

KNOWLEDGE AND ATTITUDE OF PHYSICIANS REGARDING SCREENING OF
COLORECTAL CANCER AT AL-KARKH HEALTH DIRECTORATE

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ABSTRACT

Background: Colorectal cancer (CRC) is the third most common cancer and the second leading cause of cancer mortality worldwide, with incidence rising steadily in Iraq over the past two decades. Unlike high-income countries where mortality is declining due to screening, most Iraqi patients present at advanced stages. Key risk factors include age, family history, and lifestyle factors, highlighting the urgent need for effective screening, particularly colonoscopy, starting at age 45. **Methods:** This study was a descriptive cross sectional study conducted among internal medicine and general surgery physicians at Al-Imammein Al-Kadhimain medical city, Al-Yarmouk Teaching Hospital by sampling. To assess knowledge attitude and practice of colorectal cancer screening. A designed questionnaire was conducted to included physicians to assess knowledge, attitude and practice of colorectal cancer screening. **Results:** A total of 172 physicians participated, the majority being residents (95.3%). Overall knowledge about colorectal cancer (CRC) screening was limited, with only 10.5% achieving good knowledge, 49.4% acceptable, and 40.1% poor. While 75% correctly identified colonoscopy as the gold standard, substantial gaps existed regarding test sensitivity and specificity, especially for FIT and CT colonography. Regarding attitudes, 59.3% recommended screening for asymptomatic patients, most often colonoscopy every 5 years. Univariable regression showed that being a specialist (OR=15.2, $p=0.004$), having a family history of cancer (OR=2.52, $p=0.066$), and recommending screening (OR=3.85, $p=0.039$) were associated with better knowledge. In the multivariable model, specialist position (OR=15.0, $p=0.0075$) and family history of cancer (OR=3.15, $p=0.0375$) remained independent predictors. **Conclusion:** Colorectal cancer (CRC) is a major cause of cancer mortality, with incidence rising in Iraq where patients often present late. This study showed significant gaps in physicians' knowledge and practices regarding CRC screening, with colonoscopy recognized as the gold standard but knowledge gap and limited practice persisting. Barriers included patient refusal and unclear pathways, underscoring the need for education, structured guidelines, and a national screening program.

INTRODUCTION

Colorectal cancer ranks as the third most frequently diagnosed malignancy globally, following lung and breast cancers, and it represents the second leading cause of cancer-related mortality worldwide.^[1] In men, it ranks as the second leading cause of cancer-related mortality following lung cancer, while in women, it is the third leading cause, after breast and lung cancers.^{[2][3]} Between 2005 and 2015, colorectal cancer had the fourth highest absolute years of life lost among all types of malignancy.^[2] In 2015, the global incidence of colorectal cancer reached 1.7 million cases, resulting in

approximately 832,000 deaths.^[4] Projections indicate that by 2030, the number of new cases will rise to 2.2 million, with an estimated 1.1 million deaths attributable to the disease.^[5]

In Iraq, the incidence has been rising steadily over the past two decades. National statistics from the Iraqi Cancer Registry indicated that colorectal cancer incidence rose from 1.2 per 100,000 in 1999 to 5.9 per 100,000 in 2019, making it the third most prevalent cancer in Iraq.^[6] Regional data from Karbala province confirmed a similar upward trend, with incidence rising

from 3.83 per 100,000 in 2012 to 5.69 per 100,000 in 2020.^[7] CRC predominantly affects middle-aged and older adults, with the majority of cases diagnosed in individuals aged 50–59 years, while a significant proportion also occurs in those aged 40–49 years.^{[6][7][8]} These findings highlight the increasing public health burden of CRC in Iraq and the urgent need for effective screening, early detection, and preventive strategies.

In the UK and other Western nations, mortality from colorectal cancer has generally stabilized or decreased. Conversely, most low- and middle-income countries are experiencing a growing CRC burden, which may be attributed to lower awareness, limited engagement in preventive health behaviors, delayed screening, and postponed treatment referral.^[9] In Iraq, clinical experience indicates that patients frequently present at advanced stages with widespread metastases, restricting therapeutic options.^[9]

From local experience, patients with CRC in Iraq present late in their disease with multiple metastases when treatment options are limited. Traditions and cultural factors act as barriers to having screening colonoscopy, which most patients perceive as unacceptable.^{[10][11]}

Screening methods for colorectal cancer, including the fecal immunochemical test (FIT), flexible sigmoidoscopy, colonoscopy, and CT colonography, are effective in detecting polyps and early-stage tumors, enabling early management.^[9] Early detection and early treatment of colorectal cancer are associated with improved patient outcomes and reduced mortality.^[10] Consequently, screening is essential to identify asymptomatic individuals at risk and to refer them for further evaluation and intervention.^[10] The median age at diagnosis is 60 years for men and 57 years for women. According to the national guidelines of the Iraqi Ministry of Health, as well as the recommendations of the American Cancer Society and the US Preventive Services Task Force (USPSTF), Colorectal cancer screening is recommended to begin at age 45.^{[11][12]}

This study aims to assess knowledge attitude and practice of colorectal cancer screening among sample of internal medicine and general surgery doctors in Al-Imammein Al-Kadhimain medical city, Al-Yarmouk Teaching Hospital and to identify barriers as well as facilitators that will assist in drawing up changes that would enhance physician-related cancer screening.

SUBJECTS AND METHODS

Study Design and setting

This cross sectional study included 172 participants and was conducted from the 1st of March 2025 until the end of July 2025. The study was conducted at healthcare organizations in Baghdad/ Al-Karkh in Al-Imammein Al-Kadhimain and Al-Yarmouk Teaching Hospitals.

Inclusion criteria was Iraqi physicians (residents, specialists, and consultants) in internal medicine and general surgery at Al-Imammein Al-Kadhimain medical city and Al-Yarmouk Teaching Hospital, volunteered to give information about their knowledge attitude and practice toward colorectal cancer screening.

Physicians with incomplete questionnaires were excluded.

Data Collections Tools

Attitude and Practice of Physicians Regarding Screening of Colorectal Cancer in Qatar: A Cross-Sectional Survey” by Mahmoud et al. (2020) in Qatar.^[13] The questionnaire was further modified by supervisors as well as specialists in community medicine, general surgery, and internal medicine. The researcher obtained the data from physicians through direct interviews.

Questionnaire

The questionnaire contains questions regarding the demographic characteristics of the physician and cancer screening knowledge, attitude, current practice, and barriers to practicing screening of colorectal cancer of the physician. The questionnaire contains the following domains.

- **Domain 1:** Sociodemographic characteristics.

Age, gender, medical degree, years in practice, primary site of practice, family history of cancer.

- **Domain 2:** Knowledge and attitude of colorectal cancer screening:

Age for screening, appropriate screening interval, appropriate screening method, sensitivity and specificity of screening methods, gold standard for CRC screening, most common complication of colonoscopy in screening, preparation before colonoscopy.

- **Domain 3:** Practice of CRC screening:

Routinely recommending screening, the screening method most often being recommended, and referring patient for screening.

Ethical Considerations and Official Approvals

Formal approvals were obtained from scientific committee of Arab board of health & specializations. Then an official permission was obtained from the directorate of health of Baghdad and from Al-Imammein Al-Kadhimain medical city and from Al-Yarmouk Teaching Hospital. Verbal consent was taken from all participants after explaining the aim of the study and only those who were willing to participate in the study were included.

Statistical Analysis

Data were entered and analysed using IBM SPSS Statistics version 26.0. Descriptive statistics were presented as frequencies and percentages for categorical variables. To assess the association between doctors' knowledge levels regarding colorectal cancer (CRC) screening and their sociodemographic and attitudinal variables, the Chi-square test (or Fisher's exact test when

appropriate) was used. P-value of (<0.05) was considered statistically significant.

For further analysis of predictors associated with good knowledge of CRC screening, binary logistic regression was conducted. Univariable logistic regression was initially applied to examine the crude relationship between each independent variable and good knowledge. Variables with a p-value ≤ 0.10 in univariable analysis were then entered into a multivariable logistic regression model to identify independent predictors. The results of

regression analyses were reported as odds ratios (ORs) with 95% confidence intervals (CIs), along with beta coefficients (β), standard errors, z-scores, and p-values.

RESULTS

Sociodemographic data

Participants included 106 males and 66 females, primarily residents (95.3%). Experience among specialists and consultants varied, with 12.5% having up to 5 years. The distribution was nearly equal between the two sites, and 35.5% reported a family history of cancer.

Table 1: Sociodemographic and Professional Characteristics of the Participating Doctors (N = 172).

Variables		No.	%
Gender	Male	106	61.6
	Female	66	38.4
Specialty	Resident	164	95.3
	Specialist	5	2.9
	Consultant	3	1.7
Post-graduate Year	PGY (1-2)	42	24.4
	PGY (3-4)	48	27.9
	PGY (5-7)	82	47.7
Years of Experience (if specialist/consultant) (N=8)	Up to 5 years	1	12.5
	5–10 years	4	50.0
	More than 10 years	3	37.5
Primary Site of Practice	Al-Imammein Al-Kadhimain Medical City	81	47.1
	Al-Yarmouk Teaching Hospital	91	52.9
Family History of Cancer	Yes	61	35.5
	No	111	64.5

Knowledge about colorectal cancer (CRC) screening

Table 2 presents responses from 172 doctors to 12 multiple-choice questions assessing their knowledge of colorectal cancer (CRC) screening.

Table (2): Doctors' Knowledge on Key Aspects of Colorectal Cancer Screening (N = 172).

Question	Knowledge area / response option	No.	%
1	Age group of asymptomatic individuals for CRC screening		
	40–60 years	52	30.2
	45–75 years	48	27.9
	50–75 years	57	33.1
	55–80 years	15	8.7
2	Sensitivity of colonoscopy		
	60–70%	21	12.2
	70–85%	63	36.6
	86–100%	57	33.1
	Not sure	31	18.0
3	Specificity of colonoscopy		
	80–90%	47	27.3
	91–95%	43	25.0
	95–100%	27	15.7
	Not sure	55	32.0
4	Sensitivity of fecal immunochemical test (FIT)		
	50–60%	40	23.3
	60–70%	37	21.5
	70–80%	32	18.6
	80–90%	63	36.6
5	Specificity of fecal immunochemical test (FIT)		

Question	Knowledge area / response option	No.	%
	80 – 85%	48	27.9
	86 – 91% (correct response)	28	16.3
	92 – 96%	15	8.7
	Not sure	81	47.1
6	Sensitivity of CT colonography		
	60–70%	56	32.6
	75–85%	46	26.7
	90–96%	32	18.6
	Not sure	38	22.1
7	Specificity of CT colonography		
	75–85%	52	30.2
	86–98%	53	30.8
	99–100%	15	8.7
	Not sure	52	30.2
8	Sensitivity of flexible sigmoidoscopy		
	50–60%	25	14.5
	60–70%	32	18.6
	70–80%	67	39.0
	Not sure	48	27.9
9	Specificity of flexible sigmoidoscopy		
	80–85%	38	22.1
	86–91%	37	21.5
	90–95%	32	18.6
	Not sure	65	37.8
10	Most common complication of colonoscopy		
	Bleeding	92	53.5
	Perforation	42	24.4
	Infection	10	5.8
	Adverse reaction to sedation	16	9.3
	No complications	6	3.5
	Not sure	6	3.5
11	Appropriate patient preparation before colonoscopy		
	No dietary restrictions and no bowel preparation required	0	0.0
	Clear liquid diet for 24 hours and split-dose bowel preparation	161	93.6
	Full solid diet and single-dose laxative on morning of procedure	5	2.9
	Fasting only for 6 hours before procedure with no bowel prep	6	3.5
12	Gold standard for CRC screening according to current clinical guidelines		
	Fecal immunochemical test (FIT)	12	7.0
	CT colonography	13	7.6
	Flexible sigmoidoscopy	18	10.5
	Colonoscopy	129	75.0

Figure 1 illustrates the overall knowledge levels of participating doctors concerning colorectal cancer (CRC) screening, categorized based on the number of correct answers to 12 knowledge-based questions. Nearly half of doctors 85 (49.4%) demonstrated an acceptable level of knowledge by answering 5 to 8 questions correctly. Poor knowledge defined as 1 to 4 correct responses was observed in 69 doctors (40.1%). Only 18 participants

(10.5%) achieved a good knowledge level, correctly answering 9 to 12 questions.

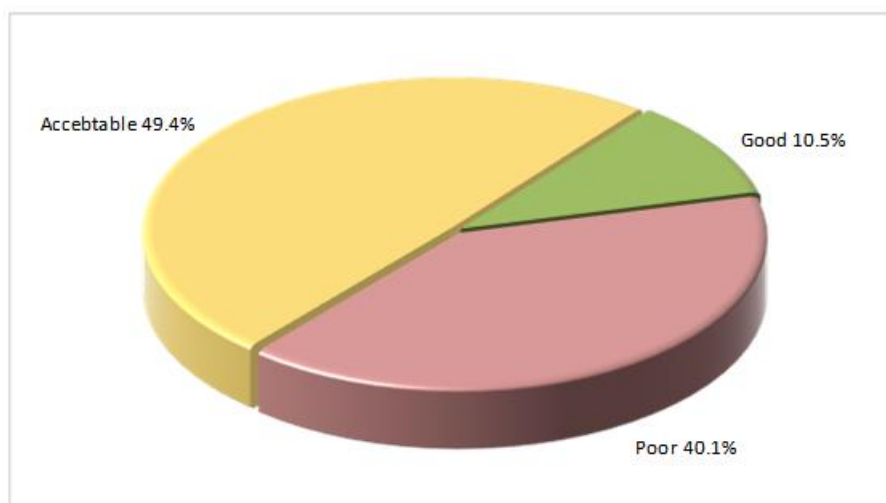


Figure (1): Distribution of Doctors Based on Overall Knowledge Levels Regarding Colorectal Cancer Screening (N = 172).

Attitude of doctors about colorectal cancer (CRC) screening.

Table 3 shows the data of doctors' attitudes toward recommending and implementing colorectal cancer (CRC) screening.

Table (3): Doctors' Attitudes toward Colorectal Cancer Screening Practices and Implementation (N = 172)

Attitude			No.	%
1	Do you recommend colorectal cancer screening for your asymptomatic patients?			
	Yes		102	59.3
	If so, what test do you recommend?	FIT every year	7	6.9
		FIT every 2 years	16	15.7
		Colonoscopy every 5 years	62	60.8
		Colonoscopy every 10 years	14	13.7
		Sigmoidoscopy every 5 years	2	2.0
		CT every 5 years	1	1.0
		FOBT every year	0	0.0
	No		70	40.7
2	How frequently do you recommend colorectal cancer screening in outpatient clinics?			
	Always		9	5.2
	Often		27	15.7
	Sometimes		55	32.0
	Rarely		30	17.4
	Never		9	5.2
	Do not have clinic		42	24.4
3	Do you offer colorectal cancer screening for inpatients?			
	Yes		67	39.0
	No		105	61.0
4	Who do you think should screen asymptomatic patients for colorectal cancer?			
	Nurse		6	3.5
	Cancer screening program team		94	54.7
	Trainees		11	6.4
	Specialists/Consultants		53	30.8
	Other		8	4.7

Associations of Doctor's sociodemographic data with colorectal cancer (CRC) screening

Table 4 indicates no significant link between gender and knowledge level ($p=0.562$), with similar poor knowledge

rates for both sexes. A significant association was found between specialty and knowledge ($p=0.003$). Family history of cancer correlated with better knowledge

(p=0.019). Other factors like Post-graduate year showed no significant impact on knowledge levels.

Table (4): Association between Doctors' Sociodemographic Characteristics and Colorectal Cancer (CRC) screening Knowledge Level (N = 172).

Variables		Knowledge level								P value
		Poor		Acceptable		Good		Total		
		No=69	%	No=85	%	No=18	%	N=172	%	
Gender	Male	43	40.6%	50	47.2%	13	12.3%	106	61.6%	0.562
	Female	26	39.4%	35	53.0%	5	7.6%	66	38.4%	
Specialty	Resident	68	41.5%	82	50.0%	14	8.5%	164	95.3%	0.003
	Specialist	0	0.0%	2	40.0%	3	60.0%	5	2.9%	
	Consultant	1	33.3%	1	33.3%	1	33.3%	3	1.7%	
Post-graduate Year	PGY (1-2)	16	38.1%	23	54.8%	3	7.1%	42	24.4%	0.259
	PGY (3-4)	17	35.4%	28	58.3%	3	6.3%	48	27.9%	
	PGY (5-7)	36	43.9%	34	41.5%	12	14.6%	82	47.7%	
Years of Experience (if specialist/ consultant) (N=8)	Up to 5 years	1	100.0%	0	0.0%	0	0.0%	1	12.5%	0.084
	5–10 years	0	0.0%	2	50.0%	2	50.0%	4	50.0%	
	More than 10 years	0	0.0%	1	33.3%	2	66.7%	3	37.5%	
Family History of Cancer	Yes	29	47.5%	22	36.1%	10	16.4%	61	35.5%	0.019
	No	40	36.0%	63	56.8%	8	7.2%	111	64.5%	

Associations of Doctor's attitude with colorectal cancer (CRC) screening

Table 6 examines the link between doctors' attitudes toward colorectal cancer (CRC) screening and their

knowledge levels. A significant association was found between recommending screening and higher knowledge (p = 0.001).

Table (6): Association between Doctors' Attitudes and Knowledge Levels Regarding Colorectal Cancer Screening (N = 172).

Attitude	Knowledge level								P value
	Poor		Acceptable		Good		Total		
	No=69	%	No=85	%	No=18	%	N=172	%	
Do you recommend colorectal cancer screening for your asymptomatic patients?									
Yes	30	29.4%	57	55.9%	15	14.7%	102	59.3%	0.001
No	39	55.7%	28	40.0%	3	4.3%	70	40.7%	
If so, what test do you recommend?									
FIT every year	0	0.0%	6	85.7%	1	14.3%	7	6.9%	0.260
FIT every 2 years	4	25.0%	9	56.3%	3	18.8%	16	15.7%	
Colonoscopy 5 years	20	32.3%	36	58.1%	6	9.7%	62	60.8%	
Colonoscopy 10 years	5	35.7%	4	28.6%	5	35.7%	14	13.7%	
Sigmoidoscopy 5years	1	50.0%	1	50.0%	0	0.0%	2	2.0%	
CT every 5 years	0	0.0%	1	100.0%	0	0.0%	1	1.0%	
How frequently do you recommend colorectal cancer screening in outpatient clinics?									
Always	2	22.2%	5	55.6%	2	22.2%	9	5.2%	0.064
Often	7	25.9%	15	55.6%	5	18.5%	27	15.7%	
Sometimes	22	40.0%	26	47.3%	7	12.7%	55	32.0%	
Rarely	20	66.7%	10	33.3%	0	0.0%	30	17.4%	
Never	2	22.2%	6	66.7%	1	11.1%	9	5.2%	
Do not have clinic	16	38.1%	23	54.8%	3	7.1%	42	24.4%	
Do you offer colorectal cancer screening for inpatients?									
Yes	23	34.3%	33	49.3%	11	16.4%	67	39.0%	0.099
No	46	43.8%	52	49.5%	7	6.7%	105	61.0%	
Who do you think should screen asymptomatic patients for colorectal cancer?									
Nurse	3	50.0%	3	50.0%	0	0.0%	6	3.5%	0.057
Cancer screening team	46	48.9%	36	38.3%	12	12.8%	94	54.7%	
Trainees	2	18.2%	7	63.6%	2	18.2%	11	6.4%	
Specialists/Consultants	17	32.1%	32	60.4%	4	7.5%	53	30.8%	
Other	1	12.5%	7	87.5%	0	0.0%	8	4.7%	

DISCUSSION

Knowledge about CRC Screening

The current study demonstrated that half of the participants have scoring in the “acceptable” range, and only 10.5% achieving “good” knowledge. This highlights important gaps, particularly regarding quantitative test performance (sensitivity and specificity of tests). These findings are consistent with a study in Alghamdi et al., 2022, Saudi Arabia, which also reported modest knowledge scores among primary care physicians (mean 4.65/10), with especially low knowledge among residents compared to consultants.^[14] Similarly, study Mahmoud et al. (2020) in Qatar found that knowledge about the correct age groups involved in CRC screening and modalities used in screening remained suboptimal, particularly among consultants.^[13]

In the present study, fewer than one-third (27.9%) of physicians correctly identified the CRC screening age range (45–75 years) for average risk according to the updated guideline, while still many chose (50–75 years) according to the old CRC screening guideline, this consistent with study conducted by Mahmoud et al., 2020, Qatar, where 65% of the participants selected the old CRC screening guideline (50–75 years).^[13] This may be attributed that many physicians still follow the old CRC screening guideline and lag in adopting new CRC screening guidelines.

In contrast to the results of three studies conducted in Saudi Arabia by Alghamdi et al., 2022, that showed 64% of the participants correctly identifying the initiation age for CRC screening (45 years)^[14]

Distribution of Doctors Based on Overall Knowledge Levels

The current study demonstrates that nearly half (49.4%) of participants exhibited an acceptable level of knowledge regarding CRC screening, while 40.1% showed poor knowledge and only 10.5% achieved a high knowledge level. These findings highlight substantial knowledge gaps among doctors, which may have implications for effective CRC prevention and early detection. The proportion of doctors with adequate knowledge in this study is consistent with the result of study conducted by Mahmood et al., 2023 in Bahrain, where 48.3% of participants demonstrated adequate knowledge of CRC screening program, and 51.7% had poor knowledge.^[15] Similarly, Aldukhayel and Alsudairi (2021) in Saudi Arabia reported a generally low mean knowledge score among physicians, with individual factors such as gender, experience, and job title significantly influencing knowledge levels.^[16]

Collectively, these findings across multiple settings indicate that while physicians generally recognize the importance of CRC screening, persistent knowledge deficits limit the translation of positive attitudes into consistent, evidence-based practice.

Doctors' Attitudes toward CRC Screening Practices and Implementation

In the present study, only 59.3% of doctors recommending CRC screening for asymptomatic patients, while 40.7% did not, highlighting significant deficiencies in adherence to preventive care guidelines. Similar findings have been reported by two studies conducted in Saudi Arabia, Altwijri and Rabbani (2023)^[17] and Arishi et al. (2025)^[18], who observed low levels of screening practices among physicians, with considerable uncertainty regarding the appropriate starting age and preferred screening tests.

A marked preference for colonoscopy every five years was evident in the current study, with 60.8% of those recommending screening selecting this option. The preference of colonoscopy over non-invasive modalities such as fecal immunochemical testing (FIT) or sigmoidoscopy is consistent with studies of Yusoff et al. (2021) in Malaysia^[19] and Alessa et al. (2023) in Saudi Arabia^[20], who also found colonoscopy to be the most frequently recommended test.

Association between Sociodemographic Features and CRC Knowledge

Specialty level was significantly associated with knowledge in the present study and emerged as the most strong independent predictor, with specialists and consultants achieving higher knowledge scores than residents. This is in agreement with Alghamdi et al., 2022 in Riyadh^[14] who found medical degree to be significantly associated with knowledge ($p < 0.001$), with consultants scored highest in knowledge, followed by registrars and residents, reinforcing the influence of clinical experience. Falah Tafti et al. (2024) in Iran^[21] similarly reported that higher specialty training and greater clinical experience correlated with better knowledge.

A significant association between a positive family history of cancer and higher knowledge levels was observed. This finding aligns with Jarab et al. (2024) in Jordan, who reported that doctors with a positive family history of cancer achieved higher CRC screening knowledge scores.^[22] Similarly, Khan et al. (2024) in Pakistan found that family history was a major motivator for CRC screening recommendations.^[23] Alzoubi et al. (2024), in a systematic review, confirmed that healthcare practitioners with personal or family experience of CRC tend to demonstrate greater awareness and are more inclined to recommend CRC screening.^[24] This mirrors findings of study conducted in Zambia by Asante-Moise et al. (2021)^[25], who reported that a first-degree family history of colorectal cancer was associated with increased provider knowledge and more appropriate CRC screening referrals.

Association between Doctors' Attitudes and Knowledge Levels

The current study findings indicate that doctors' knowledge and attitudes regarding CRC screening are suboptimal, with only a minority consistently recommending screening to asymptomatic patients. This observation is consistent with the study by Khan et al. (2024) in Pakistan, which reported that although over 90% of respondents select colonoscopy answer as a screening tool, only 6.1% routinely recommended CRC screening for all eligible patients in their daily practice. Similar to our results, the majority were aware of medical screening tools but not aware of CRC guideline specific steps or optimal intervals, highlighting a persistent knowledge-practice gap.^[23] This supports our finding that broad awareness does not necessarily translate into detailed daily medical practice and guideline-driven knowledge. Furthermore, the suboptimal attitudes and practices in our study echo those observed by Abbas & Alkhazraji (2024) in Baghdad, who found that while 67% of primary care physicians had good knowledge, less than half displayed a positive attitude to CRC screening program and only 30.5% had good screening practices.

The recent study also demonstrated that factors such as years of experience and job title influence knowledge and attitudes, with more experienced and higher-qualified physicians tending to have greater awareness and more positive attitudes toward CRC screening. Recent systematic reviews, such as Alzoubi & Al-Ghabeesh (2024) in Jordan, reinforce these findings on a global scale, concluding that many healthcare providers worldwide lack fundamental knowledge about CRC screening and that improving education, system clarity, and guidelines adherence are critical steps for better screening practices.^[24]

CONCLUSION

Colorectal cancer (CRC) is a major cause of cancer mortality, with incidence rising in Iraq where patients often present late. This study showed significant gaps in physicians' knowledge and practices regarding CRC screening, with colonoscopy recognized as the gold standard but knowledge gap and limited practice persisting. Barriers included patient refusal and unclear pathways, underscoring the need for education, structured guidelines, and a national screening program.

REFERENCES

1. Plummer M, de Martel C, Vignat J, Ferlay J, Bray F, Franceschi S. Global burden of cancers attributable to infections in 2012: a synthetic analysis. *Lancet Glob Heal*, 2016; 4: e609–e616.
2. Wang H, Naghavi M, Allen C, Barber RM, Bhutta ZA, Carter A, Casey DC, Charlson FJ, Chen AZ, Coates MM. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet*, 2016; 388: 1459–1544.
3. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2020. *CA Cancer J Clin* [Internet], 2020; 70: 7–30. doi: 10.3322/caac.21590.
4. Global B. Global, regional, and national cancer incidence, mortality, years of life lost, years lived with disability, and disability-adjusted life-years for 32 cancer groups, 1990 to 2015: a systematic analysis for the global burden of disease study. *JAMA Oncol*, 2017.
5. GLOBOCAN 2012: Estimated Cancer Incidence, Mortality and Prevalence Worldwide in, 2012.
6. Alwan N, Illami F, Nsoor M, Kerr D. Trends in the Incidence and Mortality of the Most Common Cancers in Iraq (Iraqi Cancer Registry 1999-2019). *gulf J Oncol*, 2022; 1: 47–57.
7. Mjali A, Hamzah SK, Darwish LAA, Al-Rubai ATA. Pattern of Colorectal Cancer in Karbala Province of Iraq: Data from Developing Country. *Asian Pacific J Environ Cancer* [Internet], 2024; 7: 15–19. doi:10.31557/apjec.2024.7.1.15-19.
8. Ibrahem S, Ahmed H, Zangana S. Trends in colorectal cancer in Iraq over two decades: incidence, mortality, topography and morphology. *Ann Saudi Med*, 2022; 42: 252–261. doi:10.5144/0256-4947.2022.252. Cited in : PMID: 35933610.
9. Safiri S, Sepanlou SG, Ikuta KS, Bisignano C, Salimzadeh H, Delavari A, Ansari R, Roshandel G, Merat S, Fitzmaurice C. The global, regional, and national burden of colorectal cancer and its attributable risk factors in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *lancet Gastroenterol Hepatol*, 2019; 4: 913–933.
10. Almadi MA, Alghamdi F. The gap between knowledge and undergoing colorectal cancer screening using the Health Belief Model: A national survey. *Saudi J Gastroenterol Off J Saudi Gastroenterol Assoc*, 2019; 25: 27.
11. Almadi MA, Allehibi A, Aljebreen MA, Alharbi OR, Azzam N, Aljebreen AM. Findings during screening colonoscopies in a Middle Eastern cohort. *Saudi J Gastroenterol Off J Saudi Gastroenterol Assoc*, 2019; 25: 20.
12. CDC - What Is Colorectal Cancer? 2019.
13. Mahmoud M, Parambil J, Danjuma M, Abubeker I, Najim M, Ghazouani H, Al-Mohanadi D, Al-Mohammed A, Kartha A, Yassin MA. Knowledge, attitude and practice of physicians regarding screening of colorectal cancer in qatar: a cross-sectional survey. *Adv Med Educ Pract*, 2020; 843–850.
14. Alghamdi AA, Almutairi AH, Aldosari FS, Al-Owayed AM, AlOtaibi HK, Alghamdi TA, Aldossary AS, Alghamdi Sr AA. Knowledge, attitude, and practice of colorectal cancer screening among primary healthcare physicians in Riyadh second health cluster. *Cureus*, 2022; 14.
15. Carnahan LR, Jones L, Brewer K, Molina Y,

- Rauscher G. Abstract A051: Race and gender differences in awareness of colorectal cancer screening tests among recently diagnosed colon cancer. *Cancer Epidemiol Biomarkers Prev*, 2020; 29: A051–A051.
16. Aldukhayel AM, Alsudairi HA, Alhomidani RA, Almutairi NS, Alturki FM, Almekhadi RG, Alolayan SA, Aljasser FM, Alshammari RF, Alshammari NS. Knowledge and attitude of primary healthcare physicians toward colorectal cancer screening in Qassim Region, Saudi Arabia. *Int J Med Dev Ctries*, 2021; 5: 1784–1790.
 17. Altwijri A, Rabbani U. Knowledge, Attitude, And Practice Towards Colorectal Cancer Screening Among Primary Health Care Physicians In Buraydah, Qassim, Saudi Arabia. *J Women Med Dent Coll*, 2023; 1. doi:10.56600/jwmdc.v1i3.26.
 18. Arishi AA, Al Hulaibi MA, Hakami AA, Khormi KJ, Daraj KM, Hakami EA, Najmi MY, Faqeeh HM, Masmali AM, Alhazmi A. Knowledge, attitude, and practices of physicians toward screening of colorectal cancer in Saudi Arabia. *Sage Open*, 2025; 15: 21582440251318480.
 19. Yusoff M, Zin FM, Daud N, Yusoff HM, Draman N. Colorectal Cancer Screening: Knowledge and Practice among Private General Practitioners in Northeast Peninsular Malaysia. *Educ Med J*, 2021; 13: 43.
 20. Alessa M, Alhelal FM, Al Ahmed AA, AlKhars AA, Alomran RK, Albaqshi MM, Alabdullatif NI, Alamer Z, Buzaid AH, Abbas H. Role of primary healthcare physicians in early detection of colorectal cancer in Al-Ahsa, Saudi Arabia. *Cureus*, 2023; 15.
 21. Falah TM, Esna-Ashari F, Ghahremani Y, Talebian N, Kharaz L, Pirdehghan A. Investigation of Iranian Family Physicians' Knowledge Toward Colorectal Cancer Screening, Risk Factors, and Signs and Symptoms, 2024.
 22. Jarab AS, Al-Qerem W, Almomani N, Abu Heshmeh S, Mukattash TL, Al Hamarneh YN. Colorectal cancer screening among the public: knowledge, attitudes, and the perceived barriers. *Int J Environ Health Res*, 2024; 34: 2578–2592.
 23. Khan A, Wazir HU, Javed M, Khan H, Khan L, Khan MA, Khan A, Wazir Jr H, Khan II A. Assessment of Knowledge, Attitude, and Practice Regarding Colorectal Carcinoma Screening Among Healthcare Personnel. *Cureus*, 2024; 16.
 24. Alzoubi MM, Al-Ghabeesh SH, Al-Ghabeesh S. Knowledge, attitude, practice, and perceived barriers regarding colorectal cancer screening practices among healthcare practitioners: a systematic review. *Cureus*, 2024; 16.
 25. Comfort A, Moise IK, Jackson C, Lucky B, Pearlstein EF, Whitney M, Abbas R, Kazuma SM. S338 Colorectal Cancer Screening in Zambia, Southern Africa: A Nationwide Survey on Knowledge, Attitudes, and Practices (KAP) Amongst Medical Doctors. *Am J Gastroenterol*, 2021; 116: S146–S147.