

The estimating level of awareness and knowledge of colorectal cancer among students at Umm Al-Qura University health colleges

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ABSTRACT

Aim/Background: Colorectal cancer (CRC) encompasses a challenging health dilemma affecting millions of people globally and nationally. This study surveyed health-related students from different medical colleges in the Makkah region of Saudi Arabia. The knowledge and awareness of CRC were compared among students, and suggested methods were recommended to bridge this knowledge gap. *Methodology:* A survey-based study was carried out in August 22, 2021. All medical colleges in UQU were included. *Results:* The number of participants in the current study was 370. Their mean age was 22.3 ± 2.41 years. Overall, (65.7%) participants were males, and (34.3%) were females. The majority were 2th-year students. The predominantly represented college was the college of medicine (22.2%). Furthermore, there is a significant difference between students' level of awareness and their educational-demographical presentation (P-values, 0.000). *Conclusions:* early screening of CRC is an important goal to achieve to allow early detection to prevent serious consequences.

Keywords: colorectal cancer, health-related students, awareness, knowledge, Saudi Arabia.

1. INTRODUCTION

Colorectal cancer (CRC) ranks the third most common among its types and the fourth leading cause of cancer-related death in both genders globally (Saeed et al., 2018; Ferlay et al., 2010). However, in Saudi Arabia, according to Saudi Cancer Registry (SCR), CRC ranked first among the male population and third most common cancer among the female population since 2002 (Al-Maghrabi et al., 2016; Saudi Cancer Registry, 2012). The cancer statistics in Saudi Arabia emphasize that the mortality rate increased significantly in recent years (Al-Maghrabi et al., 2016; Elasbali et al., 2021; Saudi Cancer Registry, 2012). Therefore, CRC is a severe problem that can affect the middle-



aged and elderly population. CRC's survival is closely related to clinical and pathological stages at diagnosis (Barasheed et al., 2020; Alsanea et al., 2015).

Several risk factors are associated with the incidence of CRC as sedentary lifestyle, nutrition deficiency, and infections (Imran et al., 2016; Odegaard et al., 2013). Despite their importance certain risk factors, such as family history and age even more significant (Imran et al., 2016; McCaffery et al., 2003). Studies have shown that individuals with a positive family history have a greater risk of developing the disease by 2 to 3 times than individuals with no family history compared to people with no family history (Saeed et al., 2018; American Cancer Society, 2014).

A survey-based study in 2020 advised creating target-specific messages or teaching materials to increase participation in screening; it is necessary to understand the target group's level of knowledge, awareness, and attitudes (Alotaibi et al., 2020). Henceforth, this study aimed to assess the level of knowledge and awareness of CRC among health-related students at umm al-qura University in Makkah city, Saudi Arabia.

2. METHODS AND SUBJECTS

This cross-sectional study was conducted using a self-administered structured questionnaire at Umm Al-Qura University (UQU), Makkah city, Saudi Arabia. The study was carried out from July 2021 to August 2021 after obtaining ethical approval from UQU's research ethics committee in August 22, 2021.

A multistage stratification method and random sampling technique were implemented to stratify students based on gender and college. We focused mainly on six health colleges at UQU, namely, the College of Medicine, College of Applied Medical Sciences, College of Dentistry, College of Pharmacy, College of Nursing, and College of public health and health informatics. Any student belonging to one of these colleges who had completed the questionnaire in the study and provided informed consent was included in the study.

The sample size was calculated using Stat Calc of Open Epi software of Rollin School of Public Health, Emory University, USA (Sullivan et al., 2009). Accordingly, the minimum sample size to achieve a precision of $\pm 5\%$ with a 95% confidence interval is 353. The questionnaire was classified into two parts. We first collected the educational and demographic information of students. Then, we gathered general information on CRC awareness, knowledge, risk factors, and its detriments based on previously published article (Imran et al., 2016). The first question of the second part revealed the participants' awareness, in which the (yes) answer conclude that the student had a high level of awareness while the (no) answer completely that the student had no awareness.

In the second part of the questionnaire, each correct answer was given a score of one, while incorrect answers were given a score of zero. Modified Bloom's cut off value of 75% was used to classify participants' knowledge scores (Wildani et al., 2021). Therefore, total scores below 75% were considered to represent poor knowledge, while those over 75% represented good knowledge. The questionnaire was distributed to students during the month of August 2021 after the stratification process into randomly chosen classes. Any inquiry about the questionnaire from participants was answered on the spot by the investigators.

We entered the data on Microsoft XL spreadsheets. After checking for completeness and adjusting for minor typographical inaccuracies, data were transferred to a Statistical Package for the Social Studies 23 spreadsheet (IBM, Armonk, NY). Descriptive statistics were stated with percentages for categorical variables, mean \pm standard deviation for the continuous variables, and a p-value was considered significant if less than 5%. The categorical variables were compared using the Chi-square test.

3. RESULTS

A total of 370 students of health-related students were surveyed. (Table 1) shows students' educational demographic distribution. Approximately more than half of the participants were males (65.7%); however, female participants represent (34.3%). The mean age of participants was 22.3 ± 2.41 years; the 19-year-old age group was predominantly represented (20.8%). On the other hand, the 27- and 30-year-olds were the least represented both (0.5%). All age groups are described in (Table 1). Single participants (279, 75.4%) were considerably more represented than married participants. Students of the College of Medicine were the most represented among all the colleges (22.2%). Conversely, the least represented was the College of public health and health informatics (7%). Moreover, 2th-year students were predominant (147, 39.7%) compared with intern students (12, 3.2%). Concerning students' level of awareness of CRC, the majority were aware (232, 62.7%), while 138 (37.3%) were not aware. On the other hand, regarding students' level of knowledge, most had poor knowledge (72.4%) (Table 1 and Figure 1).

The past medical history of participants concerning ever diagnosed with CRC, students with negative past medical history represent (67.7%) compared with positive past medical history (32.3%). Furthermore, regarding family history, most students have a negative family history (62.2%) compared with students with positive family history (32.8%).

Table 1 Demographic data		
Variable	Category	Frequency (%)
Age (<i>mean [SD]</i>)	(22.3 [2.41])	
Age	19	77(20.8%)
	20	25(6.8%)
	21	29(7.8%)
	22	42(11.4)
	23	66(17.8%)
	24	60(16.2%)
	25	48(13%)
	26	13(3.5%)
	27	2 (0.5%)
	28	3(0.8%)
	29	3(0.8%)
30	2(0.5%)	
Gender	Male	243(65.7%)
	Female	127(34.3%)
	2 nd year	147(39.7)
	3 rd year	72(19.5)
	4 th year	73(19.7)
	5 th year	35(9.5%)
	6 th year	31(8.4%)
	intern	12(3.2%)
Collage	College of medicine	82(22.2%)
	College of applied medical sciences	70(18.9%)
	College of dentistry	53(14.3%)
	College of nursing	73(19.7%)
	College of pharmacy	66(17.8%)
	College of public health and health informatics	26(7%)
Marital status	Single	279(75.4%)
	Married	91(24.6%)
Ever heard about CRC	Yes	232(62.7%)
	No	138(37.3%)
Ever diagnosed with CRC	Yes	75(32.3%)
	No	157(67.7%)
Family history of CRC	Yes	76(32.8%)
	No	156(67.2%)
Knowledge scores	Good knowledge	64(27.6%)
	Poor knowledge	163(72.4%)

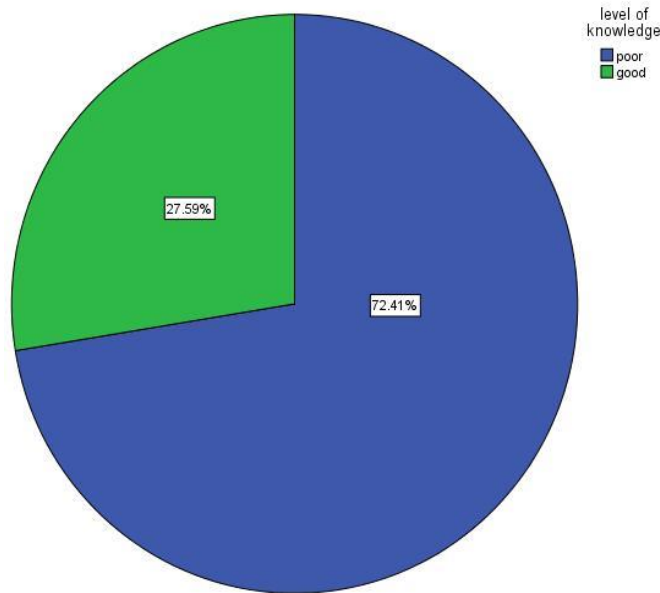


Figure 1 pie chart for level of knowledge

11-subgroups of questions aimed to assess the level of knowledge of CRC. The correct answer frequencies are provided in (Table 2). CRC knowledge varied among the subgroups associated with respondents’ demographic data, as described in (Table 3); there was a significant difference between participants’ age, gender, academic year, students’ College, and marital status (P-values, 0.000).

Table 2 Knowledge Concerning CRC among Participants

Question	Correct answer n. (%)
Do you think that colon cancer is a preventable disease	84(36.2%)
Do you think that there are tests to help in detecting colon cancer early	101(43.5%)
Do you think that chronic abdominal pain is one of the symptoms related to colon cancer?	120(51.7%)
Do you think that fever and weight loss one of the symptoms that related with colon cancer	110(47.4%)
Do you think that blood in stool is one of the symptoms related to colon cancer?	110(47.4%)
Is the common affected age of colon cancer are the 40 years old and older	106(45.7%)
Do you think that colon cancer commonly found in Saudi Arabia	82(35.3%)
Do you think that chronic infection of the colon considered as risk factor for colon cancer	93(40.1%)
Do you think that family history influences the incidence of colon cancer?	112(48.3%)
Do you think that aging is one of the risk factors for colon cancer?	108(46.6%)
Do you think that obesity and lack of exercise are considered as a risk for colon cancer?	94(40.5%)

Table 3 Association between level of knowledge and Educational-Demographic data

Variable	Level of knowledge		P-VALUE
	Poor n (%)	Good n (%)	
Age			0.000*
19	5 (100.0%)	0 (0.0%)	
20	7 (53.8%)	6 (46.2%)	
21	14 (70.0%)	6 (30.0%)	
22	27 (90.0%)	3 (10.0%)	
23	25 (44.6%)	31(55.4%)	
24	38 (76.0%)	12 (24.0%)	
25	35 (87.5%)	5 (12.5%)	

26	11 (91.7%)	1 (8.3%)	
27	1 (100.0%)	0 (0.0%)	
28	3 (100.0%)	0 (0.0%)	
29	1 (100.0%)	0 (0.0%)	
30	1 (100.0%)	0 (0.0%)	
Gender			
Male	92 (60.9%)	59 (39.1%)	0.000*
Female	76 (93.8%)	5 (6.2%)	
College			
College of medicine	11 (100.0%)	0 (00.0%)	0.000*
College of applied medical sciences	45 (83.3%)	9 (16.7%)	
College of dentistry	26 (78.0%)	7 (21.2%)	
College of nursing	24 (38.1%)	39 (61.9%)	
College of pharmacy	48 (92.3%)	4 (7.7%)	
College of public health and health informatics	14 (73.7%)	5 (26.3%)	
Marital status			
Single	109 (63.7%)	62 (36.3%)	0.000*
Married	59 (96.7%)	2 (3.3%)	
Academic year			
2nd year	48 (46.2%)	56 (53.8%)	0.000*
3rd year	36 (94.7%)	2 (5.3%)	
4th year	45 (93.8%)	3 (6.3%)	
5th year	20 (100.0%)	0 (0.0%)	
6th year	17 (94.4%)	1 (5.6%)	
Intern	2 (50.0%)	2 (50.0%)	

4. DISCUSSION

This survey of health-related students at UQU in a western Saudi city suggested that the knowledge and awareness of CRC are reasonable still, could be improved. Limited studies were investigating health population knowledge concerning CRC (Alghamdi et al., 2021) compared with public health studies nationally (Al-Maghrabi et al., 2016; Barasheed et al., 2020; Imran et al., 2016). Up to our knowledge, this is the first study investigating CRC knowledge and awareness among health-related students in Makkah city, the kingdom of Saudi Arabia. Participants in the current study varied in age from 19 and 30 years. This is closely similar to age variation in two Saudi surveys in which participants' ages ranged from (18 and 25 years) and (18 and 29 years) respectively (Al-Maghrabi et al., 2016; Alotaibi et al., 2020).

In the present study, there were more male participants than female ones. This disagrees with many studies in which women represent a higher proportion than men (Al-Maghrabi et al., 2016; Barasheed et al., 2020; Imran et al., 2016; Alotaibi et al., 2020). On the contrary, limited studies show a higher proportion of male respondents (Alghamdi et al., 2021; Bagny et al., 2021). Single participants represented a higher proportion in the present study. This corresponds to one Jordanian study in which single participants represented 97.8% of the sample (Bagny et al., 2021). On the other hand, this disagrees with two studies in which married participants represented a higher proportion (52.9%), (71.5%) respectively (Barasheed et al., 2020; Alghamdi et al., 2021).

There was noticeable conjunction between participants who had heard about CRC in the present study; this strongly agrees with the previous Kuwaiti study, which most participants were aware of CRC (75%) (Saeed et al., 2018). However, this disagrees with one Saudi study in which unaware participants were predominantly high (Alghamdi et al., 2021). Furthermore, our study found that the majority of participants had poor knowledge of CRC. This is closely similar to the Jordanian study finding that 65.1% of participants had poor knowledge (Rababah et al., 2018). The current study showed a significant variation in participants' health collage, which agrees with a previous Jordanian survey (Rababah et al., 2018).

Concerning CRC knowledge among participants, most questions were incorrectly answered, representing less than (50%); however, when they asked about chronic abdominal pain as one of the symptoms related to colon cancer, more than (50%) was answering correctly. This agrees with one Saudi study in which more than (50%) of the students were acknowledged (Alotaibi et al., 2020). The health literacy rate of the public is related to disease knowledge, especially cancer knowledge and screening programs; the lower the literacy rate, the less knowledge about screening tests (Imran et al., 2016; Stegeman et al., 2013). For example, a population-based study conducted in Saudi Arabia found less knowledge about CRC screening programs, worrying symptoms, and risk factors; however, educated people and women are more knowledgeable (Imran et al., 2016; Almadi et al., 2015).

Study limitations

The research results are not illustrative of all the universities of Saudi Arabia as it's conducted in one university. In addition, this study needs additional investigation among all health populations in Saudi Arabia. Moreover, all responses are self-reported, and we do not have any tools to evaluate the effectiveness of the answers. Furthermore, the majority of our respondents were junior health students, which explained the poor level of knowledge compared to senior students. Therefore, our study results are not descriptive among all students; thus, need for further investigation.

5. CONCLUSION

CRC is a serious disease that can affect both middle-aged and elderly individuals, and its prognosis is determined by the clinical and pathological stage of the disease at the time of diagnosis. Our findings indicate that most participants had a poor knowledge of CRC. In addition, there was a significant variation between students' age, gender, academic year, collages, and marital status in association with knowledge of CRC. Moreover, additional intensified awareness strategies among the public and general population are obligatory to safeguard reliable information to detect, manage, and prevent serious consequences.

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Ethical approval

The study was approved by the Medical Ethics Committee of Umm Al-Qura University (ethical approval code: HAPO-02-K-012-2021-08-718).

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Conflict of Interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are presented in the paper.

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