Knowledge, Attitude and Obstacles of Colorectal Cancer Screening in Primary Health Care in Bali, Indonesia

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ABSTRACT

Background: *The knowledge of colorectal cancer (CRC) and its screening methods of healthcare workers is the bedrock of CRC early detection particularly in countries lacking national screening programs. Unknown factors influencing colorectal cancer early detection program implementation. We aimed to evaluate the knowledge and attitudes of primary health care (PHC) provider regarding CRC screening and identify the barriers associated with the screening plan.*

Methods: *A cross-sectional study was conducted among PHC physicians and nurses in public primary health care centers in Bali, Indonesia. A 44-item self-administered questionnaire was used to assess the knowledge, attitude and practice of CRC screening. The questionnaire was spread using google form. The data analyzed univariately and with chi-square to compare proportional differences.*

Results: *Two hundred and five respondents have participated in this study. The average duration of doing practice in PHC is 6.6 years. In knowledge of CRC, 50.2% of them have good knowledge, and there is no difference between PCPs vs nurses (51.9% vs 47.3%; p=0.53). In attitude toward CRC screening, 58.5% out of the have good attitude, and there is no difference between primary care physicians (PCPs) vs nurses (60.3% vs 55.4%; p=0.50). There was no association between knowledge and attitude towards CRC screening (p=0.63).*

Conclusion: *The majority of health workers' knowledge and attitudes toward CRC screening were in the "good" category. The patient's fear of being diagnosed with cancer, as well as the patient's fear and anxiety of screening tests, is the most significant barrier to colorectal cancer screening.*

Keywords: *attitude, barrier, colorectal cancer screening, knowledge, primary health care.*

ABSTRAK

Latar Belakang: *Pengetahuan tentang Kanker Kolorektal (CRC) dan metode pemeriksaannya oleh para tenaga kesehatan merupakan dasar utama dalam deteksi dini CRC, terutama di negara-negara yang tidak memiliki program skrining nasional. Faktor-faktor yang tidak diketahui yang memengaruhi implementasi program deteksi dini kanker kolorektal. Kami bertujuan untuk mengevaluasi pengetahuan dan sikap penyedia perawatan kesehatan primer (PHC) mengenai skrining CRC dan mengidentifikasi hambatan yang terkait dengan rencana skrining tersebut.*

Metode: *Penelitian lintas-seksional dilakukan di antara dokter dan perawat PHC di pusat perawatan kesehatan primer publik di Bali, Indonesia. Kuesioner mandiri sebanyak 44 item digunakan untuk menilai pengetahuan, sikap, dan praktik skrining CRC. Data dianalisis secara univariat dan menggunakan chi-square untuk membandingkan beda proporsi.*

Hasil: *Sebanyak 205 responden berpartisipasi dalam penelitian ini. Rata-rata durasi praktik di PHC adalah 6,6 tahun. Dalam pengetahuan tentang CRC, 50,2% dari mereka memiliki pengetahuan yang baik, dan tidak ada perbedaan antara Dokter Umum (PCPs) dan perawat (51,9% vs 47,3%; p=0,53). Dalam sikap terhadap skrining CRC, 58,5% dari mereka memiliki sikap yang baik, dan tidak ada perbedaan antara primary care physicians (PCPs) dan perawat (60,3% vs 55,4%; p=0,50). Tidak ada hubungan antara pengetahuan dan sikap terhadap skrining CRC (p=0,63).*

Simpulan: *Mayoritas pengetahuan dan sikap tenaga kesehatan terhadap skrining CRC berada dalam kategori "baik." Ketakutan pasien akan didiagnosis menderita kanker, serta ketakutan dan kecemasan pasien terhadap tes skrining, merupakan hambatan terbesar dalam skrining kanker kolorektal.*

Kata Kunci: *skrining kanker kolorektal, perawatan kesehatan primer, pengetahuan, sikap, hambatan.*

INTRODUCTION

Colorectal cancer (CRC) is the second leading cause of death worldwide.[1] According to World Health Organization (WHO) data, colorectal cancer has a high global incidence and mortality rate.[2] Colorectal cancer has a lifetime risk of about 1 in 23 (4.4%) for men and 1 in 25 (4.1%) for women.[3] By 2030, the global CRC burden is expected to rise by 60% to more than 2.2 million new cases and 1.1 million deaths.[4]

CRC screening aims to detect early-stage cancers and precancerous lesions in otherwise healthy people, potentially lowering CRC incidence and mortality.[5,6] Although CRC screening guidelines differ by country and region, the majority of professional societies recommend colonoscopy, fecal immunochemical test (FIT), computed tomography (CT) colonography, FIT-fecal Deoxyribonucleic acid (DNA), and flexible sigmoidoscopy as acceptable screening tools.[5,7,8] National colorectal cancer medical service guidelines were also established in 2017, but colorectal cancer early detection activities are still not widespread. The factors influencing the implementation of colorectal cancer early detection programs in Indonesia, particularly in Bali Province, remain unknown. Is it a lack of information received by the community or a lack of knowledge on the part of health workers that is impeding the implementation of colorectal cancer early detection programs.

The knowledge of CRC and its screening methods of healthcare workers is the bedrock of CRC early detection, particularly in countries lacking national screening programs.[9] With proper screening knowledge, physicians can improve patient compliance and change their perceptions of the expected barriers and benefits.[9] Patients who receive CRC screening recommendations from their doctors are more likely to be current on CRC screening than patients who do not.[10,11] In higher risk CRC settings, doctors with extensive experience performed better.[12] Unknown factors influencing colorectal cancer early detection program implementation in Indonesia, particularly in Bali, are public health issues that must be addressed through research studies. This encourages researchers to conduct study to identify the barriers to the implementation of colorectal cancer early detection programs. The aim of our study was to evaluate the knowledge and attitudes of primary health care (PHC) provider regarding CRC screening and identify the barriers associated with the screening plan.

METHOD

Study Design, Study Area and Period

A cross-sectional study was conducted among PHC physicians and nurses in public primary health care centers in Bali, Indonesia. The study was approved by the ethics committee of Medical Faculty, Udayana University, Indonesia/Prof. dr. I.G.N.G. Ngoerah General Hospital. Healthcare workers were assured of the survey's strict confidentiality in the survey's introduction.

Study Participants and Sample Size

The participants in this study were health workers in Bali's primary care centers. The target population that met the inclusion and exclusion criteria comprised the study sample. Medical personnel working in primary care were the inclusion criteria. While the exclusion criteria were medical personnel who refused to fill out the questionnaire because they were ill. The sample size was calculated in this study. The hypothesis assumed that half of professionals would support a population screening program. The required sample size for a 95% confidence level and 5% precision was 250 doctors and 250 nurses. The participants were

drawn from primary health care facilities in both urban and rural areas.

Data Collection

We created a survey instrument to help us achieve the goals of this study. This process included not only stakeholder and practitioner input, but also a thorough review of previous surveys and academic literature reporting survey results. For this study, we used the google form application as a questionnaire. At the start of the survey, inform concerns were provided.

Data Analysis

The data were analyzed univariately and bivariately. The frequency and percentage of each item measuring doctors' and nurses' knowledge and attitudes toward colorectal cancer screening were displayed in univariate analysis. Normality and mean or median values will be evaluated for variables with ratio/interval data scales. We will use all variables in a bivariate analysis by professional type. The analysis was performed with chi-square test to compare proportional differences. We used the SPSS 22.0 software.

RESULTS

Socio-demographic characteristics of respondents

This research was planned to begin in April 2020, but due to the COVID-19 pandemic, it encountered several challenges in data collection, particularly in finding health workers willing to participate in this study. From a target of 500 respondents, only 205 have agreed to fill out this research questionnaire so far. Because of the state of COVID-19, it is difficult to reach all health workers. Table 1 shows the socio-demographic characteristics of 205 respondents willing to participate in this study.

Table 1 shows that the majority of the 205 respondents are doctors with a clinic as their practice location. Most respondents were between the ages of 20 and 30. The majority of respondents were female. The respondents' most recent level of education was mostly professional. The average length of practice was 9.2 years, with a 6.6-year service in primary care facilities.

Table 1. Socio-Demographic Characteristics

Variable (n=205)	Value
Age, n (%)	
20-30	95 (46.3)
31-40	51 (25)
41-50	37 (18)
>50	22 (10.7)
Sex, n (%)	
Male	82 (40)
Female	123 (60)
Profession, n (%)	
PCPs	131 (63.9)
Nurse	74 (36.1)
Education, n (%)	
Diploma	43 (21)
Undergraduate	59 (28.8)
Profession	85 (41.4)
Postgraduate	18 (8.8)
Type of health facility, n (%)	
Public health center	37 (18)
Clinic	115 (56.1)
Independent medical practice	53 (25.9)
Health facility location, n (%)	
Inside Denpasar	98 (47.8)
Outside Denpasar	107 (52.2)
Length of practice, mean ± SD	9.2 ± 8.6
Length of duty, mean ± SD	6.6 ± 6.9

PCP: Primary care physician

Respondents' knowledge, attitude, and obstacles of colorectal cancer screening

This study also looked at health workers' knowledge and attitudes toward colorectal cancer screening. Figure 1 depicts the distribution of correct answers for each colorectal cancer screening knowledge item. Most respondents correctly identified the patient groups considered to be at the highest risk for the purpose of colon cancer screening as those with an immediate family member who has been diagnosed with colon cancer before the age of 50, and the procedure not recommended for screening use as abdominal ultrasound.

The overall average correct score for the seven knowledge items was 3.8, with a minimum of 0 (all wrong) and a maximum of 7. Knowledge was divided into two categories: good knowledge and poor knowledge. Because the knowledge data was not normally distributed, the median value of 4 was used for categorization. If the respondent has a knowledge score of ≥4, they are in the "good knowledge" category and the "poor knowledge" category if the score is <4. According to Table 2, the majority of respondents had good knowledge about colorectal cancer.

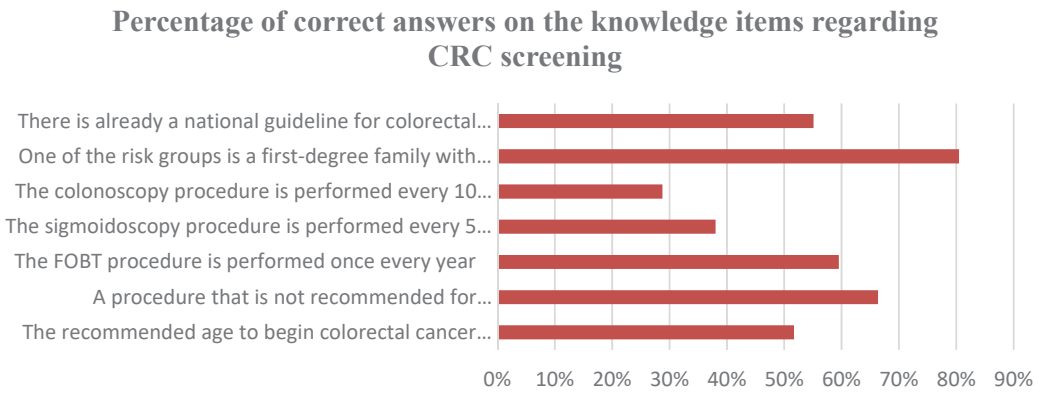

Figure 1. Colorectal cancer screening knowledge distribution

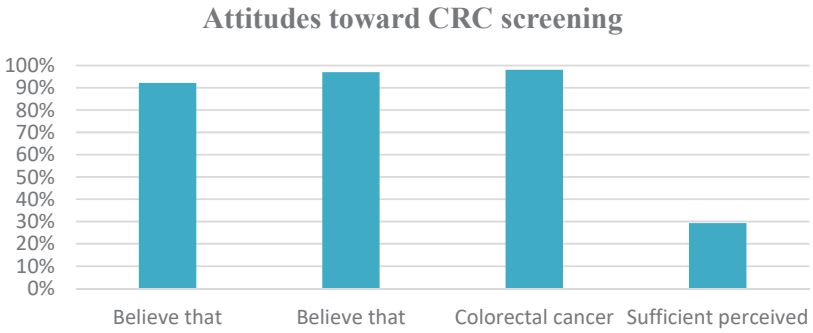

Figure 2. Percentage of attitude towards colorectal cancer screening

Table 2. Distribution of knowledge on Colorectal Cancer Screening

Knowledge	Value
Poor knowledge, n (%)	102 (49.8)
Good knowledge, n (%)	103 (50.2)
Total, n (%)	205 (100)

Overall, health-care workers have a positive attitude toward colorectal cancer screening. When more specific based on the type of health worker, there is no significant difference in knowledge between doctors and nurses (Table 3).

Table 3. Distribution of Knowledge by Health Worker Profession

	Good knowledge	Poor knowledge	*p-value*
Profesion, n (%)			
PCPs	68 (51.9)	63 (48.1)	0.53
Nurse	35 (47.3)	39 (52.7)	

PCP: Primary care physician

One variable that will be looked at later for factors associated with this variable is the attitude and experience of health workers regarding colorectal cancer screening. According to descriptive Figure 2, most people believe that colorectal cancer can be prevented, that colorectal cancer screening is beneficial, and that colorectal cancer screening is very important. However, few health workers felt they had sufficient professional training on cancer prevention and screening.

The personal experience of health workers related to colorectal cancer is that most health workers have read scientific journal articles or literature related to cancer screening in the last month and met patients with a history of colorectal cancer at the practice site, but few have participated in colorectal cancer screening procedures (Figure 3). Figure 3 also shows that the majority had gained knowledge and skills on colorectal cancer screening during formal professional education, educated patients about screening, and recommended screening.

Experience is assigned a value of 1 if it “ever” and 0 if it “never”. If "not" to "believe", attitude was measured using a Likert scale of 0 to 2. The overall average of the 18 items of attitude and experience was 9.8, with a minimum of 4 and a maximum of 22. There were two types of attitudes: good and poor. Because the attitude data was not normally distributed, the median value limit of 9 was used for categorization. If the respondent has an attitude score ≥9, they are in the good category, and in the poor category if the score is <9. According to Table 4, the majority of respondents were positive about colorectal cancer screening.

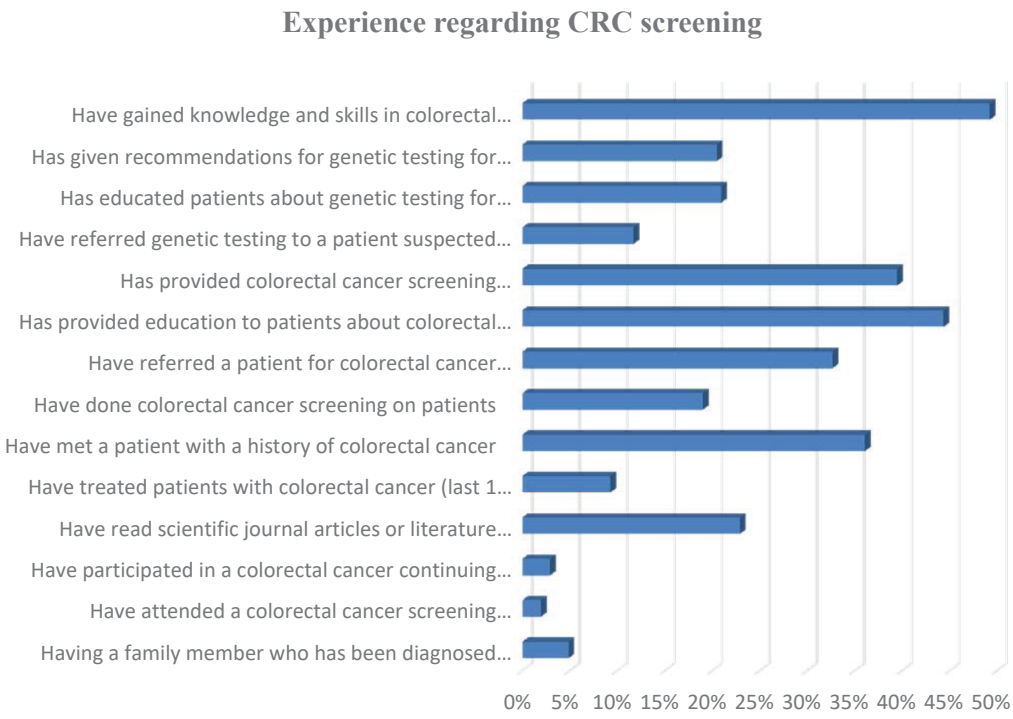

Figure 3. Experience of colorectal cancer screening

Table 4. Distribution of Attitudes regarding Colorectal Cancer Screening

Attitude	Value
Poor attitude, n (%)	85 (41.5)
Good attitude, n (%)	120 (58.5)
Total, n (%)	205 (100)

There is no significant difference in attitude between primary care physicians (PCPs) and nurses based on the type of health worker. Both health workers have a good attitude towards colorectal cancer screening (Table 5).

Table 5. Distribution of Attitudes by Health Worker Profession

	Good attitude	Poor attitude	*p-value*
Profession, n (%)			
PCPs	79 (60.3)	52 (39.7)	0.50
Nurse	41 (55.4)	33 (44.6)	

PCP: Primary care physician

This study also looked at how well health workers are aware of the facilities and barriers to colorectal cancer screening. Figure 4 shows the experiences that respondents were aware of in terms of colorectal cancer screening facilities. The majority of respondents perceived facilities in the form of cancer specialists' availability, government/health department guidelines or recommendations, international guidelines, and PNPK guidelines.

Colorectal cancer screening barriers can be divided into two categories: barriers in the health system and barriers based on patient perceptions. Figure 5 shows the perceived barriers by patients and the existing health care system.

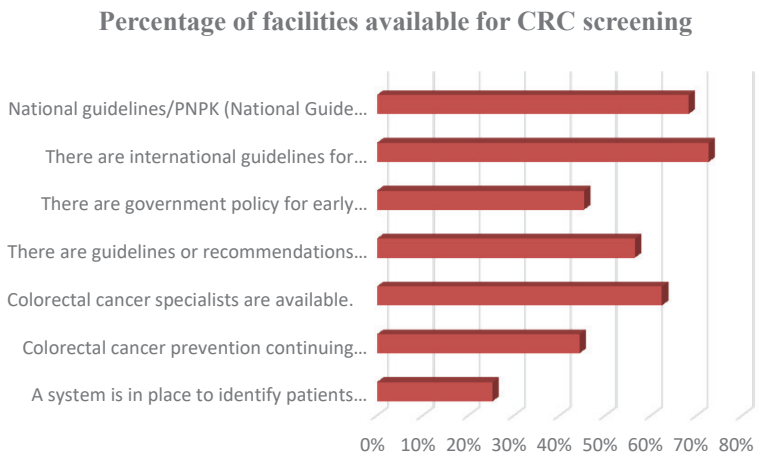

Figure 4. Facility on Colorectal Cancer Screening

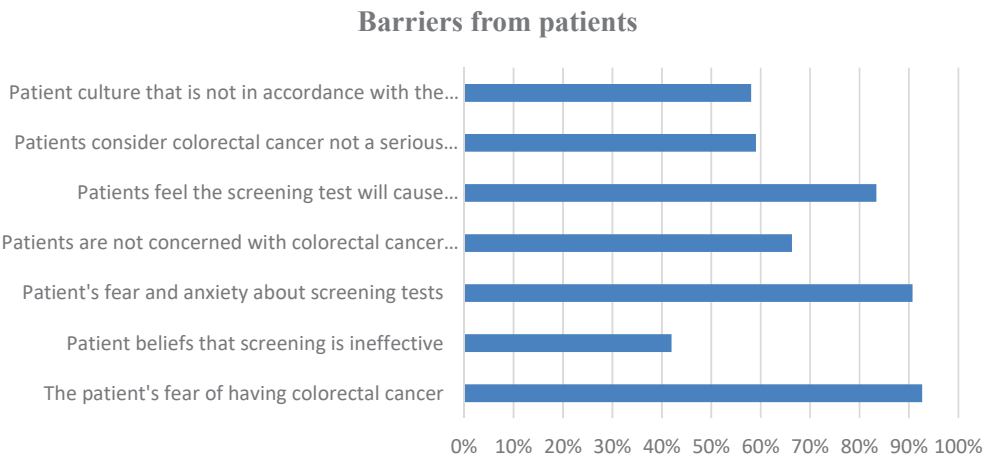

Figure 5. Colorectal Cancer Screening Barriers

According to health workers, the most significant barriers from patients are patients' fear of being diagnosed with cancer and patients' fear and anxiety about screening tests, while the health system's perceived barriers are Screening is very expensive, and there aren't enough trained health workers to do it.

Associated between respondents' knowledge and attitude toward colorectal cancer screening

This study also wanted to investigate the associated between health workers' knowledge and attitudes toward colorectal cancer screening. Table 6 results show that there is no relationship between health workers' knowledge of colorectal cancer screening and their attitude toward colorectal cancer screening.

Table 6. Associated between Knowledge and Attitude of Health Workers towards Colorectal Cancer Screening

	Good attitude	Poor attitude	*p-value*
Knowledge, n (%)			
Good knowledge, n (%)	62 (60.2)	41 (39.8)	0.63
Poor knowledge, n (%)	58 (56.9)	44(43.1)	

DISCUSSION

The role of screening in reducing the incidence of CRC is unequivocal, which is why it is critical to identify barriers to CRC screening.[13,14] In this study, we included PCP and nurses because they were involved closely to the patients care in PHC and have an important role in prevention medicine. The effectiveness of colorectal cancer screening programs in reducing morbidity and mortality in average-risk populations is dependent on several important factors that vary by country: participation rates, outcomes, costs, burden, complications, resources, available capacity for colonoscopy, and etc.

The results of the current study show that half of the PCPs and nurses working in PHC have a good knowledge and attitudes toward cancer CRC screening. In the similar study in Muscat City report that the participants of the study had good attitudes, but for knowledge regarding CRC screening was inadequate.[15] Other studies have also reported positive attitudes among PCPs, as evidenced by results that show CRC screening as very important (>90%) and high rates of receipt of screening tests (80%) among those over the age of 50.[16] The PCPs' and nurses' attitudes toward CRC screening could be attributed to the general public's and profession's expectations of cancer prevention services.[17]

This study also discovered several barriers perceived by health workers to colorectal cancer screening, including patients' fear of being diagnosed with cancer and their fear and anxiety about the screening test. Similar findings have been reported by study on HCPs working in primary care in Jordan that patient barriers to CRC screening were patient's fear of finding out that they have cancer.[17] The barriers perceived by health workers from the health system were screening is very expensive, and there aren't enough trained health workers to do it. Similarly, patient concerns about the cost of CRC screening was the most commonly reported barrier in the study done in Montana.[18] This suggests that, in order to improve the efficacy of colorectal cancer screening, these barriers should be addressed first. These costs impose greater financial burdens on low-income patients, who also have limited access to physicians. Providing universal coverage with no copayments for all recommended CRC screening tests is an obvious priority.

Based on the Asia Pacific Colorectalcancer Screening score, the Asia Pacific Colorectalcancer Screening group recommends FIT as a screening test for people at average risk and colonoscopy for those at high risk for malignancy,[19] but based on the knowledge of health workers in Bali, there are still few who are familiar with the Colonoscopy procedure. In fact, health workers' knowledge of CRC screening contributes to the community's screening uptake rate.[13] For example, a survey of 168 diseases in four accredited programs in the United States found many misconceptions about CRC screening and the use of FOBT.[20] Furthermore, health workers' knowledge of the CRC screening test is likely to encourage more participation and positively influence CRC screening patient uptake.[17] As a result, it is critical to educate health professionals about colonoscopy procedures, which are one type of colorectal cancer screening that can be done once every ten years.

To get a clearer picture, more research on the extent of education that health workers have provided to patients about colorectal cancer and the patients' qualitative response to the education is needed.

CONCLUSION

The majority of health workers' knowledge and attitudes toward CRC screening were in the "good" category. The patient's fear of being diagnosed with cancer, as well as the patient's fear and anxiety of screening tests, is the most significant barrier to colorectal cancer screening. Meanwhile, the health system's obstacles that health workers face are the high cost of screening and a lack of trained health workers to perform screening. It is need a big effort to reduce the barrier from health care system and population to reach success in CRC screening program.

REFERENCES

1. Rawla P, Sunkara T, Barsouk A. Epidemiology of colorectal cancer: incidence, mortality, survival, and risk factors. Prz Gastroenterol 2019;14(2):89-103.
2. World Health Organization. Cancer. WHO. 2020. Available from: https://www.who.int/news-room/fact-sheets/detail/cancer. Accessed January 16, 2023).
3. National cancer registry. National cancer registry 2020. 2020. Available from: https://onkologia.org.pl/pl. Accessed January 16, 2023.
4. Lewandowska A, Rudzki G, Lewandowski T, Stryjkowska-Góra A, Rudzki S. Risk factors for the diagnosis of colorectal cancer. Cancer Control 2022;29:10732748211056692.
5. Rex DK, Boland CR, Dominitz JA, Giardiello FM, Johnson DA, Kaltenbach T, et al. Colorectal cancer screening: recommendations for physicians and patients from the U.S. Multi-Society Task Force on colorectal cancer. Am J Gastroenterol 2017;112(7):1016-30.
6. Levin TR, Corley DA, Jensen CD, Schottinger JE, Quinn VP, Zauber AG, et al. Effects of organized colorectal cancer screening on cancer incidence and mortality in a large community-based population. Gastroenterology 2018;155(5):1383-91.e5.
7. US Preventive Services Task Force; Bibbins-Domingo K, Grossman DC, Curry SJ, Davidson KW, Epling JW Jr, García FAR, et al. Screening for colorectal cancer: US preventive services Task Force Recommendation Statement. JAMA 2016;315(23):2564-75.
8. Issa IA, Noureddine M. Colorectal cancer screening: An updated review of the available options. World J Gastroenterol 2017;23(28):5086-96.
9. World Health Organization. National Cancer Control Programmes: Policies and Managerial Guidelines. 2nd edition. 2002. Available from: http://www.hdnet.org. Accessed January 18, 2023.
10. Zapka JG, Puleo E, Vickers-Lahti M, Luckmann R. Healthcare system factors and colorectal cancer screening. Am J Prev Med 2002;23(1):28-35.
11. Gupta S, Brenner AT, Ratanawongsa N, Inadomi JM. Patient trust in physician influences colorectal cancer screening in low-income patients. Am J Prev Med 2014;47(4):417-23.
12. Triantafillidis JK, Vagianos C, Gikas A, Korontzi M, Papalois A. Screening for colorectal cancer: the role of the primary care physician. Eur J Gastroenterol Hepatol 2017;29(1):e1-7.
13. Nagelhout E, Comarell K, Samadder NJ, Wu YP. Barriers to Colorectal Cancer Screening in a Racially Diverse Population Served by a Safety-Net Clinic. J Community Health 2017;42(4):791-6.
14. Tan KK, Lopez V, Wong ML, Koh GC. Uncovering the barriers to undergoing screening among first degree relatives of colorectal cancer patients: a review of qualitative literature. J Gastrointest Oncol 2018;9(3):579-88.
15. Muliira JK, D'Souza MS, Ahmed SM, Al-Dhahli SN, Al-Jahwari FR. Barriers to colorectal cancer screening in primary care settings: attitudes and knowledge of nurses and physicians. Asia Pac J Oncol Nurs 2016;3(1):98-107.
16. Hannon PA, Martin DP, Harris JR, Bowen DJ. Colorectal cancer screening practices of primary care physicians in Washington State. Cancer Control 2008;15(2):174-81.
17. Omran S, Barakat H, Muliira JK, Aljadaa N. Knowledge, experiences, and barriers to colorectal cancer screening: a survey of health care providers working in primary care settings. J Cancer Educ 2015;30(1):53-61.
18. Montana Cancer Control Programs. Primary Care Provider Survey: Colorectal Cancer Screening Knowledge and Attitudes. 2020. Available from: https://dphhs.mt.gov/assets/publichealth/CancerProviderSurveyColorectalCancerScreeningKnowledgeandAttitudes.pdf. Accesed March 26, 2023.
19. Sung JJ, Ng SC, Chan FK, Chiu HM, Kim HS, Matsuda T, et al; Asia Pacific Working Group. An updated Asia Pacific Consensus Recommendations on colorectal cancer screening. Gut 2015;64(1):121-32.
20. Sharma VK, Corder FA, Raufman JP, Sharma P, Fennerty MB, Howden CW. Survey of internal medicine residents' use of the fecal occult blood test and their understanding of colorectal cancer screening and surveillance. Am J Gastroenterol 2000;95(8):2068-73.