



Awareness of Colorectal Cancer among General Population in Hail city, Saudi Arabia

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ABSTRACT

Background: Colorectal cancer is one of the most common oncological causes of increased mortality in Saudi Arabia, especially in men. Awareness programs are beneficial in educating the community on early screening for colorectal cancer. This study was done to know which group of the population need dedicated educational and awareness effort. **Method:** This is a cross-sectional study that was conducted using a self-administered structured online survey tool through the “Google Forms” platform. The inclusion criteria were all individuals who agreed to participate in the study, aged ≥ 18 years, and residing or working in Hail city. There were no restrictions on the gender, education, nationality, occupation, or socioeconomic status of the participants. All data were analyzed using Statistical Package for Social Science (SPSS) version 26.0. **Results:** A total of 924 valid responses were included in the final analysis, with a mean age of 30.93 ± 12.44 years. Nearly half of the participants were females (58.23%), most of them were residing in Hail city (79.65%), and the majority of them were Saudi (97.19%). There was an obvious defect in the participants’ total awareness, with a mean score of 7.89 ± 4.36 ; out of 29 possible points. As per the regression analysis, married individuals had a lower awareness score (p -value <0.001). Moreover, participants with a positive family history of colorectal cancer showed significantly higher awareness scores (p -value <0.001). **Conclusion:** Married individuals and those with a positive family history of colorectal cancer were significant factors in total awareness while no significant association was found between the total awareness score and other demographic variables.

Keywords: Colorectal cancer, Hail, awareness, Saudi Arabia

INTRODUCTION

Colorectal Cancer (CRC) is highly prevalent and is marked as the third commonest cancer globally, with an estimated incidence of 70,480 and 72,090 for females and males, respectively, and 51,370 related deaths globally, in 2010 [1]. CRC is also ranked fourth as the commonest cancer-related mortality all over the globe for both genders [2]. Africa, Asia, and South America have the lowest rates of CRC which indicates the significant variations among the different countries globally [3]. On the other hand, the highest prevalence rates were obtained from studies in Europe, North America, and Oceania [4]. Such differences might be attributable to the different exposure rates to the potential risk factors (like diabetes, obesity, reduced physical activities, smoking, and poor diet) for CRC in the different populations.

In Saudi Arabia, CRC is the commonest cancer in males and the third commonest in females, with an age-standardized rate of 9.6 per 100,000 populations and is rapidly increasing [5]. Comparatively, Saudi CRC patients are younger than similar patients from Western countries and usually present during late stages [6-8]. The etiology of CRC is multifactorial, including environmental, genetic, and lifestyle-related factors. CRC can be categorized into hereditary and non-hereditary with the non-hereditary one being more common and is usually caused by certain mutations resulting from exposure to certain environmental factors. Additionally, evidence shows that CRC is associated with high mortality rates, with an estimated mortality rate of 55.4% for Saudi patients [9]. Therefore, it is essential to raise the awareness of populations at risk for proper prevention [10,11].

Many research investigations from different countries can be found regarding the screening of awareness of CRC. Wong, et al. reported that the mean knowledge and risk factors for CRC among their Chinese population were

4.06, and 3.23, respectively with similar reports from Saudi Arabia [12,13]. However, such information needs to be continuously updated as a result of the increasing trends and features of the disease with changes in everyday lifestyles and increasing sedentary ways of living [14]. Therefore, this study aims to assess and update the knowledge and awareness of a Saudi population towards CRC in the city of Hail.

MATERIAL AND METHODS

Study Design and Study Population

This is a cross-sectional study was carried out using a self-administered structured online survey tool through the “Google Forms” platform. The inclusion criteria were all individuals who agreed to participate in the study, aged ≥ 18 years, and residing or working in Hail city. There were no restrictions on the gender, education, nationality, occupation, or socioeconomic level of the participants. The exclusion criteria were all residents less than 18 years and those who refused to participate in the study.

Sampling and Data collection

All participants fulfilling the inclusion criteria were invited to participate and the survey was distributed online through a database of numbers and emails for those living in Hail. Snowball sampling was used to select the study participants. An online link of the web-based questionnaire was developed using “Google Forms” obtaining awareness data from November 2020 to December 2020. On the first page, a Plain Language Information Statement (PLIS) and Consent Form were placed with age selection. Only the participants providing consent to participate in the study can move to the next section containing the screening questionnaire to confirm the age is consistent with the pre-defined criteria. Upon confirmation, the participants were moved to the next pages containing the self-administered questionnaire.

Questionnaire Formulation and Validation

Before developing the questionnaire, an extensive review of the relevant literature was conducted, followed by a discussion with experts on awareness assessment. Following the development of the first version of the questionnaire, it was validated by a panel of experts for face, content, criterion, and construct components. For validation purposes, a pilot study of 30 participants was performed and a Cronbach alpha of 0.70 was considered to be a valid score. Regarding the language validation, we formulated the survey in the English language then translated it into Arabic, followed by a backward translation by two independent translators. The translation was finally reviewed by a team of investigators and translators to resolve any discrepancies.

Study Tool

The final format of the survey tool consisted of 36 questions, which were divided into six different sections: (1) personal data (seven questions); (2) family history of colorectal cancer; (3) do you have enough information regarding colorectal cancer and the sources of this information; (4) colorectal cancer symptoms (seven questions); (5) Colorectal screening and prevention (14 questions); and (6) risk factors (eight questions). For all that questions, the participants were given one point for every correct answer and zero for any wrong one. The entire questionnaire and scale are available in the supplementary data.

Ethical Approval

The study has been conducted in alignment with outlined ethical principles in the Declaration of Helsinki and the known Ethical research and surveillance recommendations for emergencies and disasters and was approved by the University of Hail institutional review board letter-number Nr. 16784/5/42 project number H-2020-210. The survey link was available on the Google platform, and it did not require the participant to log in before filling the survey to ensure anonymity and protect data confidentiality. The process did not gather IP addresses, web cache, or cookies, and the Google platform was used to store the data during the availability period, and the final dataset was exported as a Microsoft Excel file.

Statistical Analysis

All data were analyzed using Statistical Package for Social Science (SPSS) version 26.0. Standard descriptive were calculated for each question or item individually. For different awareness scores, data were represented by the mean and standard deviation. Furthermore, both a multivariable linear regression to identify possible predictors for the total awareness score was performed and A p-value of <0.05 was considered statistically significant.

RESULTS

A total of 924 valid responses were included in the final analysis, with a mean age of 30.93 ± 12.44 years. Nearly half of the participants were females (58.23%), most of them were residing in Hail city (79.65%), and the majority of them were Saudi (97.19%). About two-thirds of the participants had university degrees or higher (66.88%) and 57.25% were unemployed. Only 8.12% of the participants reported a family history of colorectal cancer (Table 1). Only 10.5% of the participants reported that they have enough information regarding colorectal cancer. The most commonly used source was the world health organization website (61.26%), while other reliable sources were rarely used; including health campaigns (3.35%), doctors (2.06%), and the ministry of health website (0.32%) (Table 2).

Table 1 Baseline characteristics of the participants; SD: Standard Deviation

Variables		Count	%
Age; mean \pm SD		30.93 \pm 12.44	
Gender	Female	538	58.23
	Male	386	41.77
Nationality	Saudi	898	97.19
	Non-Saudi	26	2.81
Residence	Hail	736	79.65
	Outside Hail	188	20.35
Educational level	Secondary school or less	306	33.12
	University degree or higher	618	66.88
Employment	Unemployed	529	57.25
	Employed	395	42.75
Marital status	Widow	9	0.97
	Single	484	52.38
	Married	411	44.48
	Divorced	20	2.16
Family history of colorectal cancer	No	788	85.28
	Do not know	61	6.6
	Yes	75	8.12

Table 2 Sources of information as reported by different participants; *: statistically significant

Variables			Do you have enough information regarding colorectal cancer								p-value
			Yes		No		Don't know		Total		
			Count	%	Count	%	Count	%	Count	%	
Sources of information	WHO website	No	41	51.9	249	36.89	68	40	358	38.74	0.033*
		Yes	38	48.1	426	63.11	102	60	566	61.26	
	MOH website	No	79	100	675	100	167	98.24	921	99.68	0.011*
		Yes	0	0	0	0	3	1.76	3	0.32	
	Doctor	No	76	96.2	661	97.93	168	98.82	905	97.94	0.398
		Yes	3	3.8	14	2.07	2	1.18	19	2.06	
	Health Campaigns	No	72	91.14	657	97.33	164	96.47	893	96.65	0.015*
		Yes	7	8.86	18	2.67	6	3.53	31	3.35	
	Others	No	12	15.19	335	49.63	80	47.06	427	46.21	<0.001*
		Yes	67	84.81	340	50.37	90	52.94	497	53.79	

There was an obvious defect in the participants' total awareness, with a mean score of 7.89 ± 4.36 ; out of 29 possible points. The best scores were observed in symptoms of colorectal cancer with a mean score of 2.19 ± 1.67 (out of possible seven points) (Table 3). As per the regression analysis, married individuals had a lower awareness score as

compared to single ones (p -value <0.001). Moreover, participants with a positive family history of colorectal cancer showed significantly higher awareness scores (p -value < 0.001). Nevertheless, there was no significant association between the total awareness score and gender, residence, nationality, educational level, employment, or marital status (Table 4).

Table 3 Awareness score of colorectal cancer among the participants; *: statistically significant

Awareness item	Do you have enough information regarding colorectal cancer								p-value
	Yes		No		Don't know		Total		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
Symptoms of colorectal cancer score (Max=7)	2.08	1.59	2.17	1.65	3.22	2.03	2.19	1.67	$<0.001^*$
Screening and prevention (Max=14)	2.67	1.65	2.65	2.32	5.1	2.71	2.87	2.02	$<0.001^*$
Risk Factors (Max 8)	2.75	1.72	2.65	1.61	3.77	1.91	2.82	1.74	$<0.001^*$
Total Awareness (Max=29)	7.5	3.87	7.48	4.62	12.09	5.44	7.89	4.36	$<0.001^*$

Table 4 Multivariate linear regression of different predictors to total awareness scores; *: statistically significant

Predictor	Estimate	SE	t-value	Standardized Estimate	95% Confidence Interval		p-value
					Lower	Upper	
Gender							
Female				reference			
Male	-0.06	0.3	-0.2	-0.01	-0.15	0.12	0.842
Nationality							
Non-Saudi				reference			
Saudi	-0.78	0.87	-0.9	-0.18	-0.57	0.21	0.368
Residence							
Outside Hail				reference			
Hail	-0.1	0.36	-0.27	-0.02	-0.18	0.14	0.784
Educational level							
Secondary school or less				reference			
University degree or higher	0.11	0.33	0.33	0.03	-0.13	0.18	0.743
Employment							
Unemployed				reference			
Employed	0.25	0.39	0.66	0.06	-0.12	0.23	0.509
Marital status							
Single				reference			
Widow	-2.27	1.49	-1.52	-0.52	-1.19	0.15	0.129
Married	-1.54	0.38	-4.03	-0.35	-0.53	-0.18	$<0.001^*$
Divorced	-2.14	1.01	-2.12	-0.49	-0.95	-0.04	0.035
Family history of colorectal cancer							
No				reference			
Do not know	-0.46	0.58	-0.8	-0.11	-0.37	0.15	0.426
Yes	2.33	0.52	4.48	0.53	0.3	0.77	$<0.001^*$

DISCUSSION

Assessment of knowledge and awareness of the general population towards CRC is an important factor in inaugurating a proper plan for the appropriate intervention and management of the disease. Therefore, we aimed to assess these parameters among our population to help the local healthcare resources with the mentioned outcomes. Our results indicate the low awareness attitude of our population towards CRC in all of the assessed domains including the awareness of symptoms, screening and prevention, and the risk factors, whether the participants reported that had

enough information about CRC or not. The low awareness attitudes among the public are not unique to the present study. An Irish study by McVeigh, et al. indicated that the awareness levels among the Irish population are low, which has accelerated the development of the national screening program for CRC in Ireland [15]. Low scores of knowledge and awareness were also reported in studies from Malaysia, United Kingdom, and the Czech [16-18]. The reported low scores from these studies have encouraged the inauguration of national screening campaigns for proper detection and prevention of CRC.

Studies from Saudi Arabia have shown that the awareness among their participants is fluctuant. Zubaidi, et al. reported that around 42.9% of their population thought that CRC screening should begin when symptoms are discovered and around 80.6% of their population reported that they were not aware that polyps are associated with an increased risk of CRC [13]. On the other hand, Almutlaq, et al. reported that 88% of their participants answered that early detection of CRC can be done by endoscopy screening and 88.8% think that by early detection of CRC, various potential complications can be prevented [11]. On the other hand, Barasheed, et al. indicated the inadequacy of public awareness towards CRC in Mekkah [19]. This was also supported by other studies from different regions all over the Kingdom [20,21]. A previous Saudi meta-analysis reported that a pooled awareness level of CRC screening program be 19.1% [22].

Our results also showed that participants with a previous family history of CRC significantly had better awareness scores than others who did not. This is probably because participants with a positive family history of the disease are usually eager to learn more about it to gain more information about the possible prevention and management approaches for themselves and also for the potential care provided for their relatives with CRC. We have also found that married individuals were significantly less aware than single participants which are inconsistent with the previous results by Zubaidi, et al. who also found that female respondents were more aware than males, a finding that was not significant in the present study compared to our gender relation [13]. Hajeili, et al. also reported that gender, educational level, and family history were significant risk factors among their Saudi population [23]. Besides, Su, et al. reported that divorced individuals had lower scores of CRC when compared to single or married participants while gender was not a statistically significant factor [16]. However, evidence shows that male individuals are more likely to develop CRC in their life than female patients [24]. The difference between the presented findings might be attributable to the differences in the basic demographics and characteristics of the included populations by each study.

The reported findings indicate the importance of initiating more effective education campaigns about CRC with innovative ideas that can increase the levels of awareness among the general population of Saudi Arabia. Although this was suggested by the previously published Saudi studies, it seems like such campaigns are not effective. Our results showed that only 0.32%, 2.06%, and 3.35% of our study participants considered the MOH website, their doctors, and health campaigns, respectively, as useful resources for obtaining adequate information about CRC. These rates indicate the failure of the currently applied local health approaches to raise the awareness of CRC among the public and imply the need for additional efforts to target more individuals of the population. Previous studies have reported different approaches that can increase public awareness and knowledge about CRC. Enhancing the healthcare practices of CRC screening and enhancing the quality of the provided care is a potential approach [25]. Bagai, et al. reported that CRC screening at workplaces is significantly associated with increased awareness and knowledge levels [26]. Targeting students and young individuals by easy-to-understand and exciting approaches is also a potentially effective approach [27,28]. Adjusting the local resources, where individuals can get information from, is also an important factor.

Limitation of the study includes the small sample size of the participants and the nature of data collection which is based on participants' self-reporting that may have caused some degree of bias in our findings.

CONCLUSION

Our results indicate low awareness attitudes and knowledge levels among the study participants for CRC. Individuals with a family history of CRC have significantly higher awareness levels while married participants have lower levels of awareness compared to another marital status. Further innovative approaches should be made to increase the level of awareness towards CRC for better management of the disease in Hail, Saudi Arabia.

DECLARATIONS

Conflicts of Interest

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

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