

Original Research Article

Public awareness and knowledge about colorectal cancer screening in Saudi Arabia

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ABSTRACT

Background: Colorectal cancer (CRC) is a significant global health concern, ranking second among women and third among men in cancer diagnoses worldwide. In Saudi Arabia, CRC has been the most prevalent cancer in men since 2002. Despite rising incidence rates, public awareness and understanding of CRC screening remain critical for early detection and effective intervention. This study assesses public awareness and knowledge regarding CRC screening in Saudi Arabia.

Methods: A cross-sectional, questionnaire-based study was conducted using Google forms to gather data from Saudi Arabia's overall population from 5th December 2023 to 20th December 2023. The online questionnaire included demographic information and assessed participants' knowledge, awareness, and attitudes toward CRC screening. Data analysis was performed using SPSS version 26.

Results: Of the 461 participants, 61.4% were female, 38.6% were male, and 53.1% were 50 or older. Only 13.1% of participants aged 50 and above had undergone CRC screening. A significant proportion (55.1%) in other age groups remained undecided about future screening. Lack of awareness (51.9%) was the primary reason for refusal or hesitation. Participants exhibited limited awareness of CRC's global prevalence (50.3%) and the recommended screening age (36.4%). Significant associations were found between awareness levels, gender, education, and age groups.

Conclusions: The study highlights a substantial need for more awareness and knowledge about CRC screening in Saudi Arabia, particularly among specific demographic groups. Targeted awareness campaigns are crucial, focusing on increasing knowledge about risk factors, symptoms, and the importance of early screening.

Keywords: Gastroenterology, Colon tumor, Colon cancer prevention, Public knowledge, Public health education

INTRODUCTION

According to the GLOBOCAN database maintained by the world health organization, CRC is the third most diagnosed form of cancer worldwide.¹

Over 1.9 million new cases of CRC were diagnosed worldwide in 2020, with an estimated 930,000 fatalities. By 2030, the global burden of CRC is anticipated to rise by 60 percent to more than 2.2 million new cases and 1.1 million fatalities.²

Since 2002, CRC has been the most prevalent malignancy among men and 3rd most prevalent among women in Saudi Arabia, with average ratio of 116 to 100. Incidence of CRC has increased in Saudi Arabia since year 2000 but has stabilized at a plateau in recent years. It is estimated that 3,277 new cases were diagnosed in 2020.^{2,3}

Randomized controlled trials provide evidence of the effectiveness of CRC screening in terms of incidence and mortality rate reduction. The effectiveness of screening is susceptible to variation based on the screening method utilized, screening compliance, and other variables.⁴⁻¹⁰

Medical organizations and clinical practice guidelines recommend screening for populations at ordinary risk.¹¹⁻¹³

In Saudi Arabia, the Saudi gastroenterology association and Saudi oncology society recommend CRC screening for asymptomatic, average-risk individuals to be initiated at the age of 45. If colonoscopy is unavailable, flexible sigmoidoscopy should be considered every 5 years in conjunction with an annual guaiac fecal occult blood test (gFOBT) or fecal immunochemical test (FIT). FIT is more desirable than gFOBT. Circulating tumor cell (CTC) is the least recommended modality. All CRC screening modalities should be performed in centers with a high patient volume and clinical personnel with the necessary skills and experience.³

The objective of this study is to assess the level of public awareness and knowledge on CRC screening in Saudi Arabia. The aim is to determine whether there is a need to increase awareness and, if necessary, target a specific community.

METHODS

The study is cross-sectional, utilizing questionnaires as the primary data collection method. The study's target sample consists of the entire population of Saudi Arabia. The online questionnaire was created using Google Forms and distributed electronically through several social media platforms. Participants were required to give informed consent after being informed about the study's objectives and potential benefits. The survey was disseminated through multiple social media channels in Saudi Arabia between 5 December 2023 and 20 December 2023.

Criteria for inclusion were adult residents of Saudi Arabia of both genders who are over 18 years old. The criteria for exclusion are healthcare providers and participants who have had CRC at some point in their lives.

The survey has a series of questions, which are presented in a multiple-choice format. These questions may require respondents to select a single response or many applicable answers. All inquiries were obligatory. The survey encompassed demographic information as well as general data pertaining to knowledge, awareness, and attitudes toward colon cancer screening. A set of nine questions was presented to assess an individual's comprehension of CRC risk factors. These questions included items such as smoking, alcohol consumption, family history of colon cancer, obesity, lack of physical exercise, consumption of a low-fiber diet, consumption of a high-meat diet, age above 70 years, and the presence of chronic colonic disease. Every correct answer resulted in the participant receiving one point. The cumulative sum of these points has evaluated the participants' degree of knowledge. In order to measure knowledge regarding CRC symptoms, participants were questioned about five commonly observed symptoms: anemia, abdominal discomfort, abdominal mass, unexplained weight loss,

and changes in bowel habits. These symptoms were evaluated in the same manner as the risk factors. The questionnaire was initially formulated in Arabic and, after that, translated into English for publication.

The data will be gathered using a spreadsheet, followed by further analysis employing the SPSS software, version 26.¹⁴

The study's minimum required sample size was calculated using OpenEpi version 3.0, accounting for a population of around 32 million individuals.¹⁵ With a confidence interval (CI) level set at 95%, the computed sample size for the study was 385 participants.

The presentation of numeric data will be in the form of mean $\pm$ SD, or as median and range, depending on the distribution characteristics of each variable. Categorical variables will be represented using percentages. The chi-squared test is a statistical method used to analyze the association between categorical variables.

Ethical approval was sought from the faculty of medicine ethics committee at Umm Al-Qura university. The commencement of any study activity was contingent on the acquisition of permission from the biomedical research ethics committee of Umm Al-Qura university.

RESULTS

Upon gathering the replies, a grand total of 461 individuals participated, with 283 (61.4%) females and 178 (38.6%) males. Over half of the participants, precisely 53.1%, are aged 50 years or older. Concerning education, the majority of the respondents possess a bachelor's degree (62.9%), while only a small percentage (2.2%) still need to complete their high school education. Out of the participants who are 50 years old or above, only 32 (13.1%) responded affirmatively when asked if they have undergone CRC screening. Among the remaining age groups, 55.1% of the respondents have yet to decide whether they will undergo colorectal screening when they reach the recommended age. Of these groups, 16.2% have no intention of doing the screening, while 28.7% express a desire to do so. The majority of the respondents (51.9%) who did not intend to undergo the screening were unaware of the existence of the screening program. When asked about the recommended age to do the colorectal screening, only 36.4% of the respondents indicated that the optimal age to begin screening for CRC is 45 years old. Figure 1 demonstrates that a minimum (12%) of female participants is willing to undergo CRC screening, while a significant 59.4% are unwilling to do so, and 28.6% have yet to decide. On the other hand, in the male participants' group, a higher percentage of the participants were willing to undergo the screening (33.7%). Those who are rejecting the screening remain the majority; 44.9% and 21.3% are still determining. When considering gender, there is a statistically significant relationship between gender and intention to undergo colorectal screening ($p < 0.001$). Over

half of the participants (51.9%) attribute their refusal or hesitation towards undergoing the screening to their lack of awareness of its existence. Additional reasons are presented in Table 1.

Table 1: Reasons why participants refused screening for colorectal cancer

Reasons	N	Percentage (%)
I did not know it exists	190	51.9
I find it embarrassing	25	6.8
Worried about complications	23	6.3
Worried about the results	63	17.2
Financial reasons	49	13.4
I do not believe it is necessary	16	4.4
Total	366	100

Fifty percent of the respondents are aware that colorectal cancer is among the most common types of cancer globally. Meanwhile, 43% of the participants are uncertain about its prevalence, and a small minority are unaware of its common occurrence. The collected data showed a statistically significant correlation between the level of education and the awareness of the prevalence of colorectal cancer ($p=0.008$).

Regarding the prevention of colorectal cancer, 52.3% of the participants are aware that colon cancer can be prevented, while 45.6% lack this knowledge. Only a minority were confident that there were no preventative measures. When asked about the possibility of treatment, most respondents, precisely 57%, have affirmed that colon cancer can be treated, while 39% are uncertain. Merely 3% have responded negatively to the question about the possibility of treatment.

In order to evaluate the understanding of the known risk factors of developing colorectal cancer, one point was given for each correct response to a question about a risk factor. Nine points were granted to those who correctly identified all known risk factors.^{16,17} Table 2 displays the participant's responses to each risk factor. Over 60% of the participants recognize the presence of colorectal diseases such as inflammatory bowel disease (IBD) and alcohol intake as risk factors. In comparison, less than 30% of the respondents identify old age and heavy meat consumption as risk factors. The collected data showed that 80.9% of the participants scored only five points or less, while the mean score was 3.75. However, by dividing the outcomes based on gender, it becomes evident that the average score for males (4.2) surpasses that of females (3.45), indicating a significant correlation between gender and awareness of risk factors ($p<0.001$). Figure 2 demonstrates a significant correlation between the level of education and knowledge of the risk factors ($p<0.001$). Individuals with higher educational qualifications possess a higher level of knowledge than other groups, even though the average score within this category is 5.04 points. Analysis of the age group's

knowledge about risk factors reveals that participants over 50 exhibit the lowest level of knowledge (Figure 3). A statistically significant relationship exists between the age of the participants and their knowledge of the risk factors associated with colon cancer ($p<0.001$).

The assessment of knowledge of colorectal cancer symptoms involved questioning participants about six specific symptoms associated with the disease. Each correct response was awarded one point, resulting in a maximum score of six points. Table 3 presents the participants' responses to each symptom. A mere 9.3% of the participants achieved a score of 6 points. The average score for knowledge of the symptoms was 3.05. The mean for male participants was 3.2, whereas the mean for female participants was 2.95, by sorting results by gender.

Consequently, the association between males and females in knowledge about colorectal cancer symptoms is statistically insignificant ($p=0.08$) despite the disparity in knowledge about risk factors. However, the education level significantly affects knowledge about symptoms ($p<0.001$). Figure 4 illustrates a positive correlation between education level and participant knowledge about the symptoms, indicating that as education level increases, participant knowledge about the symptoms of colorectal cancer also increases. Figure 5 illustrates that both the age groups between 40 and 49, as well as those above 50 years old, exhibit the lowest levels of knowledge about the symptoms of colorectal cancer. There is a statistical significance between age and knowledge of the symptoms ($p<0.001$).

Table 2: Participants' knowledge of the risk factors of colorectal cancer.

Risk factors	N	Percentage (%)
Alcohol intake	282	61.2
Low fiber diet	201	43.6
High meat diet	98	21.3
Family history	202	43.8
Obesity	140	30.4
Age above 70	113	24.5
Colon disease e.g. IBD	295	64.0
Inactivity	161	34.9
smoking	235	51.0

Table 3: Participants' knowledge of the symptoms of colorectal cancer.

Symptoms	N	Percentage (%)
anemia	99	21.5
abdominal pain	245	53.1
Blood with stool	352	76.4
Abdominal mass	237	51.4
Unexplained weight loss	223	48.4
Change in bowel habits	255	55.3

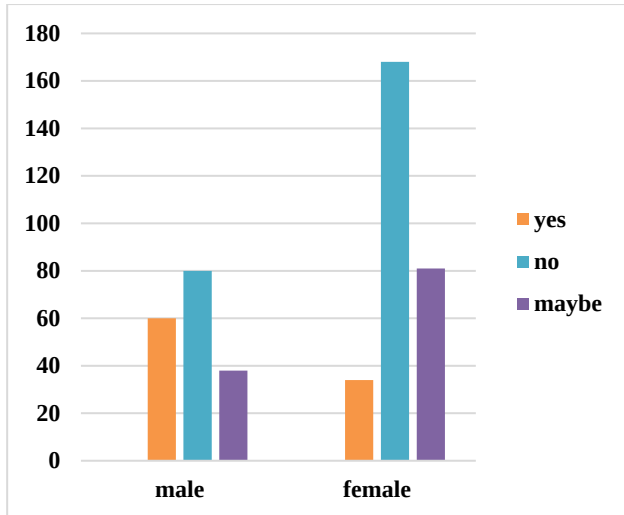


Figure 1: Participants' intention to undergo colorectal screening, comparing male and female participants.

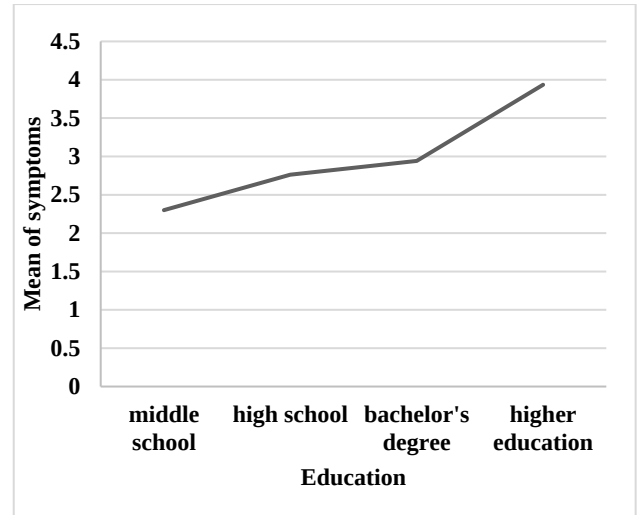


Figure 4: The relationship between education level and mean score of knowledge regarding symptoms.

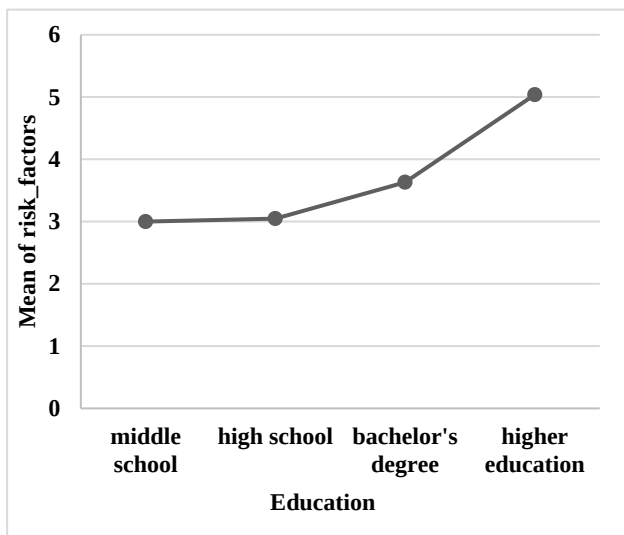


Figure 2: The relationship between education level and mean score of knowledge regarding risk factors.

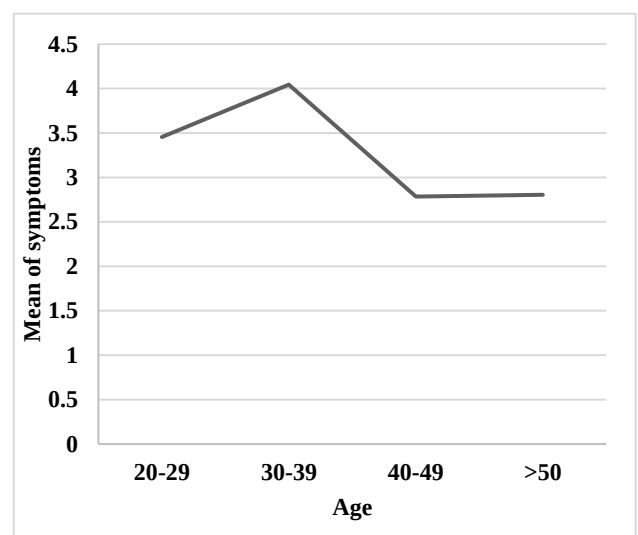


Figure 5: The relationship between age and the mean knowledge score regarding symptoms.

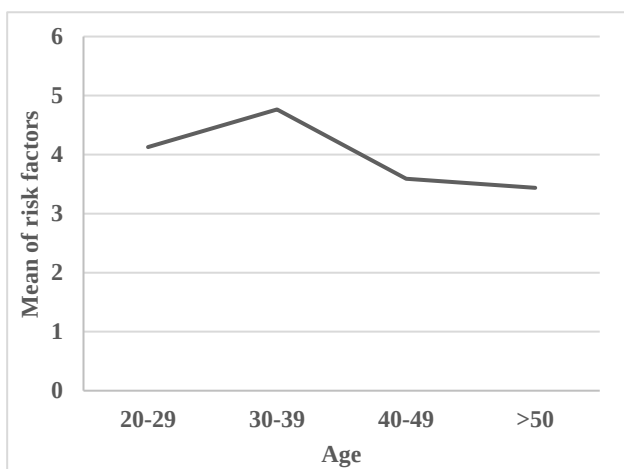


Figure 3: The relationship between age and the mean knowledge score of risk factors.

DISCUSSION

The study shows exciting data regarding the participants' knowledge, attitudes, and behaviors regarding colorectal cancer screening. There is a notable distribution between males and females, 61.4% and 38.6%, respectively, of 461 participants. The majority of the participants are aged 50 years or more, an important demographic factor that is relevant to colorectal cancer screening, as the recommended age to start screening in Saudi Arabia is 45 years of age.³ Furthermore, a large percentage of the participants had at least a bachelor's degree.

The research indicates that many participants who were supposed to undergo screening per the guidelines of the gastroenterology association and Saudi oncology society have yet to be screened. This highlights the necessity of raising awareness among these specific population groups

about the significance of colorectal screening. Other age groups have a significant hesitation to undergo colorectal cancer screening upon reaching the necessary age, with just 16.2% intending to participate in the screening program, while the majority decline to do the test. In these groups, providing a comprehensive explanation and promoting understanding is crucial, particularly for hesitant individuals. Previous studies in the Middle East have also shown poor contributions to the colorectal screening program.^{18,19}

The study indicates that a significant proportion of individuals of both genders are declining to undergo the test. However, it is noteworthy that female participants exhibit a higher refusal rate than males. A study in the United Kingdom revealed a similar observation, indicating that men are likelier to engage in the screening program than women.²⁰ Approximately 50% of the participants need to be made aware of the presence of the colorectal screening program. Therefore, awareness campaigns should prioritize both genders, with a particular emphasis on addressing the needs and concerns of females.

Recognizing the global prevalence of colorectal cancer is crucial for increasing public awareness. The study shows that only half of the participants are aware of the high incidence of colorectal cancer. This awareness is significantly linked to the level of education, suggesting the need for targeted educational campaigns for individuals with lower levels of education.

An essential factor in colorectal screening is determining the appropriate timing for participation in the screening process. Merely 36.4% of the participants know that the suggested age to commence screening in Saudi Arabia is 45 years, which is the recommended age to start screening by the gastroenterology association and Saudi oncology society.

Over half of the participants hold the belief that colon cancer can be prevented and treated. However, a significant proportion of the participants are unaware of the potential for prevention and treatment. The belief is that an unpreventable and incurable disease is causing many to reject screening since they perceive it to be burdensome and devoid of any advantages. When educating people about colon cancer, it is essential also to consider providing comprehensive information on prevention measures, treatment options, and the expected outcome.

The majority of participants have recognized only 50% of the established risk factors for colorectal cancer. Based on the gathered data, it can be concluded that the average score for awareness of risk factors is 3.75 in the female group and 4.2 in the male group. This indicates a significant deficiency in knowledge of the risk factors, particularly in relation to old age and heavy meat consumption. While men possess more excellent

knowledge than women regarding risk factors, there remains a noticeable deficiency in understanding the risk factors for both genders. Higher levels of education are associated with a greater understanding of the risk factor. The demographic most prone to lacking enough awareness about colorectal cancer risk factors consists of individuals aged 50 and above, as well as those with limited education.

Significant findings have emerged from the assessment of knowledge of the symptoms of colorectal cancer, revealing that around half of the respondents have correctly identified the most prevalent symptoms of colorectal cancer. However, almost 60% of the participants do not recognize anemia, a prominent and widely recognized symptom of colorectal cancer, as a potential symptom of colorectal cancer.¹⁷ Upon examining the overall outcome, 9.3% of the participants accurately identified all the symptoms. The average score for knowledge of the symptoms is 3.05 out of 6, indicating that approximately half of the colon cancer symptoms are unknown to the participant. The participants aged 40 and above need to improve their knowledge of the symptoms. Furthermore, the level of education has a beneficial impact on knowledge of symptoms. Similarly, several studies in the Middle East region have revealed a concerning deficiency in knowledge regarding colorectal cancer and its screening.^{18,19,21} Moreover, in the United Kingdom, research has revealed that the degree of knowledge regarding colorectal cancer is inadequate, indicating a need to improve awareness and understanding of this disease.²²

Based on these findings, it is important to pay special attention to the middle-aged and elderly population, as well as individuals with limited education, while increasing awareness in the community.

In conclusion, a significant rise in the awareness of colorectal cancer is essential, as there is an apparent deficiency in knowledge about the disease, particularly regarding screening. Particular emphasis should be placed on the middle-aged and older population, as well as persons with limited education, to enhance community awareness.

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Ethical approval: The study was approved by the Institutional Ethics Committee Biomedical Research Ethics Committee of Umm Al-Qura University (Approval No. HAPO-02-K-012-2023-10-1792).

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