifth leading cause of cancer deaths among men globally (Ferlay et al., 2015). In Africa, CaP was the most commonly diagnosed cancer for men in 2012 with an age-standardized incidence rate of 23.2 per 100,000 persons (Ferlay et al., 2015). While the burdens

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of infectious diseases are far greater in sub-Saharan Africa, non-communicable illnesses such as CaP are increasingly recognized as a significant public health problem.

In Cameroon, CaP is the leading cause of death from cancer among men (Enow-Orock, Ndom & Doh, 2012). According to the International Agency for Research in Cancer, in 2012 the population-based age standardized incidence for CaP among men in Cameroon was 23.0 per 100,000 persons and the mortality rate was 18.6 per 100,000 persons (Ferlay et al., 2015). Those figures might be underestimating the actual burden of this disease as there is no active national surveillance system and some cancer deaths are neither reported nor recorded (Morhason-Bello et. al, 2013; Doh, 2006). In Cameroon, with a population of over 21 million people, there is only one operational cancer registry (Orang-Ojong, et al., 2013; Enow-Orock et al., 2012). Budgetary constraints have limited the effectiveness of the National Cancer Control Committee, the lead agency for cancer prevention and control efforts in Cameroon (National Cancer Control Committee, 2007). This committee organizes sporadic screening and awareness campaigns for CaP but those efforts are usually concentrated in the two largest cities of Yaounde and Douala (Orang-Ojong, et al., 2013; Aikins, Boynton &Atanga, 2010).

To date, no population-based study has explored the impact of intrapersonal factors such as knowledge, awareness, attitudes, and cultural beliefs on screening for CaP among men in Cameroon. Most published studies are hospital-based (Sow et al., 2011, Angwafo et al., 2003). This study aimed at investigating knowledge and awareness about the symptoms, risk factors, and screening methods for CaP among men in Bamenda; assessing the screening rate for CaP among them; and exploring the relationship between intrapersonal factors such as age, education, income, attitudes, perceived susceptibility, perceived severity, cultural beliefs and the odds of CaP screening among that population.

MATERIALS AND METHODS

Study Population

This cross-sectional study was conducted in the Bamenda health district (BHD), located in the Northwest Region of Cameroon in February and March of 2016. With 369,537 inhabitants, the BHD is comprised of the city of Bamenda and its suburbs. The health care system in Cameroon is structured after the World Health Organization's health district model whereby populations of 30,000 to 400,000 inhabitants are divided into geographic and administrative units called health districts (Ateudjieu et al. 2013). The health districts are further partitioned into "Health Areas" which represent the primary operational health units of the district. The BHD encompasses 18 health areas (Teguia, 2015).

In this study, a multi-stage cluster sampling method was used to recruit study participants wherein clusters were assimilated to the 18 primary health subdivisions of the district. The 18 health clusters were divided into two groups of nine in order to obtain a representative sample of men in the BHD. The first group was comprised of the nine most populated clusters, while the second group consisted of the least populated ones, most of which were rural. Three clusters were randomly selected from each group (total of 6 clusters) for sampling. Calculation of the sample size used a 5% margin of error with a 95% confidence level. A population size of 20,000 was assumed with a response distribution of 50%. A minimum sample size of 377 was determined for this study.

Potential participants were recruited at their homes. Inclusion criteria were men 40 years or older with no prior diagnosis of CaP. A total of 1,325 men were assessed for eligibility. Seven hundred and thirty-four men who did not meet the study eligibility criteria were excluded. Of the 591 eligible participants, 556 consented to participate (94% participation rate) and completed an interview.

Data Collection and Study Theoretical Framework

A questionnaire was used to collect data for this study. The development of the questionnaire was guided by theoretical constructs and variables from the Theory of Planned Behavior (TPB) formulated by Ajzen (1991); the Social Ecological Model (SEM) postulated by Bronfenbrenner (1974); and the Health Belief Model (HBM) formulated by Hochbaum (1958). Theories and models are often used in social and behavioral sciences to provide structure to studies that examine modifiable health behaviors such as screening for CaP. Another benefit to the use of theories and models in research is that they act as a bridge from findings in one study to another (Glanz et al., 2015). The TPB provided a good framework for identifying factors that can be targeted to elicit behavior change. From TPB, this study utilized two constructs: behavior and attitude. The SEM provided an avenue for investigating the role of social, cultural, and

institutional contexts with regards to screening behavior for CaP among men in Bamenda. Understanding the context in which behavior (screening for CaP) occurs is helpful in the design and implementation of interventions aimed at influencing a change in behavior. From SEM, this study utilized four constructs: individual (knowledge, awareness), community (cultural beliefs), organization (health care providers) and policy/society (health policies). The HBM provided guidance on examining factors that can explain and predict health behaviors. Perceived susceptibility and perceived severity were two constructs from the HBM, utilized in this study. These two constructs combine to describe the "threat" that influences the likelihood of behavior change (Glanz et al., 2015).

The conceptual methodological framework for constructing questionnaires with constructs from the TPB (Ajzen, 2006) was used as a guide. In addition, some questions were adapted from existing literature and other studies that have used constructs and variables from the TPB, HBM, and SEM (Smith-McLallen&Fishbein, 2008; Odedina et al., 2008). The internal consistency of sampling instrument was established at 0.66 Cronbach'salpha. To avoid the potential bias of only recruiting participants who were literate, the questionnaire was translated from English into Pidgin English (a regional language) and back translated to ensure that the meaning of questions did not change. Surveys were administered to participants through face-to-face interviews in participants' preferred language.

Interviews lasted 20 minutes on average but went longer in instances where participants had questions. A brochure with information on signs and symptoms of CaP was provided to participants after the interview. A local community health worker (CHW) in each of the six health clusters surveyed was part of the data collection team. These CHWs are highly respected leaders in their respective health cluster and were critical in recruitment of participants by introducing research assistants to community leaders, gatekeepers and eligible men in their communities. This study was approved by the Regional Delegate for Public Health in Bamenda, Cameroon, the Cameroon Bioethics Initiative, and the Institutional Review Board at Florida A&M University in Tallahassee, Florida. Prior to data collection, the study questionnaire was pretested among a convenience sample of 30 men in Bamenda.

Completed questionnaires were reviewed for completeness and accuracy before data entry into an Excel spread-sheet. Data was subsequently imported into the Statistical Package for the Social Sciences (SPSS, version 22) analytical software for analysis.

Study Variables

The socio-demographic variables comprised age, education, income, marital status, religion, and employment status. With regards to age, the study questionnaire asked participants to provide their age expressed in years. The age variable was categorized into six strata (40-44, 45-49, 50-54, 55-59, 60-64, and 65 and older). Education was divided into three categories: less than high school, high school, and university. Income was categorized into three levels: low income (<50,000 Francs), middle income (50,000 – 149,999 Francs), and high income (150,000 + Francs). Marital status included three levels: single, married, divorced and widowed. Religion was stratified into four categories: Christian, Muslim, traditional beliefs, and no religion. Employment status included three levels: employed, retired, and unemployed. In addition, participants were also asked whether a health care provider had ever recommended that they get checked for CaP.

The outcome variable for this study was screening status (ever screened for CaP) and it was defined as having had a digital rectal examination (DRE) and/or prostate specific antigen test (PSA). It was measured by asking participants to indicate "Yes" or "No" if they had ever had a DRE, PSA, or both ever in their lives. Independent variables comprised knowledge, awareness, attitude, cultural beliefs, perceived susceptibility, and perceived severity. Except for knowledge and awareness, all the independent variables were measured with a Likert-type scale that ranged from strongly disagree (1) to strongly agree (5). The knowledge variable was assessed via knowledge about risk factors, signs, and symptoms for CaP. Information published by the American Cancer Society (ACS, 2015) and the Centers for Disease Control and Prevention (CDC, 2016) about prostate cancer facts and risk factors guided development of the 10 items used to assess the knowledge variable (see appendix). Response options were "True", "False", or "Don't Know". Don't know and blank responses were coded as wrong responses. Based on the correct responses to the 10 items, this variable was stratified into three levels: low knowledge (0 to 4 correct answers out of 10); medium knowledge (5, 6, or 7 correct answers); and high knowledge (8, 9, or 10 correct answers). With regards to awareness of the two main screening methods for CaP,

participants were asked two questions: “have you ever heard about a test called PSA?” and “have you ever heard about a test called DRE?” Response categories for both questions were “Yes” or “No”.

Attitude was defined as an individual’s general favorableness or un-favorableness about getting screened for CaP. It was assessed by the following four items: (1) I have more important things to do than to go for CaP check-up; (2) Men who get check-up for CaP have more problems than men who do not get the check-up; (3) I think check-up for CaP would be painful; (4) Getting check-up for CaP will cause me shame or embarrassment. The score range for this variable was 4-20. Lower scores (4 to 10 out of 20) indicated favorable attitude towards screening for CaP while higher scores (11 to 20) indicated unfavorable attitude towards screening.

Eight questions assessed prevailing cultural beliefs among study participants. Participants were asked to respond to the following statements: whether or not CaP was caused by witchcraft; whether seeking treatment for CaP was a form or weakness; if traditional African medicine was better at treating CaP than at a hospital; if an individual who was not aware of CaP can be affected by it; whether CaP affects only White men; whether getting CaP was akin to a death sentence; if there was anything an individual can do to prevent CaP; and whether participants relied solely on God/Allah for CaP prevention. The score range for this variable was 7 to 40. The a-priori scores for this variable was stratified into three levels: weak cultural beliefs, 7-15; moderate cultural beliefs, 16-23; and strong cultural beliefs, 24-40.

Perceived susceptibility or the likelihood that an individual could get CaP was evaluated by the following statements: “All men are at risk for CaP”; “It is possible that I can get prostate cancer during my life time”; and “I have a higher chance of getting prostate cancer”. The score range for this variable was 3 to 15. Higher scores (10-15) indicated a strong perceived susceptibility to CaP by participant and lower scores (3-9) indicated weak perceived susceptibility to CaP. Similarly, participant’s perceived severity of the consequences of a CaP diagnosis was measured by the following items: “CaP can lead to death”; “CaP can lead to impotence”; and “Getting CaP would be the worst thing that could happen to me”. The score range for this variable was 3 to 15. Responses were categorized into higher scores (10-15), which indicated strong perceived severity of CaP and low scores (3-9), which indicated weak perceived severity of CaP.

Statistical Methods

Descriptive statistics was conducted to characterize the study participants across their CaP screening status. Logistic regression analysis was performed to model crude and adjusted association between the outcome (screened for CaP) and exposure (age, education, income, marital status, employment status, knowledge, awareness, attitude, cultural beliefs, perceived susceptibility, and perceived severity) variables. The independent t-tests, chi-square test of homogeneity, and Fisher’s exact test were used to assess significant associations between each candidate variable and screened for CaP. A variable was considered a potential confounder and added to the full multivariate model if it met the significant criteria of $p<0.10$.

RESULTS

Characteristics of the Study Participants

Table 1 provides the socio-demographic profile of study participants across their CaP screening status. Out of the 556 men surveyed, 45 (8.1%) reported that they had ever been screened for CaP. Age range was from 40 to 94 years-old with an average age of 55.6 years (SD = 11.6) for the study participants. Most participants did not complete high school education (71.8%) and a majority identified their employment status as employed (71%). The dominant religious affiliation among respondents was the Christian faith (86.1%) and about 87.4% of respondents indicated that they were married. In terms of monthly income, the majority of participants (64.2%) earned less than 50,000 Francs ($1 is approximately = 608Francs). When asked if they had ever received any recommendation from a health care provider to screen for CaP, a majority of respondents (90.1%) reported they had never received any recommendation to screen for CaP by their health care provider. Bivariate analysis showed that age, education, employment status, income level, and recommendation to screen for CaP were significantly (at 0.05 p-value level) associated with CaP screening.

Table 2 shows the intrapersonal characteristics of study participants across their CaP screening status. A majority of participants (55.2%) exhibited medium knowledge of the risk factors, signs, and symptoms for CaP by correctly responding to 5, 6, or 7 questions out of 10. In terms of awareness of the PSA test, 88.8% of

Table 1. Socio-Demographic Characteristics of Men (n=556) Across Prostate Cancer Screening Status in Bamenda, Camroon, 2016.

Variable	Total (%) 556 (100)	Ever screened for prostate cancer		p-value
		Yes (%) 45 (8.1)	No (%) 511 (91.9)	
Age (years)				
Mean (SD)	55.6 (11.6)	59.4 (10.2)	55.3 (11.6)	0.02
Age Group				
40 – 44	105 (18.9)	3 (2.9)	102 (97.1)	0.10
45 – 49	105 (18.9)	6 (5.7)	99 (94.3)	
50 – 54	74 (13.3)	6 (8.1)	68 (91.9)	
55 – 59	72 (12.9)	6 (8.3)	66 (91.7)	
60 – 64	66 (11.9)	7 (10.6)	59 (89.4)	
65 and older	133 (24)	17 (12.8)	116 (87.2)	
Missing	1 (0.1)	0	1 (100)	
Education				
Less than High School	399 (71.8)	23 (5.8)	376 (94.2)	0.03
High School	74 (13.3)	10 (13.5)	64 (86.5)	
University	76 (13.7)	12 (15.8)	64 (84.2)	
Missing	7 (1.2)	0	7 (100)	
Employment Status				
Employed	395 (71)	23 (5.8)	372 (94.2)	<0.01
Retired	105 (18.9)	19 (18.1)	86 (81.9)	
Unemployed	52 (9.4)	3 (5.8)	49 (94.2)	
Missing	4 (0.7)	0	4 (100)	
Religion				
Christian	479 (86.1)	40 (8.4)	439 (91.6)	0.82
Muslim	59 (10.6)	4 (6.8)	55 (93.2)	
Traditional beliefs	2 (0.4)	0	2 (100)	
No religion	6 (1.1)	1 (16.7)	5 (83.3)	
Missing	10 (1.8)	0	10 (100)	
Marital Status				
Single	38 (6.8)	1 (2.6)	37 (97.4)	0.29
Married	486 (87.4)	43 (8.8)	443 (91.2)	
Divorced	9 (1.6)	1 (11.1)	8 (88.9)	
Widowed	20 (3.7)	0	20 (100)	
Missing	3 (0.5)	0	3 (100)	
Income				
Low Income (<50,000 Francs)	357 (64.2)	17 (4.8)	340 (95.2)	<0.01
Middle Income (50,000 – 149,999 Francs)	124 (22.3)	15 (12.1)	109 (87.9)	
High Income (150,000+ Francs)	51 (9.2)	11 (21.6)	40 (78.4)	
Missing	24 (4.3)	2 (8.3)	22 (91.7)	
Ever received recommendation to screen for CAP?				
Yes	37 (6.7)	17 (45.9)	20 (54.1)	<0.01
No	501 (90.1)	27 (5.4)	474 (94.6)	
Missing	18 (3.2)	1 (5.6)	17 (94.4)	

participants were not aware of this screening method while 91.0% were also not aware of the DRE. Regarding attitude, a majority of study participants (74%) reported a favorable or positive attitude towards screening for CaP.

Table 2. Intrapersonal Characteristics of Men (n=556) Across Prostate Cancer Screening Status in Bamenda, Cameroon, 2016.

Characteristic	Total (%)	Ever screened for Prostate Cancer		p-value
		Yes (%) 45 (8.1)	No (%) 511 (91.9)	
Knowledge				
Low	102 (18.4)	5 (4.9)	97 (95.1)	0.31
Medium	307 (55.2)	25 (8.1)	282 (91.1)	
High	146 (26.3)	15 (10.3)	131 (89.7)	
Missing	1 (0.1)	0	1 (100)	
Aware of Prostate Specific Antigen test?				
Yes	62 (11.1)	24 (38.7)	38 (61.3)	<0.01
No	493 (88.8)	21 (4.3)	472 (95.7)	
Missing	1(0.1)	0	1 (100)	
Aware of Digital Rectal Examination?				
Yes	49 (8.9)	19 (38.8)	30 (61.2)	<0.01
No	506 (91)	26 (5.1)	480 (94.9)	
Missing	1 (0.1)	0	1(100)	
Attitude				
Favorable	411 (74)	40 (9.7)	371 (90.3)	0.02
Unfavorable	142 (25.5)	5 (3.5)	137 (96.5)	
Missing	3 (0.5)	0	3 (100)	
Perceived Susceptibility				
Strong	423 (76)	36 (8.5)	387 (91.5)	0.63
Weak	126 (22.7)	9 (7.1)	117 (92.9)	
Missing	7 (1.3)	0	7 (100)	
Perceived Severity				
Strong	469 (84.3)	40 (8.5)	429 (91.5)	0.41
Weak	85 (15.3)	5 (5.9)	80 (94.1)	
Missing	2 (0.4)	0	2 (100)	
Cultural Beliefs				
Strong	1 (0.2)	0	1 (100)	0.24
Moderate	168 (30.2)	9 (5.4)	159 (94.6)	
Weak	377 (67.8)	36 (9.5)	341 (90.5)	
Missing	10 (1.8)	0	10 (100)	

Yet 90.3% of respondents with a positive attitude towards screening reported no history of CaP check-up. There was a strong sense of vulnerability or perceived susceptibility to CaP among participants, as 76% of respondents reported high perceived susceptibility. Even more participants (84.3%) expressed a strong perceived severity of the consequences of a CaP diagnosis. About 91.5% of participants with a strong perceived susceptibility to CaP reported no screening history and similarly, 91.5% of participants with a strong perceived severity of CaP diagnosis reported no history of CaP screening. Concerning cultural beliefs, less than 1% of study participants held strong cultural views about screening for CaP. About 30.2% of respondents reported moderate cultural beliefs and 67.8% exhibited weak cultural beliefs about screening for CaP.

Logistic Regression Analysis

Table 3 summarizes the effect of socio-demographic and intrapersonal factors on prostate cancer screening among study participants. Univariate analysis indicated that men aged 65 years and older were more likely to have screened for CaP than men aged 40-44 years with an odds ratio (OR) and 95% confidence interval (CI) of 4.9 [1.4 – 17.5]. After adjusting for other covariates, the OR and 95% CI of ever screened for CaP was 4.4 [1.1 – 17.6] among participants aged 65 years and older

Table 3. Estimates of the Effect of Socio-Demographic and Intrapersonal Factors on Prostate Cancer Screening among Men (n=556) in Bamenda, Cameroon, 2016.

	Ever screened for Prostate Cancer	
Characteristic	**Crude OR (95% CI)**	**Adjusted OR (95% CI)**
Age (years)		
40 – 44 (reference)	1.0	1.0
45 – 49	2.1 (0.5– 8.5)	0.9 (0.2 – 4.9)
50 – 54	3.0 (0.7 – 12.4)	2.2 (0.4 – 10.6)
55 – 59	3.1 (0.8 – 12.8)	1.9 (0.4 – 9.1)
60 – 64	4.0 (1.0 – 16.2)	3.8 (0.8 – 17.6)
65 and older	4.9 (1.4 – 17.5)	4.4 (1.1 – 17.6)
Education		
Less than High School (reference)	1.0	1.0
High School	2.6 (1.2 – 5.6)	2.1 (0.8 – 5.9)
University	3.1 (1.5 – 6.5)	0.9 (0.3 – 2.7)
Income Status		
Low Income (<50,000 francs) (reference)	1.0	1.0
Middle Income (50,000 – 149,999 francs)	2.8 (1.3 – 5.7)	2.8 (1.1 – 6.8)
Upper Income (150,000+ francs)	5.5 (2.4 – 12.6)	6.4 (1.9 – 20.9)
Knowledge		
Low (reference)	1.0	1.0
Medium	1.7 (0.6 – 4.6)	1.6 (0.5 – 5.4)
High	2.2 (0.8 – 6.3)	1.2 (0.3 – 4.4)
Attitude		
Positive	2.9 (1.1 – 7.6)	0.3 (0.1 – 1.0)
Negative (reference)	1.0	1.0
Perceived Susceptibility		
Strong	1.2 (0.6 –2.6)	0.8 (0.3 – 1.9)
Weak (reference)	1.0	1.0
Perceived Severity		
Strong	1.5 (0.56 – 3.9)	1.3 (0.4 – 4.4)
Weak (reference)	1.0	1.0
PSA Awareness		
Yes	14.2 (7.2 – 27.8)	14.8 (6.6 – 33.4)
No (reference)	1.0	1.0

relative to those 40-44 years old.

Men at the middle income level (monthly income of 50,000 – 149,999 francs) were more likely to have screened for CaP than men with monthly income <50,000 francs, with OR and 95% CI of 2.8 [1.3 – 5.7]. When accounting for other factors, the OR and 95% CI of ever screened for CaP among these two income groups was 2.8 [1.1 – 6.8]. Similarly, men at the upper income bracket (monthly income of 150,000 francs and above) were more likely to have had a CaP check-up relative to men at the lower income level (monthly income of <50,000 francs) with OR and 95% CI of 5.5 [2.4 -12.6]. When adjusting for other covariates, the OR and 95% CI of ever screened for CaP was 6.4 [1.9 - 20.9] among high income earners (monthly income of 150,000 + francs) compared to low income earners (monthly income of <50,000 francs).

Men with a positive attitude towards screening for CaP were more likely to have screened than men with a negative attitude towards screening with OR and 95% CI of 2.9 [1.1 – 7.6]. After controlling for covariates, the OR and 95% CI of ever screened was 0.3 [0.1- 1.0] among respondents with a positive attitude relative to those with a negative attitude to screening for CaP.

In terms of awareness of the PSA test, men who reported awareness of this screening test were more likely to have screened for CaP with OR and 95% CI of 14.2 [7.2 – 27.8] as opposed to men who reported no awareness of PSA test.

When adjusting for other factors, the OR and 95% CI was 14.8 [6.6 – 33.4].

DISCUSSION

This study examined knowledge levels for CaP, awareness of screening methods, and screening rate for CaP among men in Bamenda as well as factors that influence screening. Our findings demonstrate that although study participants exhibited medium knowledge level of CaP risk factors, signs and symptoms, only 8.1 % of respondents reported they had ever screened for CaP. This finding is consistent with results from other studies. Odedina et al. (2009) in a study with indigenous Nigerian men found that CaP screening was almost non-existent. Similarly, Nakandi et al. (2013) in a study among men in Uganda found low uptake of CaP screening. Moreover, awareness of the two main screening methods for CaP (DRE and PSA) was low among study participants with 11.1% reporting they were aware of PSA test and 8.9% reporting awareness of DRE. This indicates that men in Bamenda need information about the benefits and risks of CaP prevention to be able to make informed decisions about screening. Lack of cancer awareness and knowledge deficit of prostate related issues has been linked with poor survival and increased mortality rates among men in Africa (Morhason-Bello et. al, 2013; Jamal et al. 2012).

Interestingly, educational achievement was not a significant factor influencing screening. Study expectation was that men with higher educational attainment will report CaP screening. This was not the case as the majority of study participants who reported a screening history (51%) had not completed high school, compared to 27%of participants with a university education who reported screening history. A possible explanation could be that participants obtained information about screening for CaP from informal networks (for example, friends and family members) as opposed to through reading or proactive information search. Likewise, high knowledge of CaP risk factors was not a significant factor influencing screening. The mean score of 6.1 (SD = 2.08) for knowledge of CaP among participants in this study was above study expectations given the high levels of late stage cancer diagnosis in Cameroon reported in hospital-based studies (Enow-Orock, et al., 2012; Sow et al. 2011). However, these results are comparable to other studies from sub-Saharan Africa. Oladimeji et al. (2010) in a study among older men in Oyo State in Nigeria, found an overall mean of 5.8 (±3.0) for knowledge of CaP causation, treatment, and prevention.

When asked if they had received a recommendation from their health care provider to screen for CaP, 90.1% of study participants said “No”. This finding is consistent with results from a study among Nigerian men where Odedina et al. (2009) reported 6.4% of men in that study had received a recommendation from their health care provider to have a DRE or PSA test. This suggests that one of the reasons for the low screening rate in the current study could be lack of recommendation from health care providers and lack of awareness of screening tests among men in Bamenda. Health care providers need to be sensitized and encouraged to provide balanced information to their male patients about the risks and benefits of CaP screening. This will enable men to make informed decisions about whether to screen.

Logistic regression analysis indicated that income was associated with screening behavior. This result also suggests a disparity in CaP screening in favor of men in the middle and upper income brackets. Consequently, low income earners need to be targeted for intervention programs aimed at increasing awareness of and screening for CaP among this population.

Awareness of the PSA test was identified as an important predictor of CaP screening in this study. Slightly more men were aware of the PSA test (62) compared to 49 men who reported awareness of DRE. Men who were aware of the PSA test were more likely to have screened compared to men who were not aware of it. This finding suggests a strong need for a comprehensive health education program aimed at increasing awareness of CaP screening methods among men in Bamenda, and improving the uptake to screening. Despite the controversy over guidelines for CaP screening and early detection, screening is the most common method for early detection of CaP in asymptomatic populations (Woods et al, 2004). Moreover, Odedina et al., (2008) argue that CaP screening “is presently the only method recognized to combat prostate cancer disease through early detection and appropriate treatment.” Given the well-established risk factors for CaP (increased age, African ancestry and family history of the disease), screening could be a valuable tool to reduce mortality within a population with genetic predisposition for CaP. According to Lim, Sherin, & ACPM Prevention practice committee (2008), screening for CaP offers the only possibility of early detection for individuals at higher risk.

Contrary to study expectations, a vast majority of study participants (67.8%) exhibited weak or low cultural beliefs about screening for CaP. Other studies have noted strong cultural beliefs about chronic diseases in Cameroon including cancer that causes patients and their care providers to attribute the cause of these diseases to witchcraft (Aikins et al., 2010).This is an area for future study to explore if there is any relationship between cultural beliefs and late stage diagnosis of CaP among men in Cameroon. Perceived susceptibility to CaP and perceived severity of the consequences of the disease was high among the majority of study participants but did not seem to affect screening behavior in this study as postulated by the health belief model. According to the health belief model, individuals are likely to take action to change a behavior, if they feel threatened by the current state of affairs. One possible reason for the low screening rate among study participants despite strong perceived susceptibility and severity could be the lack of financial resources to pay for diagnostic and screening test.

Limitations

One of the limitations of this study is social desirability, which is associated with face-to-face interviews. Participants may have provided responses that they believed made them look good. Another limitation wasthe use of extreme ratings by some participants.Furthermore, there is the potential for large sampling error with cluster sampling. To avoid this, the 18 clusters of the BHD were divided into two groups to ensure that both the urban and rural clusters had equal chance of being selected for sampling.

Recommendations

In light of study findings, we make the following recommendations:

1. The development of health education and promotion programs to increase awareness of CaP risks factors and benefits of prevention. This intervention should target men especially those with lower income and men with less than a high school education.
2. The need to sensitize health care providers (doctors, nurses and traditional healers) on CaP related issues and encourage them to have conversations with their male patients when appropriate and provide objective information to help these men decided whether or not to screen.
3. Urgent need to establish population-based cancer registries in all ten Regions of Cameroon including Bamenda. Currently, cancer is not a mandatory reportable illness and valuable information is not being collected in a systematic way that could inform the epidemiology of the disease in Cameroon.

CONCLUSION

Prostate cancer is a significant public health issue in Cameroon. While findings from this study showed average levels of knowledge about risk factors, signs and symptoms for CaP, a high proportion of study participants were unaware of the screening tests (PSA and DRE) for CaP. Moreover, screening rate for CaP among this population was low (8.1%). Despite the low levels of awareness of the two main screening methods for CaP a majority of participants expressed a favorable attitude towards screening. Significant factors influencing screening among men in Bamenda were age, income, and awareness of the PSA tests. There is a need for health education programs to increase awareness levels about this disease and to educate men about preventive steps that could lead to an uptake in screening for CaP and early detection of the disease among this population. To be successful, health education programs should target men through the neighborhood where they live or through the cultural associations where they socialize.

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APPENDIX

Distribution of participants response to ten knowledge questions on risk factors, signs and symptoms of CAP (n=556) *indicates the correct answer.

Question	Frequency	Percent (%)
1. Prostate cancer is transmitted through sexual contact		
True	329	59.2
False*	227	40.8
2. Prostate cancer occurs only in males		
True*	251	45.1
False	305	54.9
3. Men who have someone in their family (blood relative) diagnosed with prostate cancer are more likely to get prostate cancer		
True*	244	43.9
False	312	56.1
4. Waking up frequently at night to urinate may be a sign of prostate cancer		
True*	260	46.8
False	296	53.2
5. Testing for prostate cancer cannot detect if someone has prostate cancer		
True	272	48.9
False*	284	51.1
6. If prostate cancer is found early, there is a chance that it can be cured		
True*	452	81.3
False	104	18.7
7. Prostate cancer occurs mostly in younger men than older men		
True	166	29.9
False*	390	70.1
8. Having difficulty passing urine could be a sign of prostate cancer		
True*	341	61.3
False	215	38.7
9. A man can have prostate cancer and show no symptoms or problems		
True*	390	70.1
False	166	29.9
10. Prostate cancer can grow slowly in some men		
True*	502	90.3
False	54	9.7