



Perceived Risk of Colorectal Cancer and Barriers to Screening among Adult Saudi: A Population-Based Study

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ABSTRACT

Objectives: Aimed to assess the level of awareness and the perceived factors about CRC screening among adult Saudi. **Methodology:** A Population-based, cross-sectional study. **Participants:** Adult Saudi general population. **Results:** Among 1612 respondents 1568 eligible were included. Neither gender ($p=0.51$), level of education ($p=0.72$), income ($p=0.22$), nor marital status ($p=0.88$) were found to be statistically associated with willingness to undergo CRC screening. With regards to the awareness related to CRC incidence and risk such as “leading cause death due to CRC” “increased age is associated with increased risk of developing CRC” “both men and women are at risk for getting CRC” “People with a family history of CRC are at higher risk” and “most CRCs begin as a growth in the colon or rectum” was found to be 29.5%, 31.5%, 37.7%, 28.8%, and 22.5% respectively. 12.7% of the respondents were agreed to be routinely screened for CRC at age 45, 22.4% can identify the required frequency of CRC screening. Those who had not heard about CRC screening methods were female and were young ($p=0.003$); with low educational level ($p<0.001$). (61%) were ready to undergo CRC screening if recommended by their medical doctor while 16% of them said they would never think of doing CRC screening ($p<0.0001$). Regarding CRC screening options, 53% select FOBT and 39% preferred colonoscopy ($p<0.0001$). (57.0%) revealed that their “Fear of finding cancer” was a barrier to screening. **Conclusion:** Majority of our respondents shows insufficient awareness regarding CRC screening guideline and CRC screening methods.

Keywords: Colorectal cancer, Saudi, Risk factors, Screening

INTRODUCTION

Colorectal Cancer (CRC) is considered one of the prevalent, lethal, and avoidable kinds of cancer [1]. It is the highest occurring malignancy among the five major gastrointestinal cancers and ranks as the third most common cancer in both sexes worldwide, constituting about 8.2% and 8.8% of all new cancer cases and deaths respectively. According to the Surveillance, Epidemiology, and End Results (SEER) Program Cancer statistics 2020 and according to ICAR, WHO, GLOBOCON 2018, Saudi Arabia was reported to be the second among gulf countries with the highest Age-Standardized Incidence Rates (ASIRs) due to CRC in both sexes with 3,564 (14.6%) new cases [2-6]. Among Saudi males, colorectal cancer is the top most common cancer with 2,405 (19.6%) new cases for all ages, whereas it the third most common cancer among Saudi females with 1,159 (9.5%) new cases for all ages [7].

Screening and early discovery of CRC using methods and modalities like Fecal Occult Blood Test (FOBT), colonoscopy, flexible sigmoidoscopy, and CT colonography were considered as essential preventive approaches and has been confirmed to be operational in improving, thus decreasing the death and morbidity among individuals with CRC especially those aged 50-75 years, and the awareness of the screening programs among the general population is significant. In addition, it was described that the consumption of green tea can lead to the inactivation of colon cancer cells by re-activate genes in carcinogen-induced rodent models of colon cancer, which eventually led to the defeat of intestinal tumor genesis [8-13]. Several studies have looked at the awareness, perception, and screening utilization

regarding CRC had been done in various countries including Saudi Arabia with resultant that there is a low level of awareness [14-29]. Furthermore, certain difficulties to carry out CRC screening have been described, such as fear of the test results, absence of awareness of symptoms, and not recommend by a doctor. Hence, our study aimed to assess the level of awareness and the perceived factors about CRC screening among the Saudi general public.

MATERIAL AND METHODS

Study Design, Setting, and Population

A population-based, cross-sectional study was conducted during the period from April to 30 May 2020. Participants were randomly selected and recruited from the adult Saudi general population targeting those who were older than 18 years. Participants were voluntarily enrolled in the study. The inclusion criteria included Saudi males and females aged ≥ 18 years. Those with a current or previous diagnosis of CRC, those with any large bowel disease, and those who did not give consent were excluded from our study.

Data Collection

A convenience sampling technique was used to obtain our study population who were randomly selected. A self-administered survey was used to collect data, the survey was designed by the principal author, and all questions were adapted from previous validated published studies and intended to collect the information from participants using Arabic language to make it easy for the respondents. Awareness among our study group regarding CRC risk factors and their perception and barriers towards screening modalities were explored. The simplicity of the questions was checked and the reliability of the instrument was tested through a pilot study of 30 adults Saudi. The purpose of the study was explained to all participants after giving consent to be included in the study.

Study Tool

The questionnaire used for data collection from our respondents was designed to include the following data: **Socio-demographics:** Gender, age in years, residence, family income and educational status, and Health insurance.

Personal information relevant to CRC: CRC awareness, CRC among family and relatives.

Items related to awareness of incidence, risk factors, and importance of CRC screening and items related to awareness of barriers they perceived towards CRC screening (fecal occult blood test, flexible sigmoidoscopy, and colonoscopy). The study questionnaire followed the constructions of the Health Belief Model as a guide for validity [30].

Data Analysis

Data were analyzed using Statistical Software Package (SPSS), version 16.0. Z-test was used to compare the results among the two groups. p-value less than 0.05 will be considered as statistical significance to compare the effect of categorical data between the two groups.

RESULTS

A total of 1612 questionnaires were filled by our respondents, 44 of them were excluded and 1568 eligible respondents were included in the study and analyzed. Our study sample constitutes 1568 Saudi adults consisted of 797 males and 771 females with the age range of 18 to 88 years (mean=55, SD=10.9). Socio-demographic characteristics of the study participants are shown in Table 1 which shows almost half (50.8%) of respondents were male, with a mean age of 41.0 ± 10.7 (Range=18-75) years, and (83.8%) of the respondents were between the ages group of 18-45years and (69.7%) were married. Most (62.7%) of the participants live in the Albaha area. Of the surveyed 80.6% had completed university or postgraduate studies and about half of participants (54.6%) reported enough income and minority (18.5%) of participants lacked health insurance? Most participants reported no family history of CRC (87.2%). The majority of the respondents had heard about CRC (81.6%). Only 3.6% reported a history of CRC in a first-degree relative. Neither gender ($p=0.51$), level of education ($p=0.72$), income ($p=0.22$), nor marital status ($p=0.88$) were found to be statistically associated with willingness to undergo CRC screening.

Table 1 Socio-demographic characteristics of the respondents

Characteristics	Male (n=797; 61.7%)	Female (n=771; 38.3%)	Total (N=1568)	p-value
Age (mean age 41.0 ± 10.7)				
Up to 44 years	657 (82.4%)	634 (82.2%)	1291 (82.3%)	0.032
45 years and more	140 (17.6%)	137 (17.8%)	277 (17.7%)	
Marital Status				
Married	619 (77.7%)	474 (61.5%)	1093 (69.7%)	<0.0001
Single	178 (22.3%)	297 (38.5%)	475 (30.3%)	
Educational Level				
Up to Diploma	151 (19.0%)	153 (19.8%)	304 (19.4%)	0.002
University and above	646 (81%)	618 (80.2%)	1264 (80.6%)	
Income				
Low			169 (10.5%)	<0.0001
Intermediate			880 (54.6%)	
High			643 (39.9%)	
Health insurance				
Yes			1314 (81.6%)	<0.0001
No			298 (18.5%)	
Aware of CRC	619 (62.2%)	380 (61.2%)	999 (61.9%)	>0.05
Family history of CRC	136 (13.7)	70 (11.3%)	206 (12.8%)	<0.0001

Awareness of Incidence and Risk Factors of CRC

With regards to the awareness of our respondents related to CRC incidence and risk such as “CRC was a leading cause death due to cancer” “increased age is associated with increased risk of developing CRC” “use of fast foods” “both men and women are at risk for getting CRC” “People with a family history of CRC are at higher risk” and “most CRCs begin as a growth in the colon or rectum” was found to be 29.5%, 31.5%, 37.7%, 28.8%, and 22.5% respectively as shown in Figure 1. Those showing a correct answer for the above-mentioned items had significantly higher levels of educational achievement as matched to those providing a wrong answer ($p < 0.001$, $p < 0.001$, $p = 0.009$, $p = 0.34$, and $p < 0.001$, respectively).

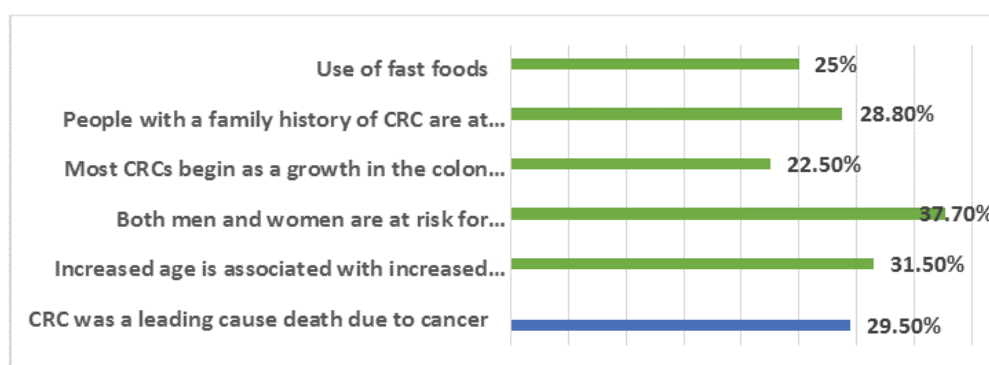


Figure 1 Respondent's rate according to their awareness of CRC incidence and risk

Awareness of the Necessity and Importance of CRC Screening

Only 12.7% of the respondents were familiar that adults should be routinely screened for colorectal cancer starting at age 45 as recommended, 22.4% of them can identify the required frequency of CRC screening. Those who had not

heard about CRC screening methods were likely to be female and were young ($p=0.003$); with low educational level ($p<0.001$).

Furthermore, most of our respondents (61%) were ready to undergo CRC screening if recommended by their medical doctor while 16% of them said they would never think of doing CRC screening ($p<0.0001$).

Among those who were ready to undergo CRC screening were questioned on their awareness of screening options, 53% of them select FOBT as their preferred method of screening, and 39% preferred colonoscopy ($p<0.0001$). And according to the reasons that might prevent respondents from having the required tests, a significant proportion (57.0%) revealed that their "Fear of finding cancer" was a barrier for screening, while the "screening procedure is not effective" or a feeling of "embarrassment if I was screened" was the least barrier revealed by our respondents ($p=0.002$) as shown in Table 2.

Table 2 Attitude of the respondents towards CRC screening

Item	Percentage	p-value
Willing to have a screening test for the bowel cancer		
Yes	61.00%	p<0.0001
No	16.00%	
Not sure	23.00%	
Preferred Colorectal Cancer screening method if willing for screening		
Faecal blood test	53.00%	p<0.0001
Sigmoidoscopy and Colonoscopy	39.00%	
Others	8.00%	
Barriers		
Fear of finding cancer (result)	57.00%	p=0.002
Embarrassment/anxiety	8.20%	
High cost and lack of coverage	8.30%	
Lack of knowledge about colorectal cancer guidelines	7.30%	
Not recommended by my doctor	14.20%	
Others	5.00%	

DISCUSSION

Colorectal screening is widely available in Saudi Arabia, but there is still no population-based screening program. Setting up and implementing an effective national colorectal cancer screening program, it is vital to have a real and clear background about the depth of information among the public regarding this disorder and their choice and barriers towards the screening program. To our knowledge, there are scarce studies in this regard especially among the population of Albaha Saudi Arabia toward CRC screening, which reveals that the overall awareness was found to be relatively unsatisfactory. This idea was constructed on the low percentage of the awareness of our respondents related to CRC incidence and risk such as "CRC was a leading cause death due to cancer" "increased age is associated with increased risk of developing CRC" "both men and women are at risk for getting CRC" "People with a family history of CRC are at higher risk" and "most CRCs begin as a growth in the colon or rectum" was found to be 29.5%, 31.5%, 37.7%, 28.8%, and 22.5% respectively. These findings were similar to previous Saudi studies conducted in different parts of Saudi such as study report from Makkah, Alahsa, and western region and other areas of Saudi Arabia which all reveal a lack in the awareness about CRC screening among the study population [25,27,31-35]. In addition, our findings are consistent with studies from surrounding countries as studies from Jordanian and East Iran and international studies in which study populations reveal inadequate and low levels of awareness about CRC and screening tests [30,36-54].

Our study reveals that only 12.7% of the respondents were familiar with that adults should be routinely screened for colorectal cancer starting at age 45 as recommended, 22.4% of them can identify the required frequency of CRC screening.

Our study reveals that most of our respondents (61%) were ready to undergo CRC screening if recommended by their

medical doctor while 16% of them said they would never think of doing CRC screening. Accordingly, recommendations from medical doctors have their influence on the community concerning health plans. This puts the burden on medical doctors to make their judgment on health-related orders and discuss it with their clients putting into consideration patients' feelings and their socio-cultural background when giving recommendations [45]. This makes medical doctors in the challenge of increasing their competence for the sake of their clients, especially on preventive healthcare.

Our study population recognized several barriers that prevent them to do CRC screening such as their "Fear of finding cancer", while the "screening procedure is not effective" or a feeling of "embarrassment if I was screened" was the least barrier revealed by our respondents. These findings reveal the poor level of awareness and education among our study respondents. Our findings are consistent with other studies locally, nationally, and internationally [46-54].

Among those who were ready to undergo CRC screening were questioned on their awareness of screening options. 53% of them select FOBT as their preferred method of screening and 39% preferred colonoscopy. These findings were the same choices for the study population in other studies [46,49,54-59]. All revealed barriers were due to general community awareness and attitude which can be overcome and changed to better by using health promotions and awareness activities.

CONCLUSION

Majority of our respondents shows insufficient awareness regarding CRC screening guideline and CRC screening methods. This deficiency of information can result in a low rate of contribution in CRC screenings since adequate knowledge is important for participation. Furthermore, a lack of physician recommendation was identified as the most common barrier to CRC screening in general. Fear of finding cancer "was a barrier for screening" was the most common specific barrier to screening among our respondents. It is recommended to report the observed barriers to CRC screening recognized in our study beforehand carry out a screening program at the national level. Additional studies are necessary to discover more specific barriers among the population in the area.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Consent

All participants provided informed, written consent before enrolment.

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Ethical Approval

The study was approved by the Scientific Research & Ethics Committee (REC): Albaha University; Faculty of Medicine (REC/SUR/BU-FM/2020/0000).

Data Sharing

No additional data are available.

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Contributors

Dr. Thamer wrote the paper. Dr. Abuobaida guided qualitative data collection and assisted with data analysis. Naif Abdullah M. Alzahrani and Turki Abdullah A. Alzahrani conducted all the interviews. All authors edited and critically revised the paper and approved the manuscript.

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