

Assessment of Male Medical Students' Knowledge and Attitudes About Prostate Cancer and Screening at the University of Khartoum

Kamal Eldin Hussein Elhassan¹, Mohammed Eltag Mohammed²,
Nimat Hussein Elhassan², Abd Elgadir Alamin Altoum^{3,4}, Asaad MA. Babker^{3,4},
Ayman Hussien Alfeel^{3,4}, Ahmed L. Osman^{3,4}, Salah Eldin Omar Hussein^{3,4*}

¹College of Medicine, Bisha University, KSA

²College of Medicine, University of Khartoum, Sudan

³College of Health Sciences, Gulf Medical University, Ajman, United Arab Emirates

⁴College of Medical Laboratories Science, University for Sciences and Technology, Omdurman, Sudan

Abstract

Background: Prostate cancer (PC) is the most common cancer among men in Sudan. It was ranked fourth among all cancer treatment centers in Khartoum. This study aimed to assess knowledge and attitude toward PC among male medical students in their final and semifinal years at the University of Khartoum.

Methods and Results: A descriptive cross-sectional online survey was conducted at the University of Khartoum (Faculty of Medicine) on semifinal and final-year male medical students from March 2022 until May 2022. Data were collected from medical students, using a standardized, pretested, coded questionnaire that contained close-ended questions. The questionnaire was distributed online to the medical students using Google Forms. Knowledge levels were determined using 10 questions on risk factors, signs and symptoms, prevention, treatment, and complications of PC. A total of 131 participants received questionnaires, and the response rate was 100%. The results are presented in chronological order in the way they were analyzed, starting with sociodemographic characteristics of the participants, sources of information on PC, knowledge levels (low, medium, and high) of PC, and attitude levels (positive, negative) relating to the year of study. All medical students in the last 2 years have heard about PC, and medical students overwhelmingly (88.5%) believe that early detection of PC through screening improves survival. Almost all the respondents in our study indicated their willingness to go for PC screening (87.8%), and the rest of the respondents' attitudes about the importance of PC and treatment were positive.

Conclusion: Most students have sufficient knowledge about prostate cancer, its risk factors, complications, and treatment. Medical students are an important population in studying the determinants of screening for prostate cancer. (*International Journal of Biomedicine*. 2022;12(4):661-666.).

Keywords: prostate cancer • attitude • knowledge • medical students

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Introduction

Prostate cancer (PC) is the most common cancer among men. Worldwide, an estimated 1,414,259 people were diagnosed with PC in 2020, according to cancer.net. Globally, PC is predicted to increase to approximately 1.7 million new cases and 499,000 deaths by the year 2030 because of the exponentially growing population and the large population of men who will be 65 years and older.⁽¹⁾ The worldwide

incidence of PC differs among various geographical regions and ethnic groups.⁽²⁾

A study performed by Adeloeyeon et al. on the incidence of PC in Africa showed that in 16 African countries, the PC incidence rate was 22–23.97 per 100,000 population, with a median incidence rate of 19.5 per 100,000 reported.⁽³⁾ PC cancer is the most common cancer among men in Sudan. It was ranked fourth among all cancer treatment centers in Khartoum. It had the highest age-specific rate in seniors

65 and older.⁽⁴⁾ The late presentation of cancer in Sudan, as in most developing countries, is a significant challenge to treating cancer in general, and PC in particular. Most patients present with advanced disease.

Furthermore, there is no agreement on effective strategies to reduce the risk of PC, nor on effective screening programs.⁽⁵⁾ Screening for PC with prostate-specific antigen (PSA) testing and digital rectal examination has been extensively researched; however, with the ability of early detection in curable stages not yet established, screening is still controversial, with potentially harmful outcomes.⁽⁶⁾ Generally, the higher the PSA level, the more likely a PC is.⁽⁷⁾ Men at a high risk of PC are advised to begin regular PSA screening earlier, and most of those with a family history of PC are of black African/Caribbean ancestry.⁽⁷⁾ The literature is inconsistent in PC association with PC screening knowledge, and the reasons for men refusing or attending screening are mainly unknown.⁽⁵⁾ According to a study conducted in Sudan, the geographic distribution of cancer patients includes 19.6% of patients from Khartoum state and the same percentage from North Kordofan state, indicating that these areas have a high incidence of cancer diseases.⁽⁸⁾

This study aimed to assess knowledge and attitude toward PC among male medical students in their final and semifinal years at the University of Khartoum.

Materials and Methods

A descriptive cross-sectional online survey was conducted at the University of Khartoum (Faculty of Medicine) on semifinal and final-year male medical students from March 2022 until May 2022. Data were collected from medical students, using a standardized, pretested, coded questionnaire that contained close-ended questions. The questionnaire was distributed online to the medical students using Google Forms. A simple random sampling method was used to acquire the responses from the participants via the online distribution of Google Forms. The forms were sent by WhatsApp and phone number. After collecting Google Forms, we imported data into Excel to clean and prepare it for analysis. Sociodemographic characteristics were summarized in frequencies and percentages. Knowledge levels were determined using 10 questions on risk factors, signs and symptoms, prevention, treatment, and complications of PC. Each participant who could answer any of the questions from 1 to 10 was assigned a score of 1, and zero for a “no” or “don’t know” answer. The overall score was calculated for all 10 knowledge questions for each person. The maximum score was 10; any individual who had a score of 1-3 was categorized as having low knowledge, any individual who had a score of 4-7 was categorized as having medium knowledge, and any individual who had a score of 7 and above was categorized as having high knowledge. Attitudes regarding PC were assessed using 10 statements on a 3-point Likert scale: agree - 1, don’t agree - 0, and don’t know - 0. 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. Out of a maximum score of 10, each

participant who scored 7 and above was classified as having a positive attitude and each participant who scored 6 and below was classified as having a negative attitude. Statistical analysis was performed using statistical software package SPSS version 25.0 (Armonk, NY: IBM Corp.).

Results

A total of 131 participants received questionnaires, and the response rate was 100%. The results are presented in chronological order in the way they were analyzed, starting with sociodemographic characteristics of the participants, sources of information on PC, knowledge levels (low, medium, and high) of PC, and attitude levels (positive, negative) relating to the year of study. The mean age of the participants was 23.96±0.10 years. A total of 40 participants came from a rural area, and 91 came from an urban area; most respondents (n=92) live with their families. Moreover, most of the respondents (n=93) indicated their father’s education level as higher (university) and above, and their mother’s education level - as higher and above indicated by 79 participants (Table 1).

Table 1.

Demographic characteristics of respondents, the fifth- and sixth-year medical students.

Characteristics		Year of study		Total
		Fifth (batch 93)	Sixth (batch 92)	
Area	Rural	22	18	40
	Urban	49	42	91
Residency	Dormitory	13	18	31
	Other, Specify	2	2	4
	With family	54	38	92
	With relatives	2	2	4
Father’s education	Elementary	1	2	3
	High school	12	13	25
	Intermediate	5	3	8
	Not educated	2	0	2
	Higher & above	51	42	93
Mother’s education	Elementary	3	2	5
	High school	19	19	38
	Intermediate	2	3	5
	Not educated	4	0	4
	Higher & above	43	36	79

Observed results showed that most respondents (104/79.4%) were non-smokers. Among cigarette smokers

(n=27), about 44.4% of the respondents reported that they smoked between 5 and 10 cigarettes per day, while about 4% smoked more than 10 cigarettes per day (Figure 1).

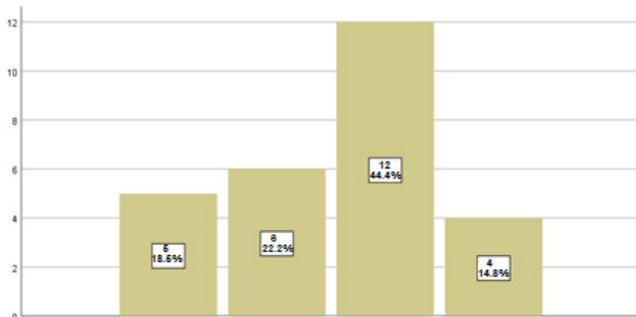


Fig. 1. The number of cigarettes smoked per day.

A total of 40(30.53%) respondents reported having a family history of PC. Respondents who have heard about PC indicated the following sources of information: TV (25/19.1%), social media (52/39.7%), lectures (122/93.1%), health pamphlets (32/24.4%), male dinners (10/7.6%), and others (11/8.4%) (Table 2).

Table 2.

Sources of information about PC.

Source of information	(n)	(%)
Social media	52	39.7%
Lectures	122	93.1%
Health pamphlets	32	24.4%
TV	25	19.1%
Male dinners	10	7.6%
Others	11	8.4%

Table 3.

Distribution of respondents' responses on knowledge about PC.

Questions and Statements	Yes		No	
	(n)	(%)	(n)	(%)
Heard about PC	131	100	0	0
Could identify what PC is	124	94.7	7	5.3
Could identify risk factors	124	94.7	7	5.3
Risk factors causing PC could be reduced	109	83.2	22	16.8
Could identify how the risk factors could be reduced	91	69.5	40	30.5
Could identify early warning signs of PC	96	73.3	35	26.7
Early detection of PC could increase the chances of survival	116	88.5	15	11.5
PC could be treated	107	81.7	24	18.3
Could identify ways to treat PC	107	81.7	24	18.3
Could identify complications of PC	121	92.4	10	7.6

Respondents who knew what PC is - 124(94.7%) (Table 3) were all able to identify the risk factors: most respondents indicated age (98.4%), family history (88.7%), and cigarette smoking (87.1%) as the most common risk factors for PC.

A total of 109(83.2%) respondents were positive that risk factors causing PC could be reduced, and 91(69.5%) could identify how the risk factors could be reduced. Most respondents (90/68.7%) identified periodic medical check-ups and better health care (90/68.7%) as the best approach to lowering PC risk. Most respondents (96/73.3%) knew the warning signs of PC, with the majority stating difficulty urinating (95/72.5%) and pain in the groin (6/4.58%) as warning signs. A total of 116(88.5%) respondents were positive that early detection could increase the chances of survival. Respondents who were positive that PC could be treated were 107(81.7%), all of whom could identify ways to treat PC (Table 3).

Almost all the respondents in our study indicated their willingness to go for PC screening (87.8%), and the rest of the respondents' attitudes about the importance of PC and treatment were positive (Table 4).

The scores were coded and summed up to provide results for participants who had positive and negative attitudes toward PC; 90(68.7%) respondents displayed a positive attitude toward PC screening (Table 5).

The associations between levels of knowledge about PC and sociodemographic factors, family history of cancer, and smoking attitude are presented as high knowledge, medium knowledge, and low knowledge. Overall, the level of knowledge of fifth-year and sixth-year students was as follows: low (0% and 1.7%, respectively), medium (28.2% and 15%, respectively), and high (71/8% and 83.3%, respectively) (Tables 6 and 7).

The levels of attitude, sociodemographic characteristics, family history of cancer, and smoking attitudes are presented as positive and negative (Table 8).

Table 4.**Respondents' attitudes about the importance of PC and treatment.**

Statement	Agree		Don't know		Don't agree	
	n	(%)	n	(%)	n	(%)
PC is only a problem for males of advancing age.	97	74.0	7	5.3	27	20.6
It is important to screen for PC.	117	89.3	5	3.8	9	6.9
Screening for PC can be painful.	24	18.3	38	29.0	69	52.7
Screening for PC is embarrassing.	44	33.6	13	9.9	74	56.5
Screening for PC can aggravate the disease.	10	7.6	13	9.9	108	82.4
Screening for PC will help me to be healthy.	106	80.9	12	9.2	13	9.9
Screening for PC is beneficial and will settle any ambiguities.	101	77.1	12	9.2	18	13.7
Regular examination for PC is expensive.	25	19.1	51	38.9	55	42.0
Willingness to go for PC screening.	115	87.8	3	2.3	13	9.9
I would accept any treatment if I were diagnosed with PC.	120	91.6	5	3.8	6	4.6

Table 5.**Attitude levels toward PC screening**

Attitude	(n)	(%)
Positive	90	68.7
Negative	41	31.3
Total	131	100

Table 6.**Knowledge levels (low, medium, and high) of PC.**

Level	(n)	(%)
High	101	77.1
Medium	29	22.1
Low	1	0.8
Total	131	100

Table 7.**Levels of knowledge about PC, sociodemographic characteristics, family history of cancer, and smoking attitude.**

Characteristics		Levels of knowledge			P-value
		High (n)	Low (n)	Medium (n)	
Year of study	Fifth-year students	51	0	20	0.229
	Sixth-year students	50	1	9	
Area	Rural	36	0	4	0.066
	Urban	65	0	26	
Residency	With family	70	1	21	0.996
	Dormitory	25	0	6	
	With relatives	3	0	1	
	Other	3	0	1	
Father's education	Not educated	1	0	1	0.911
	Elementary	3	0	0	
	Intermediate	5	0	3	
	High school	20	0	5	
	Higher & above	72	1	20	

Table 7.**Levels of knowledge about PC, sociodemographic characteristics, family history of cancer, and smoking attitude (continued).**

Characteristics		Levels of knowledge			P-value
		High (n)	Low (n)	Medium (n)	
Mother's education	Not educated	2	0	2	0.816
	Elementary	5	0	0	
	Intermediate	4	0	1	
	High school	31	0	7	
	Higher & above	59	1	19	
Smoking	Yes	21	1	10	0.371
	No	80	0	19	
Cancer history in family	Yes	30	0	10	0.882
	No	71	1	19	

Table 8.**Attitude statistics toward PC screening.**

Characteristics		Attitude statistics				
		Neg (n)	Pos (n)	OR	95% CI	P-value
Year of study	Fifth-year students	22	49	0.7226	0.3445-1.5159	0.7226
	Sixth-year students	19	41			
Area	Rural	13	27	0.9231	0.4158-2.0492	0.8440
	Urban	28	63			
Smoking	Yes	7	20	0.7206	0.2778-1.8694	0.5005
	No	34	70			
Cancer history in family	Yes	11	29	0.7713	0.3396-1.7515	0.5348
	No	30	61			

Neg- Negative; Pos-Positive.

Discussion

PC is the commonest cancer in elderly males. Screening and early detection is the primary strategy to combat this disease. In much the same manner that medical educators must teach students about the nuances and uncertainties of PC screening, future physicians will eventually have to integrate this imperfect knowledge into communicating with their patients.⁽⁹⁾ Our study was the first research among Khartoum University medical students surveyed regarding their knowledge and attitude concerning PC. Perhaps our most important finding is that all medical students in the last 2 years

have heard about PC, and medical students overwhelmingly (88.5%) believe that early detection of PC through screening improves survival.

A cross-sectional study performed at the Syrian Private University between December 2020 and January 2021 was aimed to determine the knowledge level of students concerning PC. The sample included students of all years from different faculties. The data was collected by a questionnaire to measure the awareness of PC. The total number of participants was 446 from all faculties, including males and females. The percentage of students who have heard about PC was 73.1%, and those who have heard about the PSA testing was 52%. As for students of medical faculties from different years, the percentage was 62.3%, compared to non-medical faculties, where the rate was only 19.5%, indicating a low-level knowledge among non-medical students.⁽¹⁰⁾

In a study performed by Marcella et al.,⁽⁹⁾ 1644 students were sampled at 20 medical schools using a web-based, cross-sectional survey to examine medical students' knowledge and beliefs concerning PC screening and specific determinants for their beliefs. Medical students generally were very optimistic about the benefits of screening for PC, and students' knowledge regarding PC screening shows significant improvement by class year.

Currently, results of more studies support the ability of the PSA test to detect early-stage PC,⁽¹¹⁾ but whether it should be used for screening continues to be debated,^(9,12,13) as illustrated by some recommendations.^(12,14)

Overall, the results of our study show that many of the respondents have a positive attitude toward PC as a disease in general, screening, as well as treatment. Almost all the respondents in our study indicated their willingness to go for PC screening (87.8%), and the rest of the respondents' attitudes about the importance of PC and treatment were positive.

In conclusion, most students have sufficient knowledge about prostate cancer, its risk factors, complications, and treatment. Medical students are an important population in studying the determinants of screening for prostate cancer.

Competing Interests

The authors declare that they have no competing interests.

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**Corresponding author: Salah Eldin Omar Hussein. Department of Medical Laboratory Sciences, College of Health Sciences, Gulf Medical University. Ajman, United Arab Emirates. E-mail: dr.salaheldin@gmu.ac.ae*
