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Colorectal Cancer Screening: Current Knowledge and Practice among Primary Care Physicians in Al Ahsa, Saudi Arabia

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Abstract: ***In Saudi Arabia, the incidence of colorectal cancer (CRC) has increased in recent years, and the burden of cancer has grown on the healthcare system. Knowledge and practice of healthcare providers about screening for CRC help in the early identification of abnormal cells and early management, which leads to a good prognosis. The study aims to assess the current knowledge and practice of CRC screening among PCPs in Al Ahsa city, Saudi Arabia. A cross-sectional study was conducted from July 2022 to Aug 2022. Data were collected by a self-administered questionnaire, using a systematic random sampling method. The questionnaire consists of items about sociodemographic characteristics, the risk stratification of CRC, knowledge of CRC screening modalities, and the practice of CRC screening. In this study, 76.37% had an average knowledge score for the CRC screening technique, and 93.5% of the participant practiced the CRC screening technique with their patients. The most CRC screening technique used was fecal occult blood testing (FOBT) 97.7%followed bycolonoscopy97.4%and flexible sigmoidoscopy 93%. Physicians with high education levels and those most experienced were significantly more likely to practice CRC screening. The study found that most of the PCPs have good knowledge of CRC screening and they recommended it to their patients.***

Keywords: colorectal cancer, screening, primary care physicians, Al Ahsa, KSA

1. Introduction

Colorectal cancer (CRC) is one of the most widespread cancers worldwide, ranking third in terms of prevalence and second in terms of mortality. In Saudi Arabia, it has become the most frequent cancer in men and the third most frequent cancer in women; its incidence is 14.4% among Saudi people. [1] Studies have shown that genetics, obesity, sedentary lifestyle, processed and red meat consumption, smoking, alcohol ingestion, and ulcerative colitis increase the risk of CRC. [2, 3]

Screening programs can reduce morbidity and mortality and improve survival through early identification of malignant cells and management. There are 3 tools for CRC screening: fecal occult blood testing (FOBT), flexible sigmoidoscopy, and colonoscopy. The US Preventive Services Task Force (USPSTF) recommends screening for all adults aged 50 to 75, as well as adults 45 and older, who are at average risk for CRC. It also recommends FOBT every year, sigmoidoscopy every 5 years, or colonoscopy every 10 years. [4]A meta-analysis study evaluating the Saudi guidelines for CRC screening recommends offering CRC screening to those over the age of 45 (strong recommendation; low-quality evidence). [5]

Screening campaigns ideally occur in the primary healthcare (PHC) setting. Despite the emphasis on the importance of screening in Saudi, studies found a lack of utilization of screening for chronic diseases and cancers, which is due to several reasons, such as lack of cancer awareness, lack of national screening guidelines, early detection programs, social barriers toward cancer investigations, and poor adherence to healthcare to screening. [6, 7]

According to one study, the utilization of CRC screening among the Saudi elderly shows that the prevalence was 5.64%. [8]The literature found a lack of knowledge of CRC guidelines and a poor attitude toward CRC screening. A study reported that 59.7% of medical students had poor knowledge of CRC screening. [9]Another study reported that 55% of primary healthcare workers did not practice screening, although 95% of them believed that CRC screening, in general, was effective. [10]Another study that included 284 primary care physicians (PCPs) in Al Qassim region found that only 15.5% knew about FOBT performance every year, 33.8% about the colonoscopy every 10 years, and 50.7% about the flexible sigmoidoscopy every 5 years. [11]

A study describing the crude incidence rates (CIRs) and age-standardized incidence rates (ASIRs) of colorectal cancer from 2006 to 2016 in Saudi Arabia found that the regions of Eastern Province, Northern Region, and Jouf showed the most significant changes in CIRs and ASIRs for colorectal cancer. In contrast, the least significant difference was in Jazan. [12]

In the Eastern Province of Saudi, there is still not enough documentation related to colorectal cancer screening practices among healthcare providers. The PHC center is the first introductory level of contact between patients and the healthcare system. Therefore, our study aims to improve screening rates for CRC by assessing the current status of

knowledge and practice of CRC screening among PCPs in Al Ahsa city, Saudi Arabia.

2. Materials and Methods

A cross-sectional study was conducted among PHC workers, including general physicians, family medicine residents, family medicine specialists, and family medicine consultants in Al Ahsa, Saudi Arabia, from July 2022 to Aug 2022.

The sample size was calculated based on the Raosoft sample size calculator (www.raosoft. com). The population size was 453 physicians distributed among 71 PHC centers in Al Ahsa and the affiliated villages, according to the 2016 version of the Statistical Year book of the Saudi Ministry of Health. [13] The margin of error was 5%, and the confidence level was 95%, which resulted in an estimated sample of 209. The study participants were randomly selected according to lists provided by the health sectors.

A systematic random sampling method was used to select the required number of study participants. The list of names of all registered PHC physicians was obtained from their corresponding Directorates of Health. Each name was given a serial number; in this method, all PHC physicians were ordered according to the number assigned by the research team. Every third physician was invited to participate in the study. In the event of a non response from the selected physician, the next participant on the list is asked to participate. The questionnaire takes 15 min to fill out. Then, an assigned person from the PHC administration collected the survey on the same day.

A self-administered questionnaire that is based on the previous work of Ooi, C. Y., Hanafi, N. S., &Liew, S. M. [14] (Appendix 1) in the English language was given to every participant along with a consent form declaring that the collected data would be confidential and used only for research purposes. The questionnaire consists of multiple sections. The first part includes personal and socio-demographic information, including age, gender, nationality, educational level, specialty, years of experience, daily patient attendance, place of practice, and usage of guidelines. The second section includes the risk stratification of CRC. The participants were given 4 clinical scenarios to risk-stratify the patient into each scenario: scenario 1, a patient aged 62 years with a history of inflammatory bowel disease; scenario 2, a patient aged 60 years with a family history of CRC in 2 relatives (one at 45 years and the other at 50 years); scenario 3, a female aged 60 years with no family history of CRC; scenario 4, a male aged 60 years with no family history of CRC. Participants were asked to categorize the patient as “low risk,” “average risk,” “high risk, ” or “don’t know” for each scenario. The third section is about knowledge on CRC screening modalities, including 2 parts. The first part assesses the participant’s knowledge of CRC screening for average-risk patients, while the second part assesses the participant’s knowledge of CRC screening for high-risk patients. Moreover, the areas to be assessed are recommended tests, starting age, and frequency. The screening tests to be assessed are FOBT, colonoscopy, double-contrast barium enema, flexible sigmoidoscopy, and serum carcino embryonic antigen. Participants were evaluated based on which conditions should be screened, the recommended age to begin screening, the recommended frequency, and the recommended test for each condition. Patients will be assessed for a family history of familial adenomatous polyposis, a family history of hereditary nonpolyposis colorectal cancer, and a history of inflammatory bowel disease. The 4th section is regarding the practice of CRC screening. Participants were asked if they practiced CRC screening, the starting age for screening, the proportion of eligible patients screened, and the screening test used in practice. The last section measures perceived barriers and facilitators influencing the decision for CRC screening, including 6 statements about CRC screening. The response was measured on a Likert scale, ranging from “strongly agree” and “agree” to “disagree, ”“strongly disagree, ” and “not sure. ”

Data were entered into a personal computer and analyzed using SPSS software version 24. All variables will be coded before entry and checked before analysis. Descriptive statistics for all variables will be performed, including means, medians, and standard deviations (SDs). Inferential analysis was conducted to detect the association among different study variables, and a p-value of less than 0.05 is set as a statistically significant result. The study was approved by the Institutional Review Board Research Committee of King Abdullah International Medical Research Center (KAIMRC), and informed written consent was obtained from all participants in the study.

3. Results

From a population size of 453 PCPs, 427 PCPs took part in the study, making the response rate 94.26%. From the sample size of 427 PCPs, 50.6% were females, while 49.4% were males, with two-thirds of the research subjects being of Saudi origin (65.1%) and the rest being of non-Saudi origin. More than half participants had a bachelor's degree, with 45% having Family Medicine (FM) Board Qualification and 0.9% with other postgraduate (PG) degrees. In Table 1, most PCPs (69.1%) saw $\leq$ 20 patients daily. The specialty percentages for PCPs were as follows: FM consultants accounted for16.4% of the respondents, FM residents for 30%, FM specialists for 22.5, and GP for 31.1%. Regarding clinic distribution for the research subjects, the Ministry of health (MOH) clinic was the most prominent clinic, constituting 63.2% of the interviewed PCPs. In contrast, JHAH was the least clinic undertaking screening, constituting only 13.6% of the total interviewed healthcare providers. The most preferred CRC screening guideline is the US Preventive Service Task Force recommendation, with almost every respondent (99.1%) highlighting the use of the approach.

The results from section B of the questionnaire highlighted that only 5.85% of the participants assessed risk stratification correctly for all the health scenarios and 14.75% of the participants stratified all scenarios correctly except one. Moreover, most of the respondents (64.17%) had half of the scenarios right, 13.58% of the participants had only one correct scenario, and 1.41% had all scenarios answered incorrectly. From the scenarios, no respondents answered “I don't know” for all the events. The scenario

with the highest correct answer rating was scenario 2 (90.63%), followed by scenario 1 (88.06%) and scenario 3 (21.08%). The poorest answered scenario in the study was scenario 3 (17.41%).

In Table 2, regarding the CRC modalities, the participants had a mean CRC understanding score of 20.62 (76.37%) out of the maximum score of 27 (100%). The least possible score obtained from the study was 0 (0%), while the maximum statistic from the survey was 4 (14.81%). The correlation coefficient, r, for the relationship between specialty and educational level is 0.194, p = 0.000, while the correlation coefficient, r, for the relationship between specialty and PCP using CRC screening is-0.066, p = 0.172. In addition, the correlation coefficient, r, for the relationship between PCPs practicing CRC screening and educational level is-0.075, p = 0.121.

Table 1: On average, how many patients do you see in a day?

		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	>40	10	2.3	2.3	2.3
	≤20	295	69.1	69.1	71.4
	21–40	122	28.6	28.6	100.0
	Total	427	100.0	100.0	

Table 2: CRC modalities, practice years and educational level

		Educational level	Years of practice	Screen patients for CRC
Educational level	Pearson's correlation	1	.010	.148**
	Sig. (2-tailed)		.831	.002
	Sum of squares and cross-products	114.323	15.803	8.115
	Covariance	.268	.037	.019
	N	427	427	427
Years of practice	Pearson correlation	.010	1	- .162**
	Sig. (2-tailed)	.831		.001
	Sum of squares and cross-products	15.803	20326.033	- 117.852
	Covariance	.037	47.714	- .277
	N	427	427	427
Screen patients for CRC	Pearson's correlation	.148**	- .162**	1
	Sig. (2-tailed)	.002	.001	
	Sum of squares and cross-products	8.115	- 117.852	26.164
	Covariance	.019	- .277	.061
	N	427	427	427

**Correlation is significant at the 0.01 level (2-tailed).

Concerning the participants' understanding of the therapeutic screening approaches needed for CRC's average-risk patients, slightly more than half of the respondents (57.2%) did not approve the use of serum carcinoembryonic antigen (CEA) test for the average-risk patients, the majority of PCPs (93%) recommended the use of flexible sigmoidoscopy, 54.4% of the respondents rejected the use of double-contrast barium enema (DCBE) test, almost all the participants (97.4%) recommended colonoscopy test, and most (97.7%) PCPs recommended the use of FOBT. Furthermore, most health providers could suggest or recommend the screening age for the various screening techniques, as well as the screening frequencies.

Most respondents correctly suggested screening patients with various health conditions concerning high-risk patients. More than two-thirds (68.2%) of health providers recommended screening patients with hereditary nonpolyposis colorectal cancer, and approximately three-quarters (74.3%) recommended screening for patients with inflammatory bowel disease. In comparison, 63.3% of the respondents suggested screening for patients with familial adenomatous polyposis. Colonoscopy was the most recommended screening test for the condition (71%).

Generally, almost all (93.5%) respondents reported practicing the CRC screening technique with their patients. Nonetheless, the average percentage of the screened patients was significant because two-thirds (63.9%) of the interviewed PCPs screened less than half of the qualified patients to undergo the therapeutic probe. Concerning the starting age for screening, almost three-quarters (72.5%) of the respondents highlighted that the starting screening age is 50 years, 1.2% reported that it is 60 years, 7.4% stated the age to be 40, and 12.5% highlighted the age to be 45years. In terms of the prominence of the CRC screening technique, the most used process is FOBT (71.2%), followed by colonoscopy (10.5%), flexible sigmoidoscopy (1.6%), and CEA (1.2%). The least used CRC screening is the DCBE (0.7%).

Regarding factors affecting the health providers from CRC screening of their patients, the result from the univariate logistic regression analysis revealed a significant association between the participants' knowledge and practice of the CRC screening technique. The majority of the participants (58.8%) disagreed, with an additional 16.9% strongly disagreeing with the recommendation of the screening discrepancies compared to other guidelines. Most participants (69.6%) agreed that the screening technique is cost-effective. Moreover, most study subjects (63.7%) disagreed and 12.2% strongly disagreed that time constraints during the regular check-up for CRC would translate that other chronic illness would have more prominence than CRC screening. Regarding factors affecting the CRC screening of patients by the PCPs, the results highlighted a

significant link between healthcare providers' understanding of the screening mode with the operations of the CRC screening technique. As shown in Table 3, PCPs practicing CRC screening had more knowledge scores than those not using the screening technique (p = 0.110). Health providers who considered CRC screening to be financially expensive and are from regions with adequate healthcare resources were more likely to use it. Nonetheless, the logistic regression analysis results are not a prominent pointer to the fact. Table 3 reports the perspective of CRC screening being financially unsustainable (odds ratio [OR] 1.6, 95% CI: 0.8–3.4) or having abundant screening equipment for the procedure (OR 0.9, 95% CI: 0.3–2.4) persisted in being prominently linked to the application of the CRC screening technique.

Table 3: Variables in the equation

	B	SE	Wald	df	Sig.	Exp (B)	95% CI for EXP (B)	
							Lower	Upper
Knowledge of the CRC test	- .485	.733	.437	1	.509	.616	.146	2.591
CRC screening is inconsistent	.959	.379	6.409	1	.011	2.609	1.242	5.482
CRCs are cost-effective	.469	.382	1.513	1	.219	1.599	.757	3.379
Priority than CRC screening	.333	.395	.711	1	.399	1.395	.644	3.023
CRC screening is beneficial to patients	- .372	.497	.560	1	.454	.690	.261	1.825
Adequate resources for CRC	- .120	.514	.054	1	.816	.887	.324	2.431
Constant	- 4.100	3.008	1.858	1	.173	.017		

4. Discussion

Only 5.85% of the participants in the study correctly identified the risk stratification for the 4 cases. The reported average knowledge score for the CRC screening technique was 76.37%, and there is a positive knowledge score related to specialty and education level. Though most (93.5%) of the respondents reported practicing the CRC screening technique with their patients, only 36.1% of the respondents screened 50% of the patients. The most prominent utilized CRC screening techniques were flexible sigmoidoscopy (93%), colonoscopy (97.4%), and FOBT (97.7%). The least used screening techniques were DCBE and CEA. Despite using CEA, the healthcare guideline does not approve its use for average-risk patients.

Most respondents reported correct answers for the most proper screening technique for the average-risk patients with CRC. Additionally, most health providers interviewed gave an accurate recommendation for the 3 cases concerning high-risk patients. Nonetheless, the proposals did not align with the health protocols and guidelines. Most participants recommended FOBT; however, there is no clear recommendation for the use of FOBT for high-risk patient screening, highlighting an apparent waste due to the PCP's improper use of screening resources. Overall, the inappropriate use of screening resources is one of the fundamental factors for the lack of clear understanding concerning CRC modalities. Similar research in the US concerning CRC screening for high-risk patients highlighted that participants did not have comprehensive knowledge. [15] The lack of knowledge among PCPs could be due to the limited number of patients they screen. Some patients seek a diagnosis from other healthcare providers like gastroenterologists, who presumably perform most patients' follow-up screening.

The study's average knowledge score was 76.37%, and the participants with other PG degree qualifications and healthcare specialties had high scores. The outcomes from the knowledge scores are harmonious or compatible with similar research highlighting PCPs with other PG degrees and healthcare specialties. There is a significant relationship between practicing CRC screening and years of practice (p =.001) and education level (p=.002). In the research, 93.5% of the respondents practiced CRC screening on their patients. In contrast with our other studies and another similar study in the US, a previous article in the US reported almost an absolute percentage (99%) of participants practicing CRC screening, and another Italian study reported nearly 80% of participants practicing CRC screening. [16, 17] Generally, our research's screening rates are almost the same as those in other studies, with even more percentages. Although the respondents in our research practiced CRC screening, the average percentage of the screened patients was significant because two-thirds (63.9%) of the interviewed PCPs screened less than half of the qualified patients to undergo the therapeutic probe. When we compared the results of our study with a Malaysian study, we observed that the Malaysian study reported only 20% of PCPs screened more than half of patients. [18]One of the possible explanations for PCPs screening less than half of the patients eligible for screening is a lack of collaborative efforts to provide the most appropriate screening practices and CRC screening guidelines to healthcare providers.

5. Conclusion

In conclusion, most PCPs in Al Ahsa, Saudi Arabia, scored very well on the CRC screening modality. Most PCPs correctly recommended the best screening techniques for average-risk patients and were aware of the screening starting age and frequency. Moreover, health providers correctly recommended screening techniques for various high-risk patients with some severe conditions. We found that CRC knowledge and PCP education and specialty are clearly correlated. Furthermore, there is a clear relationship between the healthcare providers' understanding of the screening mode to the operations of the CRC screening technique. Health providers who considered CRC screening financially expensive and are from regions with adequate healthcare resources were more likely to use it.

Conflict of Interest

There are no conflicts of interest to disclose.

Ethical Consent

Informed written consent was obtained from all participants in the study.

References

[1] Saudi Arabia Source: Globocan Incidence, Mortality and Prevalence by Cancer Site.
[2] Alqahtani WS, Almufareh NA, Domiaty DM, et al. Epidemiology of cancer in Saudi Arabia thru 2010-2019: a systematic review with constrained meta-analysis. AIMS Public Health 2020; 7 (3): 679–696; doi: 10.3934/publichealth.2020053.
[3] Al-Zalabani A. Preventability of Colorectal Cancer in Saudi Arabia: Fraction of Cases Attributable to Modifiable Risk Factors in 2015-2040. Int J Environ Res Public Health 2020; 17 (1): 320; doi: 10.3390/ijerph17010320.
[4] US Preventive Services Task Force. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement. JAMA 2021; 325 (19): 1965–1977; doi: 10.1001/jama.2021.6238.
[5] Alsanea N, Almadi MA, Abduljabbar AS, et al. National Guidelines for Colorectal Cancer Screening in Saudi Arabia with strength of recommendations and quality of evidence. Ann Saudi Med 2015; 35 (3): 189–195; doi: 10.5144/0256-4947.2015.189.
[6] Shaheen NA, Alaskar A, Almuflih A, et al. Screening Practices, Knowledge and Adherence Among Health Care Professionals at a Tertiary Care Hospital. Int J Gen Med 2021; 14: 6975–6989; doi: 10.2147/IJGM. S329056.
[7] Triantafillidis JK, Vagianos C, Gikas A, et al. Screening for colorectal cancer: the role of the primary care physician. Eur J Gastroenterol Hepatol 2017; 29 (1): e1–e7; doi: 10.1097/MEG.0000000000000759.
[8] Khoja A, Aljawadi M, Al-Shammari SA, et al. Utilization of Colorectal Cancer Screening among Saudi Elderly Population: A Study from the Saudi National Survey for Elderly Health. Asian Pac J Cancer Prev 2018; 19 (12): 3401–3407; doi: 10.31557/APJCP.2018.19.12.3401.
[9] Aga SS, Khan MA, Alsulimani EF, et al. Knowledge & Awareness regarding colorectal cancer among health and allied students of King Saud Bin Abdulaziz University for Health Sciences, Jeddah. J Family Med Prim Care 2021; 10 (6): 2284–2292; doi: 10.4103/jfmpc. jfmpc_2427_20.
[10] Mosli M, Alnahdi Y, Alghamdi A, et al. Knowledge, attitude, and practices of primary health care physicians toward colorectal cancer screening. Saudi J Gastroenterol 2017; 23 (6): 330–336; doi: 10.4103/sjg. SJG_1_17.
[11] Alshammari AMAHAARA ANSAFMARGASAAF MARFANS. Knowledge and attitude of primary healthcare physicians toward colorectal cancer screening in Qassim region, Saudi Arabia-. International Journal of Medicine in Developing Countries 2021; 5 (10): 1784–1790.
[12] Almatroudi A. The Incidence Rate of Colorectal Cancer in Saudi Arabia: An Observational Descriptive Epidemiological Analysis. Int J Gen Med 2020; 13: 977–990; doi: 10.2147/IJGM. S277272.
[13] Kingdom of Saudi Arabia Statistical Year Book. Available from: https: //www.moh. gov. sa.
[14] Ooi CY, Hanafi NS, Liew SM. Knowledge and practice of colorectal cancer screening in an urban setting: cross-sectional survey of primary care physicians in government clinics in Malaysia. Singapore Med J 2019; 60 (11): 596–604; doi: 10.11622/smedj.2019011.
[15] Schroy PC, Barrison AF, Ling BS, et al. Family history and colorectal cancer screening: a survey of physician knowledge and practice patterns. Am J Gastroenterol 2002; 97 (4): 1031–1036; doi: 10.1111/j.1572-0241.2002.05624. x.
[16] Federici A, Giorgi Rossi P, Bartolozzi F, et al. Survey on colorectal cancer screening knowledge, attitudes, and practices of general practice physicians in Lazio, Italy. Prev Med 2005; 41 (1): 30–35; doi: 10.1016/j. ypmed.2004.11.010.
[17] Klabunde CN, Lanier D, Nadel MR, et al. Colorectal cancer screening by primary care physicians: recommendations and practices, 2006-2007. Am J Prev Med 2009; 37 (1): 8–16; doi: 10.1016/j. amepre.2009.03.008.
[18] Norwati D, Harmy MY, Norhayati MN, et al. Colorectal cancer screening practices of primary care providers: results of a national survey in Malaysia. Asian Pac J Cancer Prev 2014; 15 (6): 2901–2904; doi: 10.7314/apjcp.2014.15.6.2901.