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# Perceptions and knowledge about prostate cancer and attitudes towards prostate cancer screening among male teachers in the Sunyani Municipality, Ghana



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### KEYWORDS

Prostate cancer;  
Perception;  
Knowledge;  
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Attitude;  
Teacher;  
Ghana

### Abstract

**Introduction:** Poor perceptions and attitudes about prostate cancer screening are some reasons for late reporting for PC screening and treatment. Understanding perceptions of PC and how it translates to screening and treatment is important for physicians and public health practitioners as this information clarifies existing knowledge and provides valuable information for the design of public health programmes to reduce the disease burden of PC.

**Objective:** This study examined perceptions and knowledge about PC and attitudes towards screening among male teachers in the Sunyani Municipality.

**Subjects and methods:** This is a cross-sectional study involving 160 teachers aged 45–60 years randomly sampled from primary, junior and senior high schools in the municipality. A structured questionnaire on background characteristics of respondents, perceptions about PC and attitudes towards early screening was used to elicit responses. Preliminary analysis summarised data on socio-demographic characteristics of respondents, perceptions and attitudes about PC screening. The Pearson's chi square ( $\chi^2$ ) and Fisher's exact tests, and logistic regression analysis were later used to examine the association between socio-demographic variables, knowledge, perceptions and attitudes about PC screening.

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*Results:* The mean age of respondents was 49.52 (SD = ±3.95). PC was not considered to be transmitted sexually (58.8%) and caused by radiations from mobile phones, (40.6%). Majority of respondents agreed that PC screening is beneficial (95.0%) and disagreed with the assertion that going through PC screening is embarrassing (72%) and painful (49.3%), although the majority had never been screened (90%). There was no association between demographic variables and perceptions about PC. However, knowledge about PC was found to be significantly associated with perceptions about PC ( $p < 0.001$ ). There was a significant association between knowledge of PC ( $p < 0.0001$ ) and attitudes towards PC screening.

*Conclusion:* Considering the public health significance of PC, public health programmes should go beyond awareness creation to organise educational campaigns for all socio-economic groups. These programmes should provide clarity on healthy lifestyles to prevent cancer, the health benefits of early screening, detection and treatment, screening and treatment options and the peculiarities of each to inform health-seeking choices.

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## Introduction

Prostate cancer (PC) is a disease of public health importance worldwide. It is the second most common cancer in men with 70% of the cases occurring in more developed countries and regions of Australia, New Zealand and America [1,2]. In Africa, PC is the leading cancer in both occurrence and the number of deaths [3]. The incidence of PC is relatively high in South Africa [4]. Statistics from Ghana indicate that PC is the second most common cancer among men next to liver cancer with an incidence of more than 200 cases per 100,000 of the population per year [5].

Possible causes of PC are unclear although increasing age, race and previous family history of the disease are known risk factors [6,7]. Various perceptions of PC have been documented in the literature and this may influence screening and treatment for PC in both developed and developing countries, besides the disparities in the availability of tests for PC. A study revealed that African-American men perceived a diagnosis of cancer as a death sentence and avoided treatment [8]. In another study among African-American men, embarrassment and the fear of a positive diagnosis were barriers to screening [9]. Finnish participants in a randomised population-based screening trial stated previous screening, forgetfulness and not wanting to think about PC as reasons for not being screened [10]. A study in Uganda reports that many participants failed to undergo PC screening because they did not consider PC as serious as HIV; HIV testing was considered more important than PC screening [11].

There are conflicting findings on the benefits of early PC screening to reduce mortality: one study conducted in Europe reported a 20% reduction in PC-related mortality. However, a US study failed to show any reduction in PC-related deaths [12,13]. Nevertheless, the benefits of early screening to ascertain cancer status to initiate early treatment and reduce PC-related deaths cannot be overemphasised.

Despite the high morbidity of PC in Ghana, about 75% of PC cases are reported late at health centres in advanced stages [5,14,15]. It is argued that poor perceptions and knowledge about PC and the availability of alternative therapies are the reasons for late reporting for PC screening and treatment [16]. However, the fact still remains that there is very little research that examines perceptions

and attitudes towards prostate cancer screening in West Africa and Ghana for that matter. Understanding perceptions of PC and how it translates to screening and treatment is important for physicians and public health practitioners as this information clarifies existing knowledge and provides valuable information for the design of public health programmes to reduce the disease burden of PC. In this study, we examined perceptions about PC and attitudes towards screening among male teachers in the Sunyani Municipality.

## Subjects and methods

### *Study design and sampling*

This is a cross-sectional study involving 160 teachers aged 45–60 years. The total number of teachers in the Sunyani Municipality is 1276; 625 are male teachers. Of the 625 male teachers, 256 are aged 45 years and above. A sample size of 156 was calculated and later approximated to 160, using the Krejcie and Morgan table, 1970. The sample of 160 male teachers was randomly sampled from primary, junior and senior high schools in the municipality. Data were collected from May to July 2015. Details of the sampling procedure are reported elsewhere [17].

### *Data collection tool*

A structured questionnaire which was centred on background characteristics of respondents, knowledge, perceptions and attitudes towards early screening was used to elicit responses. Perceptions about PC were assessed using 14 questions on causes, risk susceptibility factors, severity and treatment. The questions were scored on a 3 point Likert scale of “agree”, “don’t know” and “don’t agree”. The scale was scored as “agree” 1, “don’t know” 0 and “don’t agree” 0 for the positive questions, and “don’t agree” 1, “don’t know” 0 and “agree” 0 for the negative statements. Scores were totalled per respondent; the maximum score was

14. Consequently a score of 7 and above was classified as good perception and scores less than 7 were classified as poor perception.

Attitudes towards screening for PC were assessed using 9 questions on willingness to screen, benefits of screening and treatment options. The questions were scored on a 3 point Likert scale of “agree”, “don’t know” and “don’t agree”. The scale was scored as “agree” 1, “don’t know” 0 and “don’t agree” 0 for the positive questions, and “don’t agree” 1, “don’t know” 0 and “agree” 0 for the negative statements. Scores were totalled per respondent; the maximum score was 9. A respondent with a score of 5 and above was classified to have a positive attitude and a respondent with a score of less than 5 was classified as having a negative attitude.

Knowledge of PC was measured using 10 questions on the causes, signs, symptoms and treatment. The questions were scored on a 3 point Likert scale of “agree”, “don’t know” and “don’t agree”. The scale was scored as agree 1, don’t know 0 and don’t agree 0 for the positive statements, and “don’t agree” 1, “don’t know” 0 and “agree” 0 for the negative statements. Scores were added for each respondent on perception about PC. The maximum score was 10. Respondents who had a score of 5 and above were classified as having high knowledge and those with scores less than 5 were considered to have low knowledge. However, details of this analysis are reported elsewhere [17]. The questionnaire was in English and interviews were conducted in English.

#### Data management and analysis

Data were double—entered in Microsoft excel to reduce data entry errors and later exported into STATA 12 (StataCorp LP, College Station, TX, USA). Analysis was performed using STATA 12. Preliminary analysis summarised data on socio-demographic characteristics of respondents, perceptions and attitudes about PC. The Pearson’s chi square ( $\chi^2$ ) and Fisher’s exact test analysis were used to examine the association between socio-demographic variables, perceptions and attitudes towards PC. Additionally, binary variables were created for perceptions, attitudes and knowledge. To determine factors that influenced perceptions and attitudes towards PC, univariate analysis was done considering demographic variables that were significant at  $p < 0.25$  [18] after chi-square and Fisher’s exact test analysis to control for potential confounders. Adjusted (multiple regression) models considered variables from the unadjusted analysis with  $p$ -values  $< 0.25$ . Odds ratios with their respective 95% confidence intervals were generated for variables in the model.

#### Ethical considerations

Ethical clearance was obtained from the ethical review board of the Ghana health service. Consent was also sought from the Sunyani Municipal education office, heads of the schools sampled and respondents. Participation was voluntary.

## Results

### Background characteristics of respondents

Many respondents were aged from 45 to 50 years (68.1%). The mean age of respondents was 49.52 (SD =  $\pm 3.95$ ). Most of the respondents

**Table 1** Background characteristics of respondents.

Characteristics	Frequency (%)
Age	
45–50	109 (68.1)
51–55	34 (21.3)
56–60	17 (10.6)
Marital status	
Single	20 (12.5)
Married	140 (87.5)
Highest level of education	
College of education	15 (9.4)
University	145 (90.6)
Current rank	
Senior Superintendent	14 (8.6)
Principal Superintendent	66 (41.4)
Assistant Director II	63 (39.4)
Assistant Director I	17 (10.6)
Religious affiliation	
Christian	145 (90.6)
Muslim	15 (9.4)
Ethnicity	
Akan	105 (65.6)
Ga	3 (1.9)
Ewe	18 (11.3)
Northern <sup>a</sup>	28 (17.5)
Others <sup>b</sup>	6 (3.8)
Ever screened for PC	
Yes	16 (10)
No	144 (90.0)

Data are presented in frequency (n) and proportions (%).

<sup>a</sup> Ethnic groups of the 3 Northern regions of Ghana.

<sup>b</sup> Any other ethnic group in Ghana, PC = prostate cancer.

were married (87.5%) and the majority had completed University education (90.6%), (Table 1).

### Perceptions about prostate cancer

However, PC was considered fatal by the majority (93.8%) and many respondents indicated death is not imminent once a diagnosis of PC is confirmed (84.4%).

Although the majority of respondents were within the high risk age group (45–50 years), most of them did not consider themselves at risk of PC. Only 34.4% of respondents stated that they had a high risk of getting PC, while 39.4% of respondents thought otherwise and 46.2% indicated that one was likely to get PC at the age of 50 years (Table S1, Supplementary file).

### Attitudes towards prostate cancer screening

Although 97.5% acknowledged the importance of screening for PC, 90% of respondents have never been screened for PC even though 95.6% of respondents indicated their willingness to be screened (Table S2, Supplementary file).

**Table 2** Association between background factors, knowledge and perceptions about PC.

Variables	Perception level, N (%)		p-value
	Poor	Good	
Age			
45–50	12 (80.0)	97 (66.9)	0.523
51–55	3 (20.0)	31 (21.4)	
56–60	0 (0.0)	17 (11.7)	
Marital status			
Single	2 (13.3)	18 (12.4)	1.000
Married	13 (86.7)	127 (87.6)	
Highest level of education			
College of education	2 (13.3)	13 (9.0)	0.635
University	13 (86.7)	132 (91.0)	
Current rank			
Senior Superintendent	2 (13.3)	12 (8.2)	0.218
Principal Superintendent	9 (60.0)	57 (86.4)	
Assistant Director II	4 (26.7)	59 (40.7)	
Assistant Director I	0 (0.0)	17 (11.7)	
Religious affiliation			
Christian	13 (8.7)	132 (91.0)	0.635
Muslim	2 (13.3)	13 (9.0)	
Ethnicity			
Akan	8 (53.3)	97 (66.9)	0.068
Ga	2 (13.3)	1 (0.7)	
Ewe	2 (13.3)	16 (11.0)	
Northern <sup>a</sup>	3 (20.0)	25 (17.2)	
Others <sup>b</sup>	0 (0.0)	6 (4.4)	
History of PC among family			
No	12 (80.0)	117 (80.7)	1.000
Yes	3 (20.0)	28 (19.3)	
Knowledge of PC			
Low	13 (86.7)	55 (37.9)	<0.0001*
High	2 (13.3)	90 (62.1)	

Data are presented in frequencies (N) and proportions (%); p-value from Fisher's exact test; PC = Prostate cancer.

<sup>a</sup> Ethnic groups of the 3 Northern regions of Ghana.

<sup>b</sup> Any other ethnic group in Ghana.

\* p-value  $\leq 0.05$ .

### Association between background factors, knowledge and perceptions about prostate cancer

Fisher's exact test statistics revealed that there was no association between age ( $p = 0.523$ ), marital status ( $p = 1.000$ ), educational level ( $p = 0.635$ ), current rank ( $p = 0.218$ ), religious affiliation ( $p = 0.635$ ), ethnicity (0.068), history of PC among family ( $p = 1.000$ ) and perceptions about PC (Table 2). However, knowledge about PC was found to be significantly associated with perceptions about PC ( $p < 0.001$ ). Male teachers with positive perceptions about PC had high knowledge about PC (62.1%) as compared to 37.9% of male teachers with positive perceptions of PC who had low knowledge about PC (Table 2).

### Associations between background variables attitudes towards PC screening and, knowledge and perceptions about PC

There were no significant associations between age ( $p = 1.000$ ), marital status ( $p = 0.768$ ), educational level ( $p = 0.738$ ), current

rank ( $p = 0.502$ ), religious affiliation ( $p = 0.514$ ), ethnicity (0.304), family history of PC ( $p = 0.325$ ) and attitudes towards PC screening (Table 3). However, there was a significant association between knowledge of PC ( $p < 0.0001$ ) and attitudes towards PC screening. A high proportion of male teachers (65.4%) with positive attitudes towards PC screening had high knowledge about PC as compared to 34.7% of male teachers with positive attitudes towards PC screening who had low knowledge about PC. Furthermore, there was a significant association between perceptions about PC ( $p = 0.051$ ) and attitudes towards screening for PC. Male teachers with positive attitudes (92.9%) and good perceptions about PC were significantly higher when compared to male teachers (7.1%) with positive attitudes and poor perceptions (Table 3).

### Predictors of perceptions about PC

Variables which were statistically significant at  $p < 0.25$ , after chi-square and Fisher's exact test analysis to control for potential confounders, were selected for the logistic regression model [19]. After adjusting for age, educational level, current rank and ethnicity, male teachers with high knowledge about PC (OR 9.12; 95% CI, 1.88–44.42) were more likely to have good perceptions about PC than those with low knowledge about PC (Table 4).

### Predictors of attitudes towards PC

Variables significant at  $p < 0.25$  from the chi square and Fisher's exact test analysis were imported into a logistic regression model after adjusting for age, educational level and perceptions about PC. The results show that male teachers with high knowledge were significantly more likely to have a positive attitude towards screening for PC when compared to respondents with low knowledge about PC (OR 4.23; 95% CI, 1.74–10.28). Furthermore, after adjusting for knowledge on PC, respondents who had a positive perception about PC (OR 1.69; 95% CI, 0.52–5.55) were more likely to have a positive attitude towards screening for PC. However, this association was statistically insignificant when compared to those who had negative attitudes (Table 5).

## Discussion

This study was carried out to explore perceptions and knowledge about PC and attitudes towards prostate cancer screening by male teachers in a high-risk age group. Study findings indicate that majority of respondents held good perceptions about PC. Our study findings show no significant associations of demographic variables with perceptions of PC, probably because some variables, marital status and educational levels were positively skewed. However after controlling for confounding factors, high knowledge of PC was the only variable significantly associated with positive attitudes about PC screening and perceptions about PC.

The majority of respondents correctly perceived PC to have no known cause. An earlier study argues that the aetiology of PC is still unknown [7]. Most of the respondents held the perception that PC cannot be sexually transmitted, they believed PC is not a curse and stated that a diagnosis of PC does not indicate death, even though they mentioned that PC could lead to death. Furthermore, some respondents perceived that a diet rich in fruits and vegetables could prevent PC. Some authors argue that consumption of fruits and vegetables and a low fat and high-fibre diet might prevent cancer and

**Table 3** Associations between selected variables and attitudes towards prostate cancer.

Variables	Attitude level, N (%)		$\chi^2$ (df)	p-value
	Negative	Positive		
Age				
45–50	23 (69.7)	86 (67.7)		
51–55	7 (21.2)	27 (21.3)		
56–60	3 (9.1)	14 (11.0)		1.000**
Marital status				
Single	3 (9.1)	17 (13.4)		
Married	30 (90.9)	110 (86.6)		0.768**
Highest level of education				
College of education	2 (6.1)	13 (10.2)		
University	31 (93.9)	114 (89.8)		0.738**
Current rank				
Assistant Director I	3 (9.1)	14 (11.0)		
Assistant Director II	12 (36.4)	51 (40.2)		
Principal Superintendent	17 (51.5)	49 (38.6)		
Senior Superintendent	1 (3.03)	13 (10.2)		0.502**
Religious affiliation				
Christian	29 (87.9)	116 (91.3)		
Muslim	4 (12.1)	11 (8.7)		0.514**
Ethnicity				
Akan	23 (69.7)	82 (64.6)		
Ga	2 (6.1)	1 (0.8)		
Ewe	2 (6.1)	16 (12.6)		
Northern <sup>a</sup>	5 (15.2)	23 (18.1)		
Others <sup>b</sup>	1 (3.0)	5 (3.9)		0.304**
Family and friends with PC				
No	29 (87.9)	100 (78.7)		
Yes	4 (12.1)	27 (21.3)		0.325**
Knowledge				
Low	24 (72.7)	44 (34.7)		
High	9 (27.3)	83 (65.4)	15.544 (1)	<0.0001*
Perceptions				
Poor	6 (18.2)	9 (7.1)		
Good	27 (81.8)	118 (92.9)	3.795 (1)	0.051*

Data are presented in frequencies (N) and proportions (%);  $\chi^2$  = chi-square statistic; df = degree of freedom; PC = prostate cancer.

<sup>a</sup> Ethnic groups of the 3 Northern regions of Ghana.

<sup>b</sup> Any other ethnic group in Ghana.

\* p-values from chi-square analysis p-value  $\leq 0.05$ .

\*\* p-values from Fisher's exact test.

limit its progression [20,21]. However, respondents did not consider a high-fat diet as a risk factor for PC. There is sufficient research evidence despite earlier controversies to suggest that high animal fatty diets pose a risk to prostate cancer [7,22].

Although our respondents were aged 45–60 years, their perceived risk was low. It is common for aging males to consider themselves at low risk of PC [23]. The low perceived risk of PC among respondents could be linked to the fact that majority of respondents did not have a family history of PC. Family history of PC [24] and increasing age are known risk factors for PC [25]. Low levels of education have been associated with low knowledge and consequently low screening [26] while correct knowledge of PC is linked to favourable attitudes and practices [27]. Our study findings also corroborate this assertion that high knowledge of PC is associated with good perceptions and positive attitudes towards PC screening. Majority of respondents recognised the importance of screening for prostate

cancer, agreed that PC screening is important and that PC could be treated if detected early. Although our respondents demonstrated positive perceptions and attitudes, the majority had not screened for PC though they mentioned the intention to.

Some studies suggest that one of the barriers to PC screening is the notion that the digital rectum examination (DRE) is embarrassing, painful and uncomfortable [9,28–30]. Nevertheless, many of our study respondents did not consider PC screening embarrassing (71.2%) and 21.9% were unsure probably because the majority (90.0%) had not been screened before. Interestingly, awareness about PSA and DRE procedures was high among respondents [17]. This high level of awareness could be a reflection of the intensive educational campaign on PC in the country [5]. Although this campaign has increased awareness of PC among educated males it is not compelling enough to encourage early screening. The introduction of PSA screening for PC in the United States of America (USA)

**Table 4** Factors associated with perceptions about prostate cancer.

Variable	Perception level, N (%)		Unadjusted OR, (95% CI)	Adjusted OR, (95% CI)
	Poor	Good		
<b>Current rank</b>				
Snr. Superintendent ( <i>Ref</i> )	2 (14.3)	12 (85.7)	1	1
Principal Superintendent	9 (13.6)	57 (86.4)	1.06 (0.20–5.51)	0.88 (0.13–5.72)
Assistant Director II	4 (6.3)	59 (93.7)	2.46 (0.40–14.98)	2.34 (0.33–16.51)
Assistant Director I <sup>c</sup>	0 (0.0)	17 (100.0)		
<b>Ethnicity</b>				
Akan ( <i>Ref</i> )	8 (7.6)	97 (92.4)	1	1
Ga	2 (66.7)	1 (33.3)	0.04 (0.00–0.51)	0.13 (0.01–1.71)
Ewe	2 (11.1)	16 (88.9)	0.66 (0.13–3.39)	0.44 (0.07–2.82)
Northern <sup>a</sup>	3 (10.7)	25 (89.3)	0.69 (0.17–2.78)	0.45 (0.09–2.34)
Others <sup>b</sup>	0 (0.0)	6 (100.0)		
<b>Knowledge of PC</b>				
Low ( <i>Ref</i> )	13 (19.1)	55 (80.9)	1	1
High	2 (2.2)	90 (97.8)	10.64 (2.31–48.93)	9.12 (1.88–44.42)

Snr. = Senior; PC = prostate cancer; data are presented in frequency (N) and proportions (%); logistic regression analysis using variables significant at  $p < 0.25$  after Fisher's exact test analysis *Ref* = reference categorical variable; OR = odds ratio; adjusted for age and educational level; CI = 95% confidence interval.

<sup>a</sup> Ethnic groups of the 3 Northern regions of Ghana.

<sup>b</sup> Any other ethnic group in Ghana.

<sup>c</sup> Categories were omitted from the model.

**Table 5** Factors associated with attitudes towards screening for prostate cancer.

Variables	Attitude level, N (%)		Unadjusted OR, (95% CI)	Adjusted OR, (95% CI)
	Negative	Positive		
<b>Knowledge on PC</b>				
Low ( <i>Ref</i> )	24 (72.7)	44 (34.6)	1	1
High	9 (27.3)	83 (65.4)	5.03 (2.15–11.76)	4.23 (1.74–10.28)
<b>Perceptions of PC</b>				
Poor ( <i>Ref</i> )	6 (18.2)	9 (7.1)	1	1
Good	27 (81.8)	118 (92.9)	2.91 (0.96–8.88)	1.69 (0.52–5.55)

Logistic regression analysis using variables with  $p$ -value  $< 0.25$  in bivariate analysis as candidate variables; *Ref* = reference group of the categorical variable; OR = odds ratio; adjusted for age and educational level; CI = 95% confidence interval; PC = prostate cancer.

in the 1970s and 1980s resulted in considerable reductions in PC-related deaths by 40% by 2008 [31,32]. Screening for PC is also relatively high in other European countries [33] but woefully low in developing countries of Nigeria [34,35], Uganda [11], Ghana and Kenya [36]. Arguably a PC screening programme that identifies asymptomatic men with localised tumours could reduce PC-related deaths substantially. The relatively low screening for prostate cancer has been attributed to several factors that include poverty [30,37], lack of awareness and knowledge [38,39], low education levels, fear [30], embarrassment [28,30], traditional beliefs [11] and physician's attitudes [40].

Physicians play an important role in educating and advocating for prostate cancer screening. Physicians' advice on the importance of screening early screening and treatment options, side effects and prognosis are known to encourage the initiation of screening for prostate cancer and provide emotional support for patients undergoing prostate cancer therapy. Similarly, information from medical providers was instrumental in increasing knowledge in older men from Saudi Arabia, Egypt and Jordan and also informing their decision to undertake screening [39]. Additionally, male staff of the

University of Lagos, Nigeria were encouraged by their physicians to undergo PC screening [41].

Ghanaian men could be encouraged to screen for prostate cancer as part of routine medical examinations. For those who do not have regular medical check-ups, alternative strategies involving health professionals such as organising a PC awareness day, circulating health information of PC using short message service (SMS), posters, distribution of flyers and health education on radio and television are likely to promote screening. Health education should not be limited to information on signs and symptoms of PC but should include relevant information on screening and treatment options and the benefits of early detection and treatment. The complications of each screening examination should be carefully explained to discourage negative sentiments and propaganda which are likely to discourage prospective persons from screening. Research suggests that patients that comply with medical treatment and procedures for long-term conditions cope better when these conditions are managed in partnership with their doctors [42].

### Study limitations

The study was limited to only teachers of basic and secondary public schools; private schools were excluded because of lack of data on the number of private schools in the study area. Although male teachers in public schools are in the majority compared to teachers in private schools their views may not be representative of all teachers in the municipality. Nevertheless, our findings draw attention to behavioural factors that influence health-seeking behaviour for prostate cancer.

### Conclusion

Our study findings demonstrate good perceptions about PC and low outcomes with respect to screening behaviour, among an educated at-risk population, despite the extensive awareness programme by Ghana's health ministry. These findings indicate that PC public health programmes should create awareness and improve knowledge of PC among men across all socio-economic groups. This could result in an improvement in attitudes which may eventually help screening participation. These programmes should provide clarity on healthy lifestyles to prevent cancer and highlight the health benefits of early screening, detection and treatment, screening and treatment options and the peculiarities of each to inform health-seeking choices.

### Ethical approval

Ethical approval for the study was granted by the Ethical Review Committee of the Ghana Health Service. The number is GHS-ERC 110/02/15.

### Author contributions

BYA and MMA conceived and designed the study. BYA collected the data and conducted the analysis with inputs from MMA. BYA and MMA drafted the initial manuscript. BYA, DB, DYT and MMA critically revised drafts. All authors read and approved the final manuscript.

### Consent from the patient

Our study did not involve patients. Our respondents were more comfortable with providing verbal consent after the declarations on the consent form were read to them. Participation was voluntary. Biological samples were not taken from respondents.

### Conflict of interest

The authors declare that they have no competing interests.

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### Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.afju.2016.12.003>.

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