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Original Article

Knowledge and perception toward colorectal cancer screening in east of Iran

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Abstract

Background: Colorectal Cancer (CRC) is the third most common cancer in Iran and its early detection is necessary. This study is based on perception of people in the east of Iran toward CRC screening.

Methods: In a cross-sectional study, 1060 randomly selected individuals who referred to Razavi Hospital of Mashhad, Iran, between September the 1st, 2012 and February the 28th, 2013 as patients or their visitors involved in an interview to fill a questionnaire on CRC screening.

Results: The participants' age ranged from 40 to 88 years (mean= 55). More than 90% had no knowledge of CRC and screening tests. The most cited reasons for not having screening tests were "did not have any problem" and "did not think it was needed". Although, older people had more knowledge of CRC (P= 0.033), there was no relationship between gender, health insurance status, family history of individuals and their knowledge about CRC (P> 0.050). Employment, education and higher income had positive effect on the perception of people toward CRC screening (P< 0.050).

Conclusion: Lack of knowledge in people in lower socio-economical class with limited literacy is the most important barrier to CRC screening. As such, designing educational programs involving physicians and media is important to improve CRC screening rates.

Keywords: Colorectal Neoplasms, Early Detection of Cancer, Knowledge, East of Iran

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Introduction

The prevalence of Colorectal Cancer (CRC) in Asia is high and the number of new cases is rapidly increasing in both genders (1–3). In Iran, CRC is the third most common cancer in women and fifth in men and is known as the fifth cause of cancer death (4). CRC is mostly prevalent in older people but in Iran there has been a great rise in its incidence among young individuals in recent decades, especially in those with positive history of CRC in the first or second degree relatives (4).

The incidence of this malignancy is reducing in many western countries, largely due to improvements in treatment and increased people's awareness and early detection. On the other hand, the rates continue to increase in communities with less social knowledge and more limited health resources (1).

The majority of CRC incidences and deaths can be prevented by applying public awareness about cancer prevention and by raising the use of available screening tests.

By screening we are able to find and remove adenomatous polyps which are in premalignant state of CRC (5,6). Also being screened regularly and at the recommended intervals increases the probability of cure with less extensive treatment when CRC is present.

According to American Cancer Society, the US Multi-Society Task Force on CRC and the American College of Radiology guidelines, screening of adenomatous polyps and CRC in average-risk adults should begin at age 50 years with one of the following options: 1) annual guaiac Fecal Occult Blood Test (gFOBT) or Fecal Immunochemical Test (FIT) or testing stool for exfoliated cell DNA, 2) flexible sigmoidoscopy every 5 years; 3) colonoscopy every 10 years, 4) double-contrast barium enema every 5 years, or 5) CT colonography every 5 years (7–10).

Previously, several published researches from various countries with different races and cultures have reported patient barriers to CRC screening as health illiteracy and lack of knowledge, negative attitudes about prevention and cancer, financial concerns and lack of physician's recommendation for screening tests (2,11–25).

Also, in a study by Beydoun and Beydoun in US, predictors of CRC screening behaviors among average-risk older adults included older age, male gender, marriage, higher education, higher income, white race, non-Hispanic ethnicity, smoking history, presence of chronic diseases, family history of CRC, usual source of care, physician recommendation, utilization of other preventive health services, and health insurance coverage (26). There are a few data about CRC screening knowledge and attitudes of Iranians in literature and most of them include a small sample size (10,27).

Considering the ethnic and cultural dispersion and demographic characteristics of Iran, and lack of a national program for CRC screening, we performed the current study on a large sample of Eastern Iranian population to investigate Persian's awareness and attitudes toward CRC and obstacles to screening.

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Methods

This is a cross-sectional study on 1060 randomly selected individuals older than 40 years who referred to Razavi Hospital of Mashhad, Iran, between September the 1st, 2012 and February the 28th, 2013 as patients or their visitors involved in a face to face interview by two trained nurses to fill a designed questionnaire including demographics, knowledge about symptoms, risk factors and screening tests of CRC and reasons for not being screened. Also, those aware of the screening tests were asked about the way of notification.

CRC risk factors in the questionnaire consisted of 8 items: 1) excessive alcohol intake, 2) smoking, 3) obesity, 4) positive history of CRC in the first or second degree relatives, 5) high calorie diet, 6) high red meat consumption, 7) sedentary life style, 8) diets containing high saturated fats (28).

CRC symptoms consisted of 7 items: 1) bloody stool, 2) change in bowel habits, 3) weight loss, 4) generalized weakness, 5) nausea and vomiting, 6) intermittent abdominal pain, 7) abdominal bloating (28).

In our study we evaluated the knowledge about the most available CRC screening tests: 1) fecal occult blood test, 2) flexible sigmoidoscopy, 3) colonoscopy.

Since the purpose of this study was finding the knowledge of people toward CRC screening, patients with past or present history of inflammatory bowel diseases (crohn's disease and ulcerative colitis), CRC or polyps were excluded. After interview, every person received a free pamphlet, provided by Razavi Hospital CRC Research Group about CRC including definition, risk factors, symptoms, importance of screening and standard screening tests.

The study questionnaire followed the constructions of the Health Belief Model as a guide for validity (29). Cronbach's alpha was used to evaluate the reliability which was 99%. Data were analyzed by descriptive and analytical statistics using SPSS 19 (SPSS Inc., Chicago, IL, USA) and a *P* value of <0.050 was considered significant.

To compare the level of knowledge among men and women, employment status, insurance status and people in various levels of education, Chi-square (for qualitative variables) and one way ANOVA (for quantitative variables) tests were used. Scoring of different parts of questionnaire was carried out according to Table 1.

Results

1060 questionnaires were completed by the respondents 59 of which were excluded due to history of CRC and polyp or inflammatory bowel disease. The sample of 1001 people consisted of 478 males and 523 females with the age range of 40 to 88 years (mean= 55, SD= 10.9). Socio-demographic characteristics of the study participants are shown in Table 2.

At the time of this study, most of the participants were married (98.0%). The majority of persons had secondary school education or less (78.2%) and were employed or retired (52.1%) with monthly income of less than 400 US dollars (90.5%). Also, 88.3% of individuals had health insurance. Forty persons (4.0%) reported a positive history of CRC in their first or second degree relatives. In our survey, only 4.2% of respondents reported prior screening for CRC and other 95.8% had never been tested before.

More than 90% of the participants in this study did not have any knowledge of CRC risk factors, symptoms or the screening tests. Table 3 shows the knowledge of participants about CRC and screening tests.

Most of the people mentioned "did not have any symptom or

Table 1. Scoring of different parts of questionnaire

Part	Scoring
Awareness of the risk factors of CRC	Lack of information= nothing
	Aware of 1–2 items= low
	Aware of 3–5 items= medium
	Aware of 6–8 items= high
Awareness of the symptoms of CRC	Lack of information= nothing
	Aware of 1–2 = low
	Aware of 3–4 items= medium
	Aware of 5–7 items= high
Awareness of the screening tests	Lack of information= nothing
	Aware of 1 item= low
	Aware of 2 items= medium
	Aware of 3 items= high

Table 2. Demographic characteristics of the study participants (N= 1001)

Variables	Number	%
Gender		
Male	478	47.8
Female	523	52.2
Marital Status		
Single	20	2.0
Married	981	98.0
Widowed/divorced	0	0.0
Education		
Diploma or less	783	78.2
Some college or Bachelor's degree	190	19.0
Master's degree or more	28	2.8
Employment status		
Employed or Retired	522	52.1
Unemployed	479	47.9
Monthly income (US dollar)		
<200	215	21.5
200–400	691	69.0
>400	76	7.6
Missing	19	1.9
Family history of CRC		
Yes	40	4.0
No	961	96.0
Health insurance		
Yes	884	88.3
No	117	11.7
Prior history of CRC screening		
Yes	42	4.2
No	959	95.8

problem" and "did not think it was needed" as the main reasons for not having CRC screening tests (reported in 40.1%, 32.5% respectively). Also 12.7% of the respondents cited "physician did not recommend the test", as their reason. Findings showed that "fear of the screening test", "fear of advanced CRC" and "the cost of test", were the least cited barriers for participation in CRC screening tests. 0.5.3% of the participants who had some knowledge about screening tests of CRC, expressed university education, physician recommendation, family members, magazines and newspapers, as the primary sources of their notification.

Analysis of data proved that there was no relationship between variables such as gender, health insurance status, family history and knowledge of people about CRC risk factors and symptoms (Table 4).

Although having a positive family history of CRC did not increase the clinical knowledge among high-risk group, there was a significant association (P= 0.012) between family history and awareness of the screening tests (Table 4).

Comparison between knowledge of risk factors and symptoms of CRC and age of participants indicated a significant difference (P= 0.031) as the older people had more knowledge.

Employment, education and higher incomes had positive influence on the perception of individuals toward CRC risk factors, symptoms and screening tests, too (Table 4).

Discussion

The findings of this study demonstrated that 95.8% of our people have never had screening for CRC before and even, more than 90% did not have any knowledge of CRC risk factors, symptoms or the screening tests. This data is far from the current situation in the US where about 65% of people aged 50 or older have received CRC screening test consistent with current guidelines and it is still below target rates (30).

Like other studies, age, has been found as an important factor in the knowledge of people with rates higher among older individuals, which can be due to increased risk of co-morbidities in older people that force them to seek medical advice more than the others, although this must be evaluated in further studies with emphasizing on relationship between co-morbidities and CRC screening rate (15,16,31).

One of the most important barriers to CRC screening in our population is limited literacy that deprives them of general or particular awareness and information. This is consistent with the results of the other studies (13,20,23,26,27,32).

As mentioned in prior studies (2,10,13,26,33), we also realized that employment and higher income can be promoters to encourage average risk people to undergo screening and on the other hand, low socio-economic condition specially in rural areas can be a barrier in this regard.

Unlike other studies that reported absence of health insurance as a threat, we did not find any correlation between health insurance and participation in screening which can be due to lack of enough coverage for the expensive screening tests by the insurance organizations in Iran (2,11,15,26,31).

Although positive family history of CRC did not increase the knowledge of our population about CRC symptoms and risk factors, it could raise their awareness of screening tests that was consistent with findings in previous studies (10,15,26).

Most of the individuals in our survey perceived themselves to be in good health and did not think the screening tests were needed. This fact accompanying by failure of physician recommendation were the most cited reasons for not having screening tests which shows that perception of CRC risk in general population and healthcare system plays an important role in the tendency of adults toward screening and prevention. This is consistently reported in several other papers too (10,11,14,16,19,20,23,24,27,31,32,33–35).

In a study by Omran and Ismail in Jordan, the most common sources of information about CRC screening were respectively family members, newspapers and magazines, television or radio and physicians (25). In accordance to their findings, in our study those who had some knowledge about screening tests of CRC, expressed university education, physician recommendation, family members, magazines and newspapers, respectively as the primary sources of their notification that explains the remarkable role of educational and healthcare system in the improvement of public knowledge and perception toward CRC screening.

In this study we proposed gFOBT instead of FIT as a tool for CRC screening, because it's cheaper and more available in primary laboratories in Iran, particularly in small cities. Although FIT, with fewer tests, is more sensitive and needs no dietary restriction (36).

In our study we had limitation in evaluating the influence of our CRC pamphlet (cited in methodology section) on improvement of people's awareness, therefore further studies must be planned to investigate the effect of such educational programs on medical knowledge of people to persuade them to undergo screening tests. Also the second barrier to this research was finding the exact number of patients in our sample that referred to Razavi hospital and separating the results to two groups (patients and general population) to

Table 3. Distribution of knowledge score toward risk factors and symptoms of CRC and screening tests

	Knowledge of symptoms	Knowledge of risk factors	Knowledge of screening tests
High	0.2%	0.1%	0.3%
Medium	0.8%	0.7%	0.8%
Low	8.0%	7.1%	4.2%
Nothing	91.0%	92.1%	94.7%

Table 4. Association between knowledge about CRC and the study variables

Characteristics	Knowledge of risk factors (*P* value)	Knowledge of symptoms (*P* value)	Knowledge of screening Tests (*P* value)
Gender	0.546	0.178	0.532
Age	0.032	0.038	0.236
Family History	0.272	0.380	0.011
Health Insurance	0.402	0.253	0.339
Marital Statues	0.018	0.957	0.158
Employment	0.003	0.011	0.005
Education	0.001	0.001	0.001
Income	0.001	0.002	0.031

remove the probable bias of selection.

Conclusion

Lack of knowledge in people, particularly those in lower socio-economical class with limited literacy is the most important barrier to CRC screening. So, designing educational programs involving physicians and media is important to improve CRC screening rates. In a developing country like Iran with an acceptable infrastructure of healthcare system, training family physicians on CRC screening based on national or international guidelines to perform office-based fecal occult blood test and refer patients with a positive test for a diagnostic colonoscopy can be a useful strategy.

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Ethical issues

All the patients were fully informed and ethical consent was obtained.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

FB and KG were the main investigators, participated in the design and conducting the study, drafted and edited the manuscript. AI participated in the design of the study and conducted the statistical analysis. SA, NJ, FK, AA, MV and TT participated in the design and conducted the data gathering for the study. HA participated in the design of the study and edited the manuscript for final submission. All authors read and approved the final manuscript. FB is the study guarantors.

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Key Messages

Implications for policy makers

- There are so many barriers like education, employment and income to Colorectal Cancer (CRC) screening in a developing country like Iran.
- There is not enough coverage for the expensive screening tests by the insurance organizations in Iran.
- The role of health system infrastructure in screening programs' participation is essential.
- Designing educational programs involving physicians and media is important to improve CRC screening rates.

Implications for public

In Iran, Colorectal Cancer (CRC) is the third most common cancer in women and fifth in men and is known as the fifth cause of cancer death. CRC is mostly prevalent in older people but in Iran there has been a great rise in its incidence among young individuals in recent decades, especially in those with positive history of CRC in the first or second degree relatives. The majority of CRC incidences and deaths can be prevented by applying public awareness about cancer prevention and by raising the use of available screening tests. By screening, we are able to find and remove adenomatous polyps which are in premalignant state of CRC. Also regular screening at recommended intervals improves the probability of cure with less extensive treatment when CRC is present.