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AWARENESS OF COLORECTAL CANCER IN SAUDI ARABIA: CROSS-SECTIONAL STUDY

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ABSTRACT

Colorectal Cancer (CRC) is a global medical challenge. In the KSA, it is 1st cancer among males, 3rd among females, with a death rate of 8.3%. The main purpose of CRC screening is to detect cancer in early stage where cure can be achieved. So, this study aimed at evaluating the public awareness of CRC and determining the preferred methods to conduct the awareness of this concept. A cross-sectional study was performed in Jeddah, KSA, in 2019. Data collection was done using an online questionnaire that was distributed through social media. 4090 participants from all over the Kingdom were participated. SPSS Software was used to analyze data using the Chi-square test. 57.3% of respondents were females. 43.7% chose unintentional weight loss as the most well-known symptom of CRC. Most of the participants were unaware of CRC Screening methods and Social media was the preferred way of spreading awareness. The present study demonstrated a low level of awareness among Saudi society regarding CRC screening, risk factors, and symptoms. Most participants stated that they use social media as the first way of spreading awareness.

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Introduction

Colorectal Cancer (CRC) has become a serious issue globally, representing 10% of all cancer incidence in 2012 [1-5]. Worldwide, the number of cases of CRC in 2012 was 1.4 million, making it the third most common cancer among men and the second among females. Unfortunately, the number of deaths from CRC was 8% of all cancer-related deaths [6]. In Gulf Cooperation Countries (GCC), CRC is the second most common cancer in 10 years [7]. The incidence of CRC cases in Saudi Arabia in 2010 was 1033 accounting for 10.4% of the newly diagnosed cases. CRC in Saudi Arabia is the first among males and third among females [8] and the death rate was reported to be 8.3% [9]. More efforts are needed for early detection and to reduce the death rate of CRC in Saudi Arabia.

The main goal of CRC screening is to detect cancer in its early stages where patients can achieve a higher rate of cure [10]. In Asia, screening programs for CRC screening are not well developed and there is a piece of strong evidence that indicates the awareness for CRC among the public is markedly low [11]. However, in other countries, the number of CRC screening programs and public awareness is still low compared to the breast and cervical cancer screening programs [12].

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Several studies showed the public awareness rate concerning CRC. A study from the United Kingdom (UK) assessed public awareness about CRC. It showed that a change in bowel habits is the most recognized symptom 23%, then bloody stool 15% [13]. Also, a survey-based study in Ireland done to assess awareness of colorectal cancer symptoms and screening in a peripheral colorectal surgical unit showed that bloody stool to be the most known symptom of CRC (62%). Followed by rectal bleeding (45%). The overall study disclosed the lack of awareness in Irish patients regarding CRC symptoms and screening [14]. Moreover, another cross-sectional study in the UK showed a lack of CRC awareness among respondents who are less than 50 years old and low educational levels [15]. Furthermore, in Scotland comparative study of knowledge and awareness of colorectal and breast cancer revealed the inadequacy of knowledge and awareness of CRC among the general population in comparison to breast cancer [16].

In Saudi Arabia, a cross-sectional study of 1070 participants in Riyadh participated in a survey. Even among the most educated participants, less than 50% of them answered the questions correctly. Only 34.8% of all the participants knew that having a CRC case in the family consider as a major risk factor [17]. This substantial amount of lack of public awareness of CRC is alarming. The percentage figure is high among the educated Saudi community; therefore, increasing public awareness is essential in all regions of Saudi Arabia.

In summary, Colorectal Cancer (CRC) studies showed that knowledge about the disease and public awareness is directly related to an increase in the number of participants in the screening programs [18]. Therefore, we aim to assess the rate of public awareness about CRC, determine the preferred screening method, and discover the best method of communication to deliver education.

Materials and Methods

This is a cross-sectional study conducted in Saudi Arabia in 2016, approved by the Institutional Review Board (IRB) of King Abdulaziz University (KAU).

Data was collected using an online questionnaire distributed through social media with a sample size of 4 and a target sample of 5000. Inclusion criteria included the general population of Saudi Arabia excluding health care workers and patients diagnosed with colorectal cancer.

The survey used for this study (Bowel Cancer Awareness Toolkit Version 2.1) was slightly modified. The modifications included the following; geographic distribution (center, west, east, south, north), the preferred method of screening (colonoscopy, fecal occult blood, barium enema, CT colonography), favored method to spread awareness (street advertisement, television, mall campaign, social media, other).

Statistical Package for Social Science Software (IBM SPSS Statistics 23) was used for data analysis. Data were compared to Pearson's Chi-square to examine the level of CRC awareness concerning the demographic categories Age, Sex, level of education, and geographic distribution. A P value of < 0.05 was considered statistically significant.

Statistical Analysis

Data Were Analyzed using IBM SPSS Statistics 23. Each respondent answered 22 multiple choices questions using only one choice. Data were compared to Pearson's Chi-square to examine the level of CRC awareness concerning the demographic categories Age, Sex, level of education, and geographic distribution. A P value of < 0.05 was considered statistically significant.

Results and Discussion

Demographic characteristics were Age, Sex, Level of Education, and Geographic distribution. In **Table 1**. In total, 4090 respondents participated in our study from all over the Kingdom. The majority of the respondents were Females (57.3%), 16-49 years of age (91.5), and (63.9%) who received High education and live in the western area.

Overall, unintentional weight loss was the most recognized symptom by the respondents to indicate CRC with (43.7%). While most of them weren't sure that rectal bleeding is a symptom of CRC (42.9%). Similarly, (35%) of the respondents didn't know whether a change in bowel habits is a symptom of CRC, (33.3% answered No and 34.9% answered Not Sure). The majority, nevertheless still not aware of the symptoms of CRC **(Figure 1)**.

Regarding CRC risk factors. Smoking was the most recognized risk factor by the participants. (69.6%). While Diabetes was the least acknowledged by participants only 18.1% of them could identify it as a risk factor. (55.6% answered Not sure and 26.4% answered Disagree) **(Figure 2)**.

Concerning screening, the majority of participants weren't aware of CRC Screening methods. (60.6% answered No and 11% answered maybe). On the other hand, (47.2% of participants) knew the fact that screening could take place before the onset of symptoms. However, the majority didn't know when should the screening take place. (33.8% answered Yes, and 19% answered Maybe). While 47.5% of participants thought colonoscopy is the best method of CRC screening.

Regarding the preferred way of spreading awareness, most of both genders chose Social media educational content (60.2% of participants).

Gender

In general, females were more aware of Colorectal cancer than males. Overall, most of the participants weren't sure that rectal bleeding is a symptom of CRC (42.9%). However, there was a significant difference according to gender. (P = 0.000); (40.8% 955 participants) of females Knew that rectal bleeding is a symptom of colorectal cancer compared to (36.7% 642 participants) in males. Similarly, more females (45.9%, 1075 Participants) were aware that unintentional weight loss might indicate CRC. In comparison, (40.8%, 714 participants) of males thought so (P = 0.000). In general, females were more knowledgeable about Colorectal cancer symptoms than males.

Correspondingly, there were many significant differences in CRC risk factors according to gender. More males knew that decreased physical activity is a risk factor for CRC (60.2% 1052 participants) of males compared to (50.4% 1181 participants) in Females (P = 0.00). Equivalently, more males (45.7% 798 participants) were aware that being overweight increases the risk of developing CRC. Compared to (39.0% 914 participants) in females (P = 0.00). Likewise, more males were knowledgeable of the fact people over 70 years of age are at higher risk of developing CRC (39.2% 686 participants), compared to (28% 656 participants) in females (P = 0.00). Correspondingly, more males were concerned that being diabetic increases the risk of developing CRC (19.5% 332 participants), while females (17% 399 participants) answered correctly (P = 0.00). In contrast, more females were aware that eating red or processed meat once or more daily is a risk factor for CRC (47.8% 1119 participants), compared to (42.2% 737 participants) In males (P = 0.02). Similarly, more females (39.1% 915 participants) agreed that having a close relative with a history of CRC increases the risk of developing CRC, compared to (26.2% 458 participants) in males (P = 0.00). Equivalently, more females were able to identify inflammatory bowel diseases are risk factors to CRC (63.1% 1477 participants), whereas only (53.3% 931participants) of males answered correctly (P = 0.00). Analogously, More Females (69.9% 1637 participants) knew of the fact that smoking increase the risk of CRC than males (69.2% 1209 participants) (P = 0.02).

In contrast, there were not many significant differences in CRC screening concerning Gender. Only one question showed strong evidence of a relationship concerning gender. More females (49.2% 1153 participants) knew screening should take place before the onset of symptoms, compared to (44.5 777 participants) in males. (P = 0.007, P = < 0.05). On the other hand, the majority of both genders thought that colonoscopy is the best method of screening (47.5% 1942 of participants). However, more males answered Colonoscopy (54.2% 948 male participants) and fecal occult blood testing (14.8% 258 of male participants), compared to (42.4% 994 of female participants) who chose colonoscopy and (9.7% 228 of female participants) who chose fecal blood occult testing. (P = 0.00).

Age

Participants were divided into two groups according to age 16-49 and 50 and older. There were many significant differences in CRC awareness in correlation to age. Overall older participants (50 – older) were more aware of CRC.

Concerning risk factors, more older participants (56%) knew that consuming red or processed meat increase the risk of developing CRC compared to 44.4% in younger adults (P = 0.00). Similarly, more older participants (61.8%) could realize that diet which lows in fibers, fruits and vegetables is a risk factor for CRC, while 56.2% of younger participants believed so (P = 0.018). Furthermore, 38.8 % of older participants knew people over 70 years of age are at higher risk of developing CRC. In comparison 32.3% of younger adults knew so (P = 0.017). Likewise, more older participants (22.7%) could answer correctly whether diabetes increases the risk of developing CRC compared to 17.7% in younger adults (P = 0.013).

Concerning screening, also more older adults were aware of CRC screening methods (43.1%). On the other hand, only 27.1 of younger adults were aware of them. (P = 0.000). In contrast, more younger respondents 33.9% knew colonoscopy is not the only method of screening compared to 23% of older participants. Correspondingly more of the younger respondents 32.3% knew that a change in bowel habits might indicate CRC compared to 25.9% in older participants. (P = 0.003)

On the other hand, more of the younger participants chose social media as the most preferred way of spreading awareness (61.2%). Compared to 50% in older participants. (P = 0.000).

Level of Education

Conventionally, most of the participants weren't able to detect most of the CRC symptoms, risk factors, and screening methods. However, participants were divided into 3 groups concerning the level of education (School Education, Diploma, and High Education). There were many significant differences in the level of CRC Awareness in correlation to the level of education. Most of the participants received higher education 63.9%.

Concerning symptoms of CRC, there were significant differences in the level of awareness and level of education. People with higher education tend to answer more correctly than lower educational levels. More high education participants were able to recognize rectal bleeding as a symptom of CRC (42.1% 1101 participants) (P = 0.00). Likewise, more Higher education participants identified unintentional weight loss as a symptom that might indicate CRC (45.5% 1190 of participants) (P = 0.00).

Regarding CRC risk factors, there were also many significant differences according to the level of education. Equivalently, participants with higher education could recognize low fibers (low fruit and vegetables) is a risk factor for CRC (59.1% 1544 of participants) (P = 0.000). Furthermore, higher educated people knew that people over 70 years old are at higher risk of developing CRC (34.2% 894 of participants) (P = 0.001, P = <0.05). Likewise, more people with high education could answer correctly to whether having a close relative of CRC increases the risk of developing CRC (36.4% 952 of participants)

(P = 0.00). In like manner, more respondents with high education could recognize that diabetes increases the risk of developing CRC (17.9% 469 of participants) (P = 0.002).

Concerning CRC screening methods there were many significant differences in level awareness in response to the level of education. Same as above more participants who received high education were aware of the presence of CRC screening methods (30.3% 793 participants) (P = 0.006). Also, more respondents with high education could answer correctly to the question of whether colonoscopy is the only method or screening (32.5% 848 of participants) (P = 0.00). On the other hand, participants with diploma chose colonoscopy as the most preferred method of screening (50.6% 203 of participants) than respondents with high education (49.5% 1942 of participants chose colonoscopy). (P = 0.002).

Concerning the preferred way of spreading awareness, the majority of all participants thought is the best way to spread awareness on social media.

Geographic Distribution

Participants were divided into 5 groups according to geographic distribution (Central region (Najd), western region (Hijaz), eastern region, southern region, and northern region). Most of survey respondents were from western region (Hijaz) (39.8% 1459 participants) then Central region (Najd) 35.8% (1312 participants) after that eastern region 14.5% (531 participants) then southern region 5.9% (215 participants) and finally northern region 4% (146 participants). 427 participants were eliminated due to missing the geographic distribution information.

Overall there were less significant differences in CRC awareness according to geographic distribution. However, Participants from the central region (Najd) and the western region (Hijaz) were more aware of CRC than the other regions.

Participants from the eastern region knew the change in bowel habits is a symptom of CRC 36% (191 participants) (P = 0.007). on the other hand, participants from the western region (Hijaz) knew that consuming red or processed meat once or more daily is a risk factor (47.8% 697 participants) (P = 0.028). Participants from the southern region were able to answer correctly more than the other regions when it came to diabetes as the factor for CRC (23.3% 50 participants) (P = 0.001).

Table 1. Demographic Data (Age, Level of education, and Geographic distribution)

Category	**Gender**		**Age**	
	Male	**Female**	**<50 years**	**>50 years**
Precent	41.1%	58.8%	91.8%	8.2%
Level of Education				
Category	**School**	**Diploma**	**Higher**	
Precent	26.7%	6.7%	63.4	
Geographic Distrribution				
Category	**Central**	**West**	**East**	**North**	**South**
Precent	36.3%	14.5%	38.9%	4.2%	6.1%

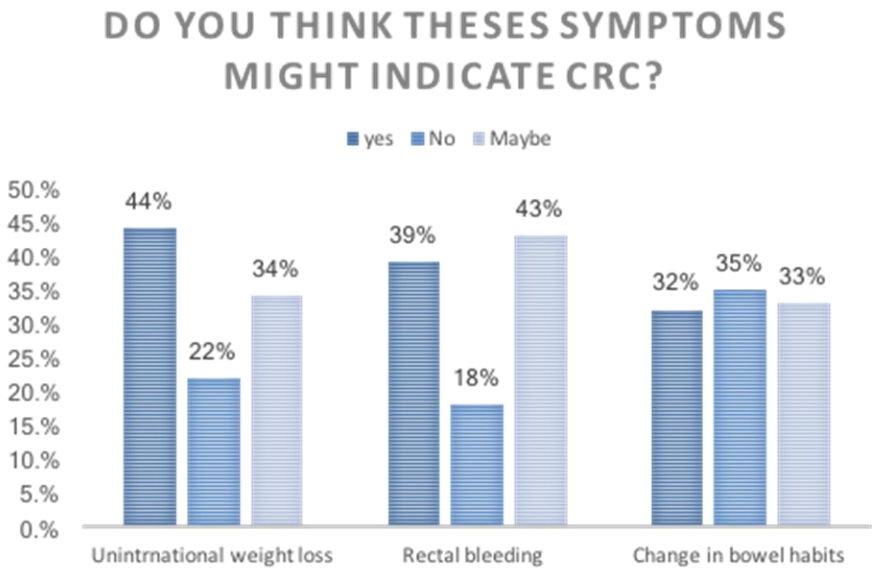

Figure 1. Participant response regarding symptoms of CRC

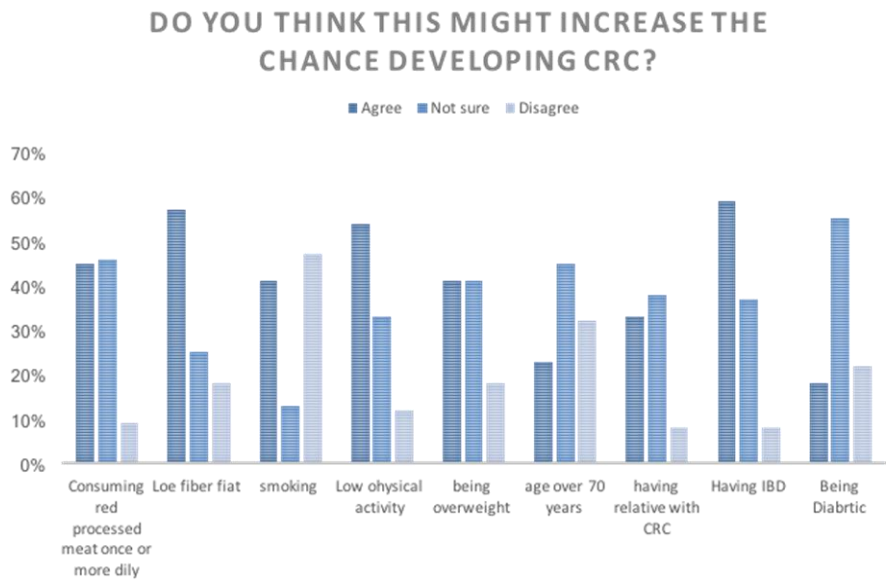

Figure 2. Participant response regarding Risk factors of CRC.

In this study, we aimed to assess the rate of public awareness about CRC, find the best method to spread awareness and identify the preferred screening methods in the Saudi community.

Our study reveals the lack of adequate awareness regarding CRC. There are significant differences in correlation to demographic categories. However, Females, older participants, and participants with a higher educational degree demonstrated a higher level of awareness of CRC (statically significant). Although the incidence of CRC is higher in males than females in Saudi Arabia, more females were able to answer correctly. Another study performed in Saudi Arabia showed that most Saudis have a low level of awareness about CRC symptoms, risk factors, and screening methods. However, it also revealed that mostly females answered the survey's questions correctly [17]. This result could be due to their involvement in breast cancer awareness campaigns; as most of the questions answered were related to symptoms and risk factors that CRC and breast cancer have in common. For instants, most females knew that unintentional weight loss is a symptom of CRC (45.9%) (P = 0.0001), having a close relative with CRC (39.1%) (P = 0.00), smoking are risk factors for CRC (69.9%) (P = 0.021). Also, their knowledge that screening should take place before the onset of symptoms (49.2%) (P = 0.007).

Concerning age, mostly older participants >50 years of age answered correctly. For instance, the increase in consumption of red or processed meat once or more days and low fiber, vegetables, and fruits diet are risk factors for CRC (56% and 61% respectively; P = 0.00, P = 0.018). Similarly, in other studies, one performed in the UK showed that participants 50 years of age and older are more aware of CRC [14]. Also, a study in Saudi Arabia showed better awareness of CRC among participants between 50 – 59 years of age [17]. Another study in the UK displayed that younger age groups are less aware of CRC [15]. We expect that this is a result of their experience in life and the difference in interests and priorities since health concerns seem to be higher for those over 50 years compared to those who are less than 50. They may know a family member or a friend diagnosed with colorectal cancer during their life, so they have greater alertness about it.

Participants with a higher educational level were more aware of CRC. They have increase awareness that rectal bleeding and unintentional weight loss are symptoms of CRC. They are aware that a low fiber diet, being over 70, and having a close relative with CRC are risk factors. Also, a similar study in the UK disclosed a lack of awareness among lower educational levels [15]. As well as a similar study conducted in Saudi Arabia in 2015 and reached the same conclusion that the people with a completed postgraduate education have a greater awareness of colon cancer [15]. We assume this result is because they have more information and are continuously updated than those who have a low level of education. On the other hand, there were no significant statistical differences in awareness of CRC according to geographic distribution.

The majority of participants knew that smoking, low fiber diet, decreased physical activity, and having inflammatory bowel diseases are risk factors of CRC.

Overall, despite the variation between the demographic categories, this study shows the poverty of awareness about CRC among Saudi society. Unfortunately, the literature review showed that a lack of awareness regarding CRC is not uncommon globally. Studies performed in the UK [13], Ireland [14] Showed a lack of awareness regarding CRC symptoms, risk factors, and screening. Similarly, in Croatia, a study showed a low level of understanding of colorectal cancer in the general population when compared to breast cancer [16]. Moreover, the majority of participants (60.2%) preferred social media to spread awareness over the other choices which include awareness campaigns in malls (14.4%), billboards (8.1), SMS (7%), and awareness campaigns in schools (6.6%). Also, 3.7% of participants chose others.

Conclusion

In Conclusion, the study disclosed the low level of awareness among Saudi society regarding CRC symptoms, risk factors, and screening despite the variation according to demographic categories gender, age, level of education, and geographic distribution. However, Females, older participants, and participants with higher educational levels were more knowledgeable than the other groups. Therefore, we must put more effort in cooperation with the Ministries of health and education to enhance and improve the level of awareness of CRC and lifestyle risk factors in Saudi society in all groups. Especially the younger people; by adding this information in the school curriculum, especially the early detection of colorectal cancer where it is first cancer among male and third among female in Saudi Arabia. Taking into consideration that social media is the most preferred way of spreading awareness for most participants.

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