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Original Research Article

Public awareness and knowledge of colorectal cancer and screening: insights from a study based in Georgia, Caucasus region

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ABSTRACT

Background: Colorectal cancer (CRC) remains a major public health challenge in terms of prevention and early detection. This study evaluates awareness and knowledge of CRC and its screening program in the urban population of Tbilisi, Georgia, aiming to provide valuable insights for primary care practitioners and physicians worldwide.
Methods: A cross-sectional study involving 385 participants aged 18 and above conducted using CAM (Colorectal awareness measure) tool at a primary care center. Data were analyzed using descriptive statistics and ANOVA tests.
Results: The mean total knowledge score was 6.93 out of 19 (SD±4.54). Knowledge scores for symptoms and risk factors were 5.29 out of 9 (SD±2.25) and 3.74 out of 10 (SD±2.44), respectively. A significant 82.6% of participants lacked confidence in identifying CRC warning signs. Higher CRC awareness was correlated with tertiary education, younger age (31-40 years), and female gender. Among those aged 40 and above, 53.1% were aware of the free screening program, but only 16% correctly identified the screening initiation age.
Conclusions: Public awareness of CRC and its screening program in Georgia is insufficient. Improved awareness campaigns are needed to address these gaps.

Keywords: Colorectal cancer awareness, Public cancer awareness, Colorectal cancer screening program, Screening in primary care, Bowel cancer CAM

INTRODUCTION

Colorectal cancer (CRC) is the second leading cause of cancer-related deaths worldwide.[1] Despite advances in early detection and treatment, CRC remains a significant public health challenge. In Georgia, CRC is one of the four most prevalent cancers, with studies showing a marked increase in incidence between 2018 and 2022.[2,3] Alarmingly, only about one-third of cases are diagnosed at a localized stage, highlighting the need for better public awareness and screening efforts.[3] A 2018 study aimed at raising awareness among Georgian primary care physicians revealed that only 1.5% of eligible citizens participated in the CRC screening program, reflecting low participation rates among the Georgian population.[4]

This study was conducted to assess awareness of CRC symptoms, risk factors, and the screening program among adults in Tbilisi, Georgia. By identifying gaps in knowledge, this research aims to inform strategies to enhance public health initiatives in Georgia and similar settings globally.

The specific objectives of this study are to investigate, among adults attending primary care in Tbilisi, the capital of Georgia, the level of awareness regarding the symptoms and risk factors of colorectal cancer, as well as the availability of a screening program for eligible citizens. Additionally, the study aims to assess confidence in recognizing the warning signs of colorectal cancer, knowledge of age-related incidence, and the association

between socio-demographic factors and the level of knowledge about symptoms and risk factors of colorectal cancer.

METHODS

Study design

This cross-sectional study was conducted between September 2023 and February 2024 to evaluate public awareness and knowledge of CRC and its screening program among Georgian citizens. The study was conducted using printed surveys distributed at a primary care facility in Tbilisi. Data collection took place over one month. The research received official approval from the institutional review board and the ethics committee.

Study population and sampling

A sample size of 385 participants, aged 18 and above, was calculated based on Tbilisi's population of 1,241,700, with a 95% confidence interval.[5] The sample size was determined using Epi-Info version 7.1.5 (CDC, Atlanta). Exclusion criteria for the study included foreigners and patients with cognitive impairments.

Study tool

The study used the validated bowel CAM tool developed by university college London and cancer research UK.[6] The survey included 13 questions: 4 on demographics and 9 on symptoms, risk factors, and screening. It was adapted for Georgia, translated into Georgian, and peer-reviewed by medical professionals. A pilot test showed no issues, and final survey, averaging 7 min to complete, was distributed in print among primary care visitors.

Components of the CAM survey included

Demographic profile

In the demographic profile, the study included gender, age groups in intervals of 10-15 years, city of residence, and education status.

Knowledge of symptoms and warning signs of CRC

Awareness was assessed using 1 open-ended (unprompted) question and 9 close-ended (prompted) questions. The unprompted question measured recall of warning signs, while the prompted questions evaluated recognition of CRC symptoms. In the close-ended questions, 1 point was given for 'Yes' answers, and 0 points for 'No' or 'I don't know.'

Knowledge of risk factors of CRC

Awareness was assessed with 1 open-ended (unprompted) question and 10 close-ended (prompted) questions. The unprompted question gauged recall of risk factors, while the prompted questions evaluated recognition of CRC risk factors. In the close-ended questions, 1 point was given for 'yes' answers, and 0 points for 'no' or 'I don't know.'

Screening program

The survey included two questions about the CRC screening program: one close-ended on the availability of free screening for eligible citizens (50+ years old) and one open-ended on the initiation age of the program.

Additionally, two questions from the Bowel CAM tool on age-related cancer incidence and confidence in recognizing warning signs included without modification.

Description of variables

Awareness of CRC symptoms and risk factors assessed with knowledge scores: 0-9 for symptoms (derived from correctly answering 9 closed-ended questions) and 0-10 for risk factors (derived from correctly answering 10 closed-ended questions), totaling 19 points. Socio-demographic characteristics also considered.

Data collection

Data was collected via face-to-face interactions, consent, and distribution of printed questionnaires at the clinic. Responses were transferred daily to Google Sheets and stored confidentially.

Data analysis

Data was analyzed with IBM SPSS statistics. Descriptive analysis and ANOVA were used to examine knowledge scores for symptoms and risk factors of CRC. Normality was tested, with a 95% CI and significance set at $p<0.05$.

RESULTS

A total of 385 participants involved in study (Table 1).

Table 1: Socio-demographic characteristics of the participants (n=385).

Variables	N (%)
Age group (in years)	
18-30	72 (18.7)
31-40	119 (31)
41-50	86 (22.3)
51-60	51 (13.2)
61-69	39 (10.1)
70+	18 (4.7)
Gender	
Male	126 (32.7)
Female	259 (67.3)
Education status	
Primary/secondary	41 (10.7)
Tertiary	341 (88.6)
Prefer not to say	6 (1.6)

Knowledge of symptoms and warning signs of CRC

In the unprompted section (Table 2), the most commonly recalled symptoms appeared to be 'bleeding from back passage' (31.7%), 'change in bowel habits' (23.1%), and 'abdominal pain' (14.5%). The responses with a 0% recall rate were 'feeling of incomplete emptiness of bowel' and 'lump in abdomen'. The least recalled symptoms were 'tiredness/anemia' (2%) and 'Unexplained weight loss' (2.3%).

In the prompted section, the most commonly recognized symptoms were 'blood in stools' (78.4%), 'bleeding from back passage' (75.3%), and 'unexplained weight loss' (70.9%). The least recognized symptoms remained the same as in unprompted questions-'feeling of incomplete emptiness of bowel' (40.5%), 'lump in abdomen' (30.4%), and 'back passage pain' (54.3%).

Table 2: Awareness of symptoms and warning signs of CRC (n=385).

Signs and symptoms	Unprompted, N (%)	Prompted, N (%)
Bleeding from back passage	122 (31.7)	290 (75.3)
Abdominal pain	56 (14.5)	236 (61.3)
Change in bowel habits	89 (23.1)	242 (62.9)
Feeling of incomplete emptiness of bowel	0 (0)	156 (40.5)
Blood in stools	41 (10.6)	302 (78.4)
Back passage pain	77 (20)	209 (54.3)
Lump in abdomen	0 (0)	117 (30.4)
Tiredness/anemia	8 (2)	212 (55)
Unexplained weight loss	9 (2.3)	273 (70.9)

Knowledge of risk factors of CRC

In the unprompted question (Table 3), risk factors for CRC were very poorly recalled. 'Low intake of fruits/vegetables' and 'low fiber diet' as separate nutrition-related risk factors were not recognized at all, with a 0% response rate. However, there was a good recall rate of a general diet-related risk factor, mentioned by the participant as an 'unhealthy/poor diet,' with a response rate of 45.7% (n=176). Among other unprompted least recognized risk factors were 'having diabetes' (0%), 'older age' (<1%), and 'being overweight/obese' (1%). The most recognized risk factor, along with 'unhealthy/poor diet,' was 'alcohol consumption' (6.5%).

In the prompted section, the most commonly recognized risk factors for CRC were 'having other bowel disease' (72.2%), 'being overweight/obese' (50.4%), and 'alcohol consumption' (40.5%). The least recognized risk factors were 'low intake of fruits/vegetables' (15.3%), 'low physical activity' (23.4%), and 'having diabetes' (26.5%).

Table 3: Awareness of risk factors of CRC (n=385).

Risk factors	Unprompted, N (%)	Prompted, N (%)
Alcohol consumption	25 (6.5)	156 (40.5)
Low intake of fruits/vegetables	0 (0)	59 (15.3)
High intake of red meat	2 (<1)	115 (29.9)
Low fiber diet	0 (0)	110 (28.6)
Being overweight/obese	4 (1)	194 (50.4)
Older age	1 (<1)	124 (32.2)
Family history of bowel cancer	43 (11.2)	143 (37.1)
Low physical activity	13 (3.4)	90 (23.4)
Having other bowel disease	9 (2.3)	278 (72.2)
Having diabetes	0 (0)	102 (26.5)

Knowledge of age-related incidence of CRC

In response to the question "in the next year, who is most likely to develop bowel cancer?" 42.3% of the participants answered that CRC is not related to age (Table 4). The correct answer, 'A 60-year-old,' was provided by 32.7% of respondents.

Table 4: Awareness of age-related incidence of CRC, (n=385).

Age (in years)	N (%)
20	4 (1)
40	77 (20)
60	126 (32.7)
Not related to age	163 (42.3)
No answer	15 (4)

Knowledge score of* CRC *awareness

The mean total knowledge score for CRC was 6.93 out of 19 (SD 4.54), with scores of 5.29 out of 9 (SD 2.25) for symptoms and 3.74 out of 10 (SD 2.44) for risk factors.

Socio-demographic associations (Table 5)

Higher awareness of CRC symptoms was observed in individuals aged 31-40 compared to those aged 70+ ($p=0.008$). Female respondents and those with tertiary education had significantly higher knowledge of CRC symptoms (gender: $p<0.001$; education: $p=0.018$). Education level was also significantly associated with CRC risk factor knowledge ($p=0.019$). Age and gender did not significantly impact risk factor knowledge.

Table 5: Socio-demographic factors associated with the knowledge score for symptoms and risk factors of CRC (n=385).

Variables	Symptoms Mean (95% CI)	ANOVA	Risk factors Mean (95% CI)	ANOVA
Age group (in years)				
18-30 (n=72)	5.51 (SD±2.33)	p=0.008*	4.35 (SD±2.29)	p=0.103
31-40 (n=119)	5.76 (SD±1.94)		3.66 (SD±2.33)	
41-50 (n=86)	5.16 (SD±2.34)		3.77 (SD±2.53)	
51-60 (n=51)	4.98 (SD±2.30)		3.76 (SD±2.52)	
61-69 (n=39)	4.74 (SD±2.33)		3.28 (SD±2.64)	
70+ (n=18)	4.00 (SD±2.40)		2.72 (SD±2.32)	
Gender				
Male (n=126)	4.70 (SD±2.50)	p<0.001*	3.55 (SD±2.44)	p=0.274
Female (n=259)	5.58 (SD±2.06)		3.84 (SD±2.44)	
Education status				
Primary/secondary (n=41)	4.46 (SD±2.45)	p=0.018*	2.90 (SD±2.32)	p=0.019*
Tertiary (n=341)	5.40 (SD±2.19)		3.86 (SD±2.44)	
Prefer not to say (n=6)				

Footnote: *p<0.05 significant.

Confidence in noticing a warning sign for CRC

Illustrated in Table 6, 82.6% of respondents were not confident in identifying warning signs of CRC.

Awareness of the free screening program for CRC among eligible citizens

Among adults aged 40 and above, 53.1% aware of free CRC screening program. However, only 16% correctly identified screening initiation age as 50 years (Figure 1).

Table 6: Confidence in noticing a warning sign for CRC (n=385).

Confidence level	N (%)
Not at all confident	113 (29.4)
Not very confident	205 (53.2)
Fairly confident	56 (14.5)
Very confident	11 (2.9)

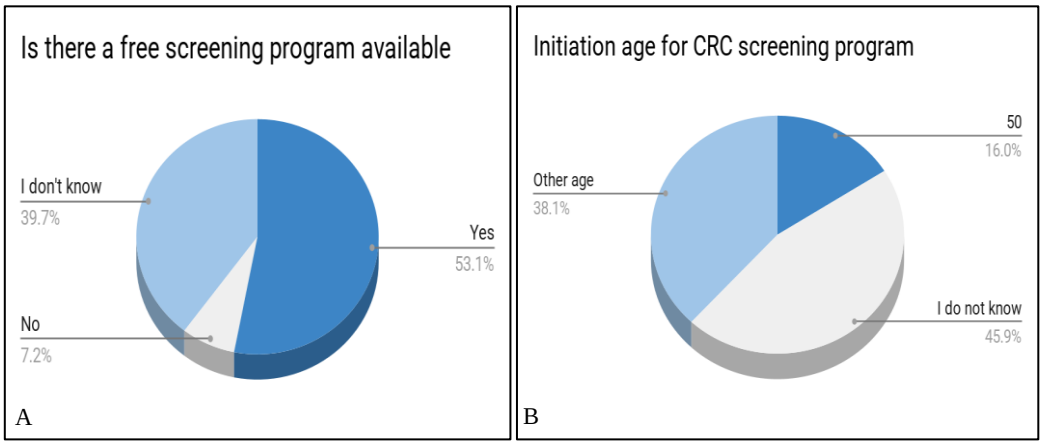

Figure 1 (A and B): Awareness of the free screening program for CRC among eligible citizens (n=194).

DISCUSSION

CRC poses a growing challenge in Georgia, reflecting a broader global concern. This study aimed to uncover factors behind low CRC awareness, focusing on symptoms, risk factors, and screening.

Primary care plays a critical role in disease prevention and early intervention. While 53.1% of participants were aware of the free screening program for eligible citizens, only 16% knew the correct initiation age of 50. This gap in awareness likely stems from inadequate disease prevention discussions during primary care visits and insufficient training for family physicians, with only

61.1% of Georgian doctors correctly identifying recommended screening age.[4]

Regarding symptom awareness, participants recognized "bleeding from back passage" and "blood in stools" well, but were less familiar with "back passage pain," possibly confusing it with hemorrhoid pain. This highlights a need for clearer education on distinguishing between symptoms to encourage timely medical consultation.

The study also identified gaps in knowledge about risk factors. Low recognition of nutritional risks, such as "Low intake of fruits/vegetables" and "high intake of red meat," may be linked to Georgian dietary habits, which emphasize meat and dough over high-fiber foods. Similarly, "low physical activity" was under-recognized, suggesting a need for increased promotion of physical activity. Low awareness of diabetes as a risk factor, despite its association with a 38% higher risk of colon cancer, points to an opportunity for targeted education in managing diabetic patients.[7]

Educational attainment was positively associated with better knowledge of CRC symptoms and risk factors, consistent with similar findings in countries such as Malaysia and Saudi Arabia.[8,9] Interestingly, younger participants (31-40 years) had higher awareness than older groups (70+ years), possibly due to greater use of social media among the younger demographic. This contrasts with studies in other countries where older populations tend to be more informed, likely due to more frequent preventive care interactions.[10]

Efforts to boost public awareness include ongoing training for family doctors across Georgia and the use of public transport banners to disseminate information about breast, cervical, and CRCs. These strategies aim to enhance early detection and reduce mortality. Future research should evaluate the effectiveness of these initiatives and their impact on public knowledge.

Limitations of this study include its focus on Tbilisi, which may not represent the broader Georgian population. The sample was also skewed towards higher education and younger age groups, potentially limiting the generalizability of the findings.

CONCLUSION

There is low public awareness of CRC and its screening program among the Georgian population. However, there is a positive prognosis for increased cancer awareness in the next few years due to health campaigns initiated for disease prevention across the country. The outcomes of this study can assist both national and global healthcare campaigns in increasing CRC awareness, as well as guide efforts in promoting various aspects of the healthy lifestyle.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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