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Saudi Population Awareness Regrading Methods of Colorectal Cancer Screening

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Aims: To assess the level of knowledge about colorectal cancer screening methods among the population in Saudi Arabia.
Study Design: A cross-sectional study
Place and Duration of Study: General Surgery Department, between January 2021 and November 2022.

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Methodology: This was a cross-sectional, survey-based study conducted in Saudi Arabia. Data was collected using a predesigned self-administered online questionnaire. Inclusion criteria include Saudi male and female between 18-65 years in Saudi Arabia. Then data were analyzed by the SPSS program, version 25 at a level of significance of 0.05.
Results: A total of randomly taken 794 participants who filled our questionnaire according to the inclusion criteria. Most of our participants (67.1%) were females and 32.9% of them were males. Only 17.5% of the participants were less than 20 years old, 62.5% of them were between 20 and 30 years old and 20% were more than 30 years old. Most of our participants (58.3%) were university educated,
Conclusion: CRC screening were not well known in Saudi Arabia. Educational programs are compulsory and should target people at risk.

Keywords: Colorectal cancer; screening; Saudi population.

1. INTRODUCTION

The third malignancy commonly diagnosed among all gender which also consider the fourth leading cause of cancer-associated mortality, despite its low incidence in Arab people is Colorectal cancer (CRC) [1]. In 2012 about 700,000 deaths were announced along with 1.4 million newly diagnosed cases internationally it should be noted that in 29% of the cases the rectum will be affected and about 71% of cases it affects the colon. Certainly, Countries in the west have high incidence rates, unlike the developing nations where rates are particularly low [2]. The application of colorectal screening programs lately decreases the incidence rate of colorectal cancer through the early discovery and treatment indeed, if the tumor discovered and surgically removed early the risk of CRC can be reduced by 95% [3]. The suggested age of screening for CRC by The American Cancer Society (ACS) is 45, they recommend two types of tests for the screening: visual/structural tests and stool tests, every 10 years the colonoscopy should be done, 5 years for the colon scan and the flexible sigmoidoscopy as they are the visual/structural tests, the fecal immunochemical test(FIT) and a guaiac-based fecal occult blood test (gFOBT) should be done yearly and every 3 years for multitarget DNA (MT-DNA or FIT DNA) test and they are the Fecal-based tests [2].

(Almadi et al., 2015) a population-based study found that people in Saudi Arabia have fewer backgrounds regarding the screening program, red flag symptoms, and the risk factors of colorectal cancer, however, the females and well-educated people had more knowledge [4].

The participants in large numbers of the previous researches that were done in KSA were from shopping centers that are not illustrative the general public, furthermore, the questionnaire was used to assess the knowledge about CRC is unsubstantiated [3]. Factors including social-class, individuals' beliefs, application of preventive care, healthcare access and background of cancer and screening tests and guidelines, considers as Barriers to Colorectal cancer screening [5].

In current work aimed to assess the knowledge about screening methods of colorectal cancer in Saudi Arabia population, due to the insignificant number of researches that done in Saudi Arabia regard this topic despite its importance. To Identify the level of knowledge among Saudi population concerning colorectal cancer screening methods and most common thoughts and believes that prevent them from agree with screening.

2. MATERIALS AND METHODS

This is an observational cross-sectional study in Saudi Arabia was done from January 2020 to November 2021. To assess the level of knowledge about colorectal cancer screening methods among the population in Saudi Arabia. The population of the study ranged in age from 18-65. The sample size was estimated using the Qualtrics calculator with a confidence level of 95%; a sample size of 384.

A- Inclusion criteria: Inclusion criteria include Saudi male and female between 18-65 years in Saudi Arabia.

B- Exclusion criteria: Exclusion criteria include non-Saudi, younger than 20 and more than 65 years.

Data collection was done in the form of the participants' responses to the questions. The survey tool was an anonymous self-administered questionnaire in Arabic, containing questions

regarding colorectal cancer screening related knowledge.

Data was entered on the computer using the "Microsoft Office Excel Software" program (2016) for windows. Data was then transferred to the Statistical Package of Social Science Software (SPSS) program, version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) to be statistically analyzed.

3. RESULTS AND DISCUSSION

Table 1 showed the sochio-demographic data of the participants. We included a total of randomly taken 794 participants who filled our questionnaire according to the inclusion criteria. Most of our participants (67.1%) were females and 32.9% of them were males. Only 17.5% of the participants were less than 20 years old, 62.5% of them were between 20 and 30 years old and 20% were more than 30 years old. Most of our participants (58.3%) were university educated, 6.8% were more than Bachelor's degree, 34.5% of them were secondary educated and only 0.4% were non educated.

Table 2 showed the Knowledge of participants of colorectal cancer. 74.1% of our participants had heard about colorectal tumors before, 55.9% of them think that colorectal tumors are present in abundance in Saudi Arabia, only 17.9% Has a member in their family had colorectal tumors, while 28.1% know someone with colorectal tumors. 84.1% of our participants think colorectal tumors are a preventable condition and 62.3% of them agreed that colon and rectal tumors are fatal.

Table 1. Sociodemographic characteristics of participants (n=794)

Parameter		No.	Percent
Gender	• Male	261	32.9
	• Female	533	67.1
Age	• Less than 20	139	17.5
	• 20 - 30years old	496	62.5
	• 31- 40years old	69	8.7
	• 41 – 50 years old	51	6.4
	• 51 - 60 years old	28	3.5
	• More than 60	11	1.4
Residence area	• Southern area	108	13.6
	• Eastern Region	150	18.9
	• The northern area	71	8.9
	• Western Region	225	28.3
	• Central Region	240	30.2
Education level	• uneducated	3	4.
	• secondary	274	34.5
	• Bachelor's degree	463	58.3
	• Master's	31	3.9
	• PhD	23	2.9

Table 2. Knowledge of participants of colorectal cancer (n=794)

Questions	Yes	No
Have you ever heard of colorectal tumors?	588	206
	74.1%	25.9%
Do you think that colorectal tumors are present in abundance in Saudi Arabia?	444	350
	55.9%	44.1%
Has anyone in your family ever had colorectal tumors?	142	652
	17.9%	82.1%
Do you know someone with colorectal tumors?	222	572
	28.0%	72.0%
Do you think colorectal tumors are a preventable condition?	668	126
	84.1%	15.9%
I think colon and rectal tumors are fatal	495	299
	62.3%	37.7%

Table 3 showed the Knowledge of screening methods and associated variables of colorectal cancer. When we asked about what they think is the recommended age for screening for colorectal tumors, 28.8% of our participants thought that its 18-30 years old, 27.7 of them recommended 31-40 years old to be the beat age of CRC screening, 23% recommended 41-50 years old and only 20.4% recommended the age above 51 to be the best age of CRC screening.

Regarding the factors that they think may increase the risk of developing colorectal tumors, 44% thought that aging is the factor affecting CRC, 73% reported family history, 36% reported the obesity, 45% choosed the genetic factors, 37% choosed smoking, 35% thought it's the age above 50, 47% reported presence of polyps in the lining of the colon and rectum, 63% said its Inflammatory bowel diseases and only 5% thought that diet rich in fat and low in fiber may be a factor in CRC.

Anal bleeding, diarrhea or constipation, Presence of blood in stool, Abdominal pain, Sudden rapid weight loss, Increase in mucous secretions in stool and appearance without any symptoms were all reported to be symptoms or auxiliary factors for the emergence of colon and rectal tumors with percent of (61%, 59%, 62%, 58%, 49%, 30% and 42%) respectively.

We reported that 50.6% of our participants previously heard of early detection of colorectal tumors. The early detection methods for large intestine tumors that the participants know were Endoscopy of the rectum and anal canal in addition to testing for blood in the stool sample (82%), Detection of blood in a stool sample (56%), Barium staining x-ray of the large intestine (42%), Abdominal CT scan (47%), Barium tincture for the large intestine (32%), Colon and rectal biopsy (66%), Clinical examination of the rectum (47%) and Blood tests (44%). 82.1% of our participants thought that early detection of colorectal tumors is very useful, 8.4% of them thought its useful, 9% of them thought its not useful and 8.6% didn't know if it's useful or not. Almost one quarter of our participants considered doing an early detection for themselves and they choosed different methods.

Table 3. Knowledge of screening methods and associated variables of colorectal cancer

Parameter		No.	Percent
What do you think is the recommended age for screening for colorectal tumors?	• 18-30 years old	229	28.8
	• 31-40 years old	220	27.7
	• 41 - 50 years old	183	23.0
	• 51 - 60 years old	97	12.2
	• 61 - 65 years old	65	8.2
Which of the following is one of the factors that you think may increase the risk of developing colorectal tumors?	•aging	351	0.44
	Having a family history of colorectal tumors	585	0.73
	•obesity	291	0.36
	•Having some genes	365	0.45
	•to smoke	301	0.37
	•Age over 50 years old	278	0.35
	The presence of polyps in the lining of the colon and rectum	376	0.47
	Inflammatory bowel diseases (Crohn's and ulcerative colitis)	503	0.63
	•A diet rich in fat and low in fiber	397	0.5
	•exposure to radiation	177	0.22
Symptoms or auxiliary factors for the emergence of colon and	• anal bleeding	486	0.61

Parameter		No.	Percent
rectal tumors			
	• diarrhea or constipation	472	0.59
	• Presence of blood in stool	500	0.62
	• Abdominal pain	464	0.58
	• Sudden rapid weight loss	396	0.49
	• Increase in mucous secretions in stool	242	0.30
	• It may appear without any symptoms	338	0.42
Have you ever heard of early detection of colorectal tumors?	• Yes	402	50.6
	• No	392	49.4
If your answer is yes to the previous question above, please complete the research. The early detection methods for large intestine tumors that you know are:	• colonoscopy	548	1.36
	•Endoscopy of the rectum and anal canal in addition to testing for blood in the stool sample	332	0.82
	• Detection of blood in a stool sample	229	0.56
	• Barium staining x-ray of the large intestine	170	0.42
	• Abdominal CT scan	191	0.47
	• Barium tincture for the large intestine	130	0.32
	• Colon and rectal biopsy	268	0.66
	• Clinical examination of the rectum	190	0.47
	• Blood tests	180	0.44
How useful is it to detect colorectal tumors early in your opinion?	• very useful	652	82.1
	• useful	67	8.4
	• not very useful	7	9.
	• I don't know how useful it is	68	8.6
Have you ever considered doing an early detection for yourself?	• Yes	206	25.9
	• No	588	74.1
Would you prefer to make an early detection for you personally using any of the?	• colonoscopy	302	0.38
	• Blood tests	367	0.46
	• Detection of blood in a stool sample	195	0.24
	• Abdominal CT scan	236	0.29
	• Proctoscopy and anal canal in addition to blood test in stool sample	139	0.17
	• Barium staining x-ray of the large intestine	132	0.16
	• Barium tincture for the large intestine	72	0.09
	• Clinical examination of the rectum	105	0.13
	• Colon and rectal biopsy	82	0.10
	• Colon and rectal biopsy	7	0.01
Was your choice to answer the above question based on:	• Fear of working with binoculars	390	49.1
	• Not convinced of the issue	112	14.1
	• History of examination	292	36.8
If you have colorectal	•Yes	562	70.8

Parameter		No.	Percent
adenomas, do you want to know about it?			
	•No	73	9.2
	•I do not know	159	20.0
How worried are you about discovering that you have colorectal tumors?	•not worried	127	16.0
	•somewhat worried	227	28.6
	•Very worried	190	23.9
	•I do not know	158	19.9
	•I'm not worried at all	92	11.6
What are your sources of information about early screening for colorectal tumors?	•Internet and social media	587	0.73
	•Awareness Videos	193	0.24
	•Volunteer campaigns in public places of the community	148	0.18
	•Consult the doctor and ask him directly	165	0.20
	•field of study	20	0.02
	•I do not know	12	0.01

3.1 Discussion

Personal attitude towards screening and availability of the appropriate screening methods affects highly screening strategies for colorectal cancer prevention. Limited knowledge of the population regarding CRC and its screening methods can strongly influence their decision, whether it is based on the experiences of family and friends, or as learned knowledge. Although Saudi Arabia has the available resources for diagnostic and therapeutic procedures, there is lack of a consistent organized screening program for CRC screening. Overall, the knowledge of the population is less than expected to encourage the spread of screening behavior, that's why we focused in assessing the level of awareness of the general population regarding such a critical subject.

We present a study that assesses the awareness of and attitudes towards undergoing CRC screening in KSA. In this study we included a sample of 794 participants who responded to the questionnaire according to our inclusion criteria. Most of our participants (67.1%) were females, 32.9% were males and more than half of them (62.5%) were between 20 and 30 years old, 17.5% were less than 20 years old and only 10.3% were more than 30 years old. The female, young age dominance in the participants may be because females and young aged individuals are more liable to use social media and respond to the questionnaire.

The knowledge level of the population regarding CRC was 74.1% with a good level of awareness about its causes and risk factors. This result is less than the results found in Makkah by Ammar A Al-Maghrabi [6], who found that the majority of the participants (85.7%) heard of colorectal cancer. In another study, 37.4% of the total participants have heared about CRC, which is much lower results than ours [7].

In our study 50.6% of our participants were aware of the early detection of CRC using the CRC screening methods. This is higher than other studies done in Saudi Arabia. In Osamah Abdullah A. et al. [8], from all participants, only 136 (16.3%) were aware about screening test of CRC and 87 (10.5%) were not sure. In another study 32.7% of the participants knew the recommended beginning of colorectal cancer screening [9]. In similar cross-sectional studies, this rate was more favourable (47.9%; 83.0%) [9,10]. These respondents were likely to see their physician more frequently. Another Saudi study conducted on men in Alahsa showed that only 28.8% participants in the study knew about screening methods of CRC [11]. Another study from Lebanon reported higher percentage of knowledge about CRC screening as more than half of the participants knew the importance for screening [12], however a much lower results were reported in another study from East Iran, which showed that more than 90% did not have knowledge about CRC screening [13].

Our participant had average information regarding the risk factors and warning signs of CRC. The CRC risk factors that were most commonly recognized were Having a family history of colorectal tumors (73%), bowel disease (63%), A diet rich in fat and low in fiber (50%), family history (45%) and aging (44%). Participants were least aware of exposure to radiation (22%), obesity (36%) and smoking (37%) as risk factors. This results is a little higher than Mohamad Ali Tfaily's results which indicated that only 31.5% and 17.2% of the participants were aware of the warning signs and risk factors of CRC, respectively [14], and the reported percentages of CRC risk factors that were most commonly recognized were red meat (64%), bowel disease (62%), and smoking (60%). Participants were least aware of diabetes (26%) and no physical exercise (37%) as risk factors, and only 17.2% of the participants were aware of nine or more of the listed risk factors. Another previous study conducted in the MENA region reported similar studies. In these studies, it was and about 82%, 85% and 94% of participants from the United Arab Emirates had poor to no knowledge on colorectal cancer risk factors, warning signs and screening methods respectively [13]. Participants were most commonly aware of presence of fecal blood anal bleeding and diarrhea or constipation (62%, 61% and 59%, respectively) as warning signs for CRC, and were least aware of Increase in mucous secretions in stool (30%).

Individuals were more likely to be aware of CRC risk factors and warning signs in relation with age and educational level, and our study found a significant association with these factors. This association was also reported in a number of other studies [15,16,17]. While different studies have demonstrated an increase in awareness of CRC screening with education and employment, our results showed no significant association with these factors [7,18,19].

In this study, when we asked the participants about the ability of applying screening on themselves, the majority 48% preferred blood test as a screening method, 38% choosed colonoscopy while Barium tincture for the large intestine, Colon and rectal biopsy, Clinical examination of the rectum were the least methods to be choosed, the decisions based on previous questions were further analyzed and showed that prior knowledge of the screening types of endoscopic and radiological methods as well as personal fear of doing the test in general, contributed to the decisions made.

In another study, after posing a direct question to the study respondents about their personal decision to undergo screening versus not undergoing screening, their responses were examined in relation to their choice of whether it was an invasive method or a less invasive method. It was shown significantly that among the people who agreed to be screened, colonoscopy or sigmoidoscopy with fecal occult blood testing was chosen as a screening method. Those who did not agree to be screened chose a less invasive method, which was barium enema or CT scan of the abdomen [20]. In Qumseya et al., they reported education below secondary school level was associated with a lower probability of accepting colonoscopy as a screening method and increased age was associated with decreased probability of accepting FOBT as a screening method [20], which is almost like our finding, as we reported a clear effect of educational level of the participants in knowledge of colonoscopy as a screening method in CRC and as well as the probability of the participant to accept it to be applied in himself.

4. CONCLUSION

There was a lack of awareness of CRC checks in Saudi Arabia. Educational programs are compulsory and should target people at risk because they are considered the most common sources of information in schools, the Internet and social media.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical approval was obtained from Research Ethics Committee at Prince Sattam Bin Abdulaziz University, Al-Kharj, Saudi Arabia. with the IRB approval number (REC-HSD-54-2021)

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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