



Awareness of Colorectal Cancer and Associated Factors Among Adult Patients in Jimma, South-West Ethiopia: An Institution-Based Cross-Sectional Study

Cancer Control
2021, Vol. 28 1–8
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DOI: 10.1177/10732748211033550
journals.sagepub.com/home/ccx


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Abstract

Background: Colorectal cancer (CRC) is the first commonest diagnosed cancer in men and the fourth commonest in women in Ethiopia. Awareness of CRC and associated factors is crucial in the prevention of CRC. However, there have not been studies about the awareness of CRC and associated factors among adult patients in Ethiopia. Therefore, the study aimed to assess the awareness of CRC and associated factors among adult patients in Jimma, South-West Ethiopia, 2020.

Methods: This institution-based cross-sectional study design was conducted among 422 adult patients. The study respondents were recruited by a systematic random sampling method. The Cancer Awareness Measure questions were used to measure awareness of CRC of adult patients. Descriptive and logistic regression analyses were conducted.

Results: More than half (57.6%) of respondents had low-level awareness of CRC. Respondents who were females (adjusted odds ratio [AOR] = 1.86; 95% CI: 1.26, 2.75), who are residing in urban areas (AOR = .45; 95% CI: .30, .67), who had a monthly income of 3000 Ethiopian Birr and above (AOR = 4.72; 95% CI: 3.11, 7.15), who heard about CRC (AOR = 4.48; 95% CI: 2.90, 6.93), who get information through social media about CRC (AOR = 2.51; 95% CI: 1.18, 5.37), and who had a family history of CRC (AOR = 3.27; 95% CI: 1.45, 7.36) had a high level of awareness of CRC, while those who cannot read and write (AOR = 2.83; 95% CI: 1.49, 5.37) and learn elementary school (AOR = 2.12; 95% CI: 1.15, 3.93) had a low level of awareness of CRC.

Conclusion: This study indicated that awareness of CRC of adult patients was inadequate. Adult patients' gender, residency, level of education, monthly income, heard about CRC, sources of information about CRC, and a family history of CRC were found to be independent predictors of the awareness of CRC. Therefore, there is a need for health education and awareness campaigns for promoting awareness of CRC of adult patients, and the government should develop policy on CRC prevention and screening program.

Keywords

awareness, colorectal cancer, symptom, risk factor, patients, Jimma, Ethiopia

Introduction

Cancer is an important global health problem in a developed and developing country. It is the most important cause of morbidity and mortality which affects the socioeconomic status of the population.¹⁻⁴ It is expected to have grown to 18.1 million new cases and 9.6 million of the population died globally.^{2,5} The most commonly identified cancers are colorectal,

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Received: 16 March 2021; revised: 14 May 2021; accepted: 30 June 2021

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lung, and breast cancers.⁶⁻⁹ Cancer in sub-Saharan Africa (SSA) is on the rise mainly caused by a lack of awareness about cancer.^{4,10,11}

Colorectal cancer (CRC) is the third commonest confirmed cancer in males and the second commonest in females in the world. It has grown to 1.8 million cases (10.2%) with the biggest figure of deaths (9.2%) in the globe.^{5,12} The majority of CRC is classified as adenocarcinoma, which mostly begins as a benign tumor, and changed to cancerous, and that may attack normal tissue, which spreads into the distant organ.¹³⁻¹⁵ In SSA, CRC is the commonest cancer that confirmed case for 5.6% in male and 3.7% in the female.^{10,16} Previous evidence showed that CRC accounts for 12.2% in males and 4.4% in females in Ethiopia.¹⁷ Currently, CRC in Ethiopia has become the first highest in men (19%) and fourth-highest for women (5%).^{6,18}

Patients with CRC face multifaceted problems arising from the disease due to a lack of awareness about CRC risk factors and symptoms among the population.^{10,16} Studies have demonstrated that increasing the awareness of the general population about CRC may lead to a decrease in the prevalence and rising willingness to involve in cancer screening, early treatment, and may increase the survival rate.¹⁹⁻²¹

Awareness of CRC and its associated factors is crucial among the population in the prevention of CRC. Awareness of CRC is recognizing the risk factors and warning signs and symptoms of CRC. The risk factors of CRC include non-modifiable risk factors such as aging, gender, prior colon diseases such as inflammatory bowel disease, type 2 diabetes mellitus (DM-2), family history of the CRC, and polyp,²²⁻²⁵ and modifiable risk factors such as lack of physical activity, smoking, alcohol drinking, obesity, low fiber diet, high red meat, and low fruit and vegetable intake in the diet.^{13,26-29} The warning signs and symptoms of CRC are bloody stool, unexplained weight loss, change in bowel habit, anemia, lower abdominal lump, rectal bleeding, and chronic abdominal pain.³⁰⁻³³

Nevertheless, increasing the awareness of people about lifestyle modification, predictor identification, and recognizing warning signs and symptoms may be important to reduce CRC morbidity and mortality. Evidence showed that a multitude of factors may be associated with the awareness of CRC among adult patients. These may include gender, age, marital status, educational level, income, family history of CRC, heard about CRC, and source of information were the most predictors of awareness of CRC.³⁴⁻³⁸ However, there have not been studies about the awareness of CRC and associated factors among adult patients in the study area. Therefore, this study aims to assess the awareness of CRC and associated factors among adult patients in Jimma, South-West Ethiopia.

Methods and Materials

Study Design, Area, and Population

This institutional-based cross-sectional study design was employed from March to April 2020 at Jimma University

Medical Center (JUMC) placed in Jimma town, located 354 km from the capital Addis Ababa within the South-West Ethiopia. JUMC is one of the largest public institutions giving service for cancer treatment and care in South-West Ethiopia. All volunteer adult patients (18 years and above) who had been attending adult medical and surgical outpatient clinic of JUMC during the data collection period were included, except patients who had a history of CRC, mentally ill, chronically ill, critically sick, visual and hearing disorder, and unable to speak during the data collection period.

The sample size was estimated by employing a single population proportion formula. This sample size yielded with considering marginal error (d) = 5%, 95% confidence level (CI), α = .05, and prevalence of 50%. The final sample size including the non-response rate yielded 422 patients. A systematic random sampling technique was employed to get allocated samples from JUMC. The number of monthly attended adult patients in the outpatient department of JUMC was [N = 14 559] from these, 485 patients were attended daily. For all cases [n = 422], $K = N/n = 35$ and K was between 1 and 35. First comer patients who registered in the health management information system case registry book took as a first sample and then every 35 intervals until getting the [485/35 = 14] samples with a day at the outpatient department.

Data Collection Tools, Procedures, and Validation

Data were collected using an interviewer-administered structured questionnaire. The data instrument included 2 parts. Part 1: socio-demographic data including information-related factors. Part 2 comprised Cancer Awareness Measure questions which were adapted from the University College London and Cancer Research in the United Kingdom (UK) in 2008 and were intended to examine the general public's awareness of CRC in the UK with some modifications after serious literature review³⁹ and using question with "Yes or No" answers where "Yes" indicated for an exact response which scores 1. An accumulative mark of respondents on awareness of CRC ranging from 0 to 20 which was acquired by the accumulation of exact response to the 20-item questionnaire. A total mark of 15 or more ($\geq 75\%$) was referred to as the respondents were attaining high awareness, whereas respondents who score less than 15 ($< 75\%$) were attaining low awareness. Cronbach's alpha coefficient of the tool was .84.^{23,39-41} For this study, the instruments on awareness of CRC were interpreted to the Amharic version, then the local language Afan Oromo via a back-to-back translation approach. The instrument was certified before being used in this work as defined in the section. The certification result revealed that there was 96% consent between the Amharic, Afan Oromo, and English instruments. To assure the quality of data, the following measures were taken. A pre-test was conducted on 42 adult patients in Shenen Gibe General Hospital in Jimma Zone 1 week before the actual data collection and the questionnaire had been checked for its clarity, understandability, and simplicity. After the pre-test, the

questionnaires were reviewed and reformatted based on the inputs and comments generated by seniors. After this, the internal consistency (Cronbach's- α) in this study was .90 which can be considered adequate. The data were collected by 8 nurses holding Bachelor of Science degrees under the supervision of 2 professional senior nurses. Both the principal investigator and recruited supervisors had been responsible for supportive supervision on the spot and for reviewing all filled questionnaires on daily basis. Data collectors and supervisors were enrolled in training for 2 days on the objective of the study, instrument, and data collection procedures by the principal investigator. The supervisors were checking the questionnaire for completeness and closely supervise data collectors and presented it to the principal investigators. Moreover, the collected data were coded, cleaned, and explored by the principal investigator before analysis.

Data Entry, Analysis, and Presentation

The collected data were checked for its completeness and consistencies before data entry. Answers in each question were labeled for easiness of data entrance. The coded data were entered into Epi data version 4.6.0 and exported to SPSS version 25 for data analysis. Descriptive analysis, bivariate, and multivariate logistic regression models were carried out. The adjusted odds ratio (AOR) was used to determine the association between the dependent variable and independent variables with a statistically significant level at a 95% confidence interval (CI). Then, significant factors with a P -value < .25 in the bivariate logistic analysis were taken as a candidate for multiple logistic regression analysis. In both simple and multiple logistic regression models, the statistical significance of associations between variables was determined using AOR with 95% CI and P -value < .05. Then, the result of the study was presented in figures and tables.

Ethical Consideration

An ethical clearance letter was gained from the institutional Review Board (IRB) of Addis Ababa University College of Health Science (Protocol No. IRB/059/20/SNM). A permission letter was obtained from Addis Ababa University College of Health Sciences School of Nursing and Midwifery to the administrator of the study site. A letter of permission was secured from the administrative bodies of the hospitals. All of the study participants were informed about the purpose of the study; written informed consent was obtained and they are informed that participating in this study was fully voluntary. Besides, the confidentiality of the information was assured. The study was conducted following the Declaration of Helsinki. The IRB office in Addis Ababa University College of Health Sciences School of Nursing and Midwifery approved the consent process.

Results

Socio-Demographic Characteristics of Respondents

A total of 422 patients participated in the study with a 100% response rate. Table 1 shows almost half ($n = 212$, 50.2%) of respondents were male, with a mean age of 47.30 ± 17.81 years. The majority ($n = 229$, 54.3%) of the respondents were between the age group of 20 and 49 years. More than half ($n = 263$, 62.3%) of the respondents were married and ($n = 212$, 50.2%) were followers of the Muslim religion. Majority ($n = 240$, 56.9%) of the respondents live in rural area. About 17.5% ($n = 74$) of the respondents attended college and above educational level. About more than half of ($n = 240$, 56.9%) of

Table 1. Socio-Demographic Characteristics of Respondents in Jimma, South-West Ethiopia, 2020 ($n = 422$).

Characteristic	Frequency (n)	Percent	
Age in year			
	20-29	88	20.9
(Mean = 47.3)	30-39	85	20.1
(SD = 17.81)	40-49	56	13.3
	≥ 50	193	45.7
Sex			
Male	212	50.2	
Female	210	49.8	
Marital status			
Single	113	26.8	
Married	263	62.3	
Widowed	35	8.5	
Divorced	11	2.6	
Religion			
Muslim	212	50.2	
Orthodox	131	31.0	
Protestant	75	17.8	
Others	4	1.0	
Residency			
Urban	236	55.9	
Rural	186	44.1	
Level of education			
Cannot read and write	88	20.9	
Can read and write	78	18.5	
Elementary school (1-8)	98	23.2	
High school (9-12)	84	19.9	
College and above	74	17.5	
Monthly income			
3000 ETB and above	182	56.9	
Below 3000 ETB	240	43.1	
Heard about CRC			
Yes	248	58.8	
No	174	41.2	
Family history of CRC			
Yes	237	56.2	
No	185	43.8	

Abbreviations: CRC, colorectal cancer; ETB, Ethiopian birr.

respondents earn monthly income lower than 3000 Ethiopian birrs. 58.8% (n = 248) of respondents heard about CRC. More than half (n = 237, 56.2%) of the respondents responded that CRC is a preventable disease (Table 1). More than one-third (n = 74, 29.8%) of the respondents had heard information regarding CRC from mass media (Figure 1).

Awareness of Respondents Toward CRC

More than 3-fourth (n = 330, 78.2%) of respondents thought that the commonest modifiable risk of CRC was smoking followed by alcohol consumption (n = 327, 77.5%). About

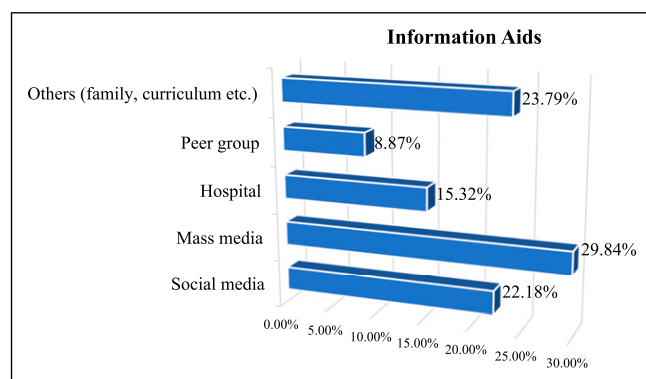


Figure 1. Sources of information about colorectal cancer among patients in Jimma, South-West Ethiopia, 2020 (n = 422).

half (n = 208, 49.3%) of respondents understood that blood in stool was the commonest warning symptom of CRC followed by chronic abdominal pain (n = 203, 48.1%) and change in bowel habit (n = 199, 47.2%). In this study, about 42.40% (n = 179) of the respondents found to have a high level of awareness of CRC by scoring a total mark of 15 or more ($\geq 75\%$) of Cancer Awareness Measure questions (Table 2).

Factors Associated With the Awareness of CRC

The multivariate logistic regression showed that awareness of CRC showed a statistically significant association with gender, monthly income, residency, level of education, heard about CRC, information sources of CRC, and family history of CRC of adult patients. Respondents who were females had 1.86 times more likely to have a high level of awareness of CRC (AOR = 1.86; 95% CI: 1.26, 2.75) compared to males. Respondents who are residing in urban areas were 55% less likely to have a low level of awareness of CRC (AOR = .45; 95% CI: .30, .67) compared to those respondents residing in rural areas. Respondents who earn a monthly income of 3000 Ethiopian Birr (ETB) and above were 4.7 times more likely to have a high level of awareness of CRC (AOR = 4.72; 95% CI: 3.11, 7.15) compared to those respondents who earn below 3000 ETB.

Respondents who cannot read and write (AOR = 2.83; 95% CI: 1.49, 5.37) and learn elementary school (AOR = 2.12; 95% CI: 1.15, 3.93) were 2.8 times and 2.1 times more likely to

Table 2. Awareness of CRC Risk Factors and Symptoms of Respondents in Jimma, South-West Ethiopia, 2020 (n = 422).

Awareness question	Yes	No
	n (%)	n (%)
Aging is risk factor for CRC	150 (35.5)	272 (64.5)
Family history influence the incidence of CRC	202 (47.9)	220 (52.1)
Type 2 diabetes is a risk factor for CRC	137 (32.5)	285 (67.5)
Prior colon diseases are a risk factor for CRC	244 (57.8)	178 (42.2)
Alcohol consumption is a risk factor for CRC	327 (77.5)	95 (22.5)
Smoking cigarette is a risk factor for CRC	330 (78.2)	92 (21.8)
Eating a low fiber diet is a risk factor for CRC	242 (57.3)	180 (42.7)
Lack of physical exercise is a risk for CRC	239 (56.6)	183 (43.4)
Lack of vegetables and fruits is a risk for CRC	248 (58.8)	174 (41.2)
Overweight/obesity is a risk factor for CRC	247 (58.5)	175 (41.5)
Eating high red meat is a risk factor for CRC	246 (58.3)	176 (41.7)
Rectal bleeding is a symptom of CRC	186 (44.1)	236 (55.9)
Change in bowel habits is a symptom of CRC	199 (47.2)	223 (52.8)
Weight loss is a symptom of CRC	179 (42.4)	243 (57.6)
Chronic abdominal pain is a symptom of CRC	203 (48.1)	219 (51.9)
Blood in stool is a symptom of CRC	208 (49.3)	214 (50.7)
Loss of appetite is a symptom of CRC	186 (44.1)	236 (55.9)
The sensation of a non-full dump of waste	182 (43.1)	240 (56.9)
A lump in the lower abdomen is a symptom of CRC	143 (33.9)	279 (66.1)
Anemia is a symptom of CRC	164 (38.9)	258 (61.1)

Abbreviation: CRC, colorectal cancer.

have low-level awareness of CRC, respectively, compared to those respondents who had an educational level of collage and above. Respondents who heard about CRC were 4.5 times (AOR = 4.48; 95% CI: 2.90, 6.93) more likely to have a high level of awareness of CRC compared to those who never heard about CRC. Respondents who get information through social media about CRC were 2.5 times (AOR = 2.51; 95% CI: 1.18, 5.37) more likely to have a high level of awareness of CRC than those who get information through other sources. Respondents who had a family history of CRC were 3.2 times (AOR = 3.27; 95% CI: 1.45, 7.36) more likely to have a high level of awareness of CRC compared to those who did not have a family history of CRC (Table 3).

Discussion

This study explored the awareness of CRC and associated factors among adult patients in Jimma, South-West Ethiopia, and found that about 42.4% of adult patients in Jimma had a high level of awareness of CRC. The finding of this study was lower than the findings of other studies conducted in the Kingdom of Bahrain (56%) and Pakistan (66.6%).^{22,42} This might be related to the fact that there is a difference in the

socioeconomic status of the respondents, the study population, organizational policies, and access to the information related to CRC and its risk factors, which might be explained by the difference in the level of awareness of CRC. For instance, the study respondents in this study were adult patients, while respondents in the Pakistan study were included only young university students and might be getting awareness through the educational curriculum. Thus, increasing awareness of CRC of adult patients is a cornerstone for better prevention, early detection, and care of patients with CRC and cancer-related complications through health education and awareness campaign interventions.

Our study identified that gender, residency, level of education, monthly income, heard about CRC, information sources of CRC, and had a family history of CRC have an association with awareness of CRC of adult patients. This study revealed that respondents who were females had a high level of awareness of CRC compared to males. This finding is similar to other studies done in other settings that found female respondents had a high level of awareness of CRC.^{22,35,43-45} This discrepancy between genders might be due to females having more exposure to cancer-related health education or information connected to their reproductive health and

Table 3. Factors Associated With Awareness of CRC Among Respondents in Jimma, South-West Ethiopia, 2020 (n = 422).

Variable	Level of awareness		COR (95 % CI)	AOR (95% CI)
	High n (%)	Low n (%)		
Gender				
Male	74 (41.3)	138 (56.8)	.53 (.36, .79)	1.86 (1.26, 2.75)*
Female	105 (58.7)	105 (43.2)		
Residency				
Urban	97 (54.2)	85 (35)	2.19 (1.48, 3.26)	.45 (.30, .67)*
Rural	82 (45.8)	158 (65)		
Monthly income				
Below 3000 ETB	64 (35.8)	176 (72.4)	.21 (.14, .32)	4.72 (3.11, 7.15)*
Above 3000 ETB	115 (64.2)	67 (27.6)		
Education				
Cannot read and write	30 (16.8)	58 (23.9)	.35 (.18, .66)	2.83 (1.49, 5.37)*
Can read and write	27 (15.1)	51 (21)	.36 (.18, .69)	2.77 (1.43, 5.34)*
Elementary	40 (22.3)	58 (23.9)	.47 (.25, .86)	2.12 (1.15, 3.93)*
High school	38 (21.2)	46 (18.9)	.56 (.29, 1.06)	1.77 (.94, 3.34)
College and above	44 (24.6)	30 (12.3)		
Heard About CRC				
No	39 (21.8)	135 (55.6)	.22 (.11, .34)	4.48 (2.90, 6.93)*
Yes	140 (78.2)	108 (44.4)		
Information sources				
Social media	24 (17.1)	31 (28.7)	.39 (.18, .84)	2.51 (1.18, 5.37)*
Mass media	46 (32.9)	28 (25.9)	.84 (.41, 1.77)	1.18 (.58, 2.42)
Hospital	21 (15.0)	17 (15.7)	.63 (.27, 1.46)	1.57 (.68, 3.64)
Peer group	10 (7.1)	12 (11.1)	.42 (.15, 1.15)	2.34 (.86, 6.34)
Others	39 (27.9)	20 (18.5)		

Abbreviations: AOR, adjusted odds ratio; CI: confidence interval; COR, crude odds ratio; CRC, colorectal cancer; ETB, Ethiopian birr.

*Statistically significant at *P*-value < .05.

females give attention to their health and have desired discussion. Therefore, male respondents need special emphasis when designing interventions aimed at improving the awareness of CRC.

This study shows that the respondents who were residing in urban areas had a high level of awareness of CRC compared to those who were from rural areas. This study finding is consistent with the study done in Malaysia.⁴⁶ The probable reason for this might be related to the fact that respondents residing in urban areas might have frequently got information through mass media (television and radio), social media, and they developed better awareness in using these types of information sources. Therefore, giving special attention to the respondents residing in rural areas is essential. This is done by bringing community-based health education to their dwelling places and encouraging them to get information through mass media.

Our study shows that respondents who cannot read and write, can read and write, and learn elementary school had a low level of awareness of CRC compared to those who had college and above educational level. This result is consistent with the study done in Bahrain.²² The possible justification for this might be that patients with joined college and university might get information through curriculum and work experience about CRC, this might increase awareness of CRC toward risk factors and symptoms. Thus, special emphasis should be given to those respondents with lower-level education when designing health educational interventions.

This study shows that respondents who had a monthly income of 3000 ETB and above had a high level of awareness of CRC compared with those who had a monthly income below 3000 ETB. This result is supported by the study done in Malaysia.³⁴ This might be related to the fact that respondents who earn better monthly income were more satisfied by their income to initiated in gathering information with different information system like joining in different social media like the internet at home, Facebook, YouTube, and Telegram and using mass media like television and radio. Therefore, respondents with lower monthly income need special emphasis when designing and implementing interventions aimed at improving the awareness of CRC of this population group. This may involve the provision of economic support and giving them access to CRC-related community-based health education.

This study also shows that respondents who heard about CRC had a high level of awareness of CRC compared to those who never hear about CRC. This finding is consistent with the study done in other settings.^{37,38} The possible justification for this might be respondents who live in urban areas that may have access to health-related information or they may live nearby cancer awareness campaigns. This might be enhancing awareness about the important disease and increase personal disease preventive practice.

Our study also found that respondents who obtaining information through social media had a high level of awareness of CRC than those who get information through other sources

(mass media and peer group). This result is corroborating with the study conducted in Saudi Arabia.^{37,38} The possible justification might be that information that was required by respondents was available at anytime and anywhere if the internet was available. It might be also that information through social media does not need a fixed period for obtaining information about CRC than others.

In this study, respondents who have a family history of CRC had a high level of awareness of CRC compared to those who did not have a family history of CRC. This might be related to the fact that respondents who had a family history of CRC have information about CRC and had a high level of awareness of CRC when compared to those who did not have a family history of CRC. Thus, respondents who did not have a family history of CRC require close attention to improve their awareness of CRC.

Strengths and Limitation of the Study

This study has a couple of strengths. One, it is the first study on awareness of CRC in Ethiopia. Second, the study had a 100% response rate. Our study also has numerous limitations. First, the use of an interviewer-administered structured questionnaire for data collection. Using this method to identify awareness about CRC and associated factors among adult patients might involve some risk, though qualitative interviews can let participants liberally highlight their concerns and obstacles concerning awareness about CRC. Second, the use of cross-sectional design does not allow inferring causality. Prospective and experimental studies are warranted. Third, the limitation of similar studies conducted in Ethiopia makes the comparison and discussion challenging. Fourth, the study was conducted in a healthcare setting and in 1 geographic area of Ethiopia which all affect the generalizability of the findings. Community-based studies within the different geographical areas of the county are warranted. Finally, the information obtained from study subjects could be subject to recall bias.

Conclusion

This study indicated that awareness of CRC of adult patients was inadequate (42.4%). Adult patients' gender, residency, level of education, monthly income, heard about CRC, sources of information, and family history of CRC were found to be independent predictors of the awareness of CRC of respondents. Therefore, adult patients with male gender, residing in rural areas, low level of education, small monthly income, those who never hear about CRC, who get information through other sources (mass media and peer group), and those who did not have a family history of CRC could be targeted for awareness of CRC health education and initiating structured awareness campaigns interventions. In addition to this, promoting these activities on mass media and social media will help address information to a wider range of audiences.

Abbreviations

AOR, adjusted odds ratio; CAM, cancer awareness measure; CI, confidence interval; COD, crude odds ratio; CRC, colorectal cancer; DM-2, type 2 diabetes mellitus; ETB, Ethiopian Birr; HMIS, health management information system; IBD, inflammatory bowel disease; IRB, institutional review board; JUMC, Jimma university medical center; NCD, non-communicable disease; SSA, sub-Saharan Africa; UK, United Kingdom.

Acknowledgments

Our deepest gratitude goes to Addis Ababa University, School of Nursing, and Midwifery for financial support. We would like to extend our sincere gratitude to the data collectors, supervisors, and study participants for being involved in the study.

Declaration of Conflicting Interests

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

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The cost of the study was covered by Addis Ababa University.

Ethics Approval and Consent to Participate

This study was reviewed and approved by an Institutional Review Board of the College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia (Protocol No: IRB/059/20/SNM). All participants provided written informed consent. The study was conducted following the Declaration of Helsinki.

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Supplemental Material

Supplemental material for this article is available online.

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