RESEARCH COMMUNICATION

More than Half of Senior Residents in Tehran Have Never Heard about Colorectal Cancer Screening

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Abstract

Background: Colorectal cancer (CRC) is the third most prevalent malignancy in Iran. Although adequate knowledge about CRC and screening tests has a significant effect on screening behavior, there is still no clear information in this regard in Iran. The aim of the study was therefore to identify knowledge toward CRC and obstacles to screening tests among an Iranian population. Methods: We conducted a preliminary analysis with baseline data drawn from an ongoing randomized community trial among people aged 50 years and over in municipal district 6 in Tehran. A total of 360 members of health houses, who were not being exposed to CRC screening tests, completed the baseline survey and randomized to two study groups. Data were collected via personal interviews by 12 trained interviewers for demographics, knowledge related to CRC, and barriers to screening tests. Results: The mean age was 58.0 (±7.13) ranging from 50 to 86 years; 69% were female, 52% were unemployed, 65% had completed high school, and 90% had medical insurance. A considerable number of respondents stated that they had never heard about fecal occult blood test (61%) and colonoscopy (51%) as CRC screening tests. In general, participants were more likely to respond the knowledge items inaccurately. Four commonly stated reasons for not being screened were "absence of clinical symptoms" (29%); "doctor did not recommend the test" (26%); "never think of the test" (22%); and "did not think it was needed" (11%). Conclusion: Our findings indicated that lack of knowledge about CRC and various barriers to screening tests exist among Iranians. Our results may facilitate the development of effective educational strategies primarily aimed at high-risk people.

Keywords: Colorectal cancer - prevention - control - Iran

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Introduction

Colorectal cancer (CRC) is the third most commonly reported cancers in the world (Shokar et al., 2005; Ferlay et al., 2010). In Iran, CRC is ranked as the third most prevalent diagnosed cancer among men and women, and mostly threatens younger cases with an increasing prevalence near the Western countries (Salari et al., 2007; Ferlay et al., 2010; Kolahdoozan et al., 2010).

Although CRC is largely preventable and is one of the few cancers for which screening leads to considerable decreases in morbidity and mortality, adherence to CRC guidelines and screening rates is still relatively low even in developed countries (Walsh et al., 2004; American Cancer Society, 2011). According to the US Preventive Services Task Force and the American Cancer Society guidelines every men and women aged 50 years and older should get screened for CRC using one of the following screening tests: annual fecal occult blood test (FOBT); sigmoidoscopy every 5 years; barium enema every 5 years; or colonoscopy every 10 years (Winawer et al., 2003; US Preventive Services Task Forces 2006; Levin et al., 2008; Smith et al., 2008).

Studies reveal that lack of knowledge is a significant reason for low participation in cancer screening in general and colorectal cancer screening in particular (Montana Behavioral Risk Factor Surveillance System 2008). Whereas increased knowledge about CRC and screening encourages people to undergo screening testes (Klabunde et al., 2006; Suha et al., 2010).

Moreover, a growing body of literature has identified barriers that limit screening participation for individuals aged 50 and older, such as inadequate knowledge about CRC and screening tests, not being recommended by a doctor, embarrassment, fear of developing cancer, costs, time limits, and transportation problems (Tang et al., 2001; Holmes-Rovner et al., 2002; James et al., 2002; Walter et al., 2005; Guessous et al., 2010). In contrast, very scant data is available in regard to the factors that may influence participation specifically among Iranian populations.

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Given the lack of comprehensive and population-based studies on CRC screening in our national literature, this preliminary survey has been conducted to evaluate factors including CRC-related knowledge, individual's awareness of screening tests, the importance of and barriers to undergoing regular screening.

Materials and Methods

Design and data collection

This study was part of an ongoing randomized community trial among a sample of age eligible individuals for colorectal cancer screening. We conducted a preliminary analysis of baseline data from a culturally and individually tailored intervention for Iranian at risk people.

The study sample

The study setting was health houses in municipal district 6, affiliated to Tehran municipality. The Deputy of social and cultural affairs in Tehran municipality holds information on the total number of members and their contact addresses for all health houses in municipal district 6. All health houses located in municipal district 6 were included in our sampling frame, and 12 out of 20 health houses were randomly selected. Thirty members from each health house were randomly contacted to complete the baseline survey, giving a total number of 360 questionnaires ready for analysis. Data were collected via face-to-face interviews by 12 trained interviewers. All interviews carried out in private at health houses.

The inclusion criteria were: age 50 years and over, not being exposed to CRC screening tests (defined as a colonoscopy in the last 10 years, sigmoidoscopy/barium enema in the past 5 years, or home fecal occult blood testing in the past year), and being physically and mentally competence to answer the questions (US Preventive Services Task Forces 2006). Respondents with colitis, Crohn's disease, personal history of CRC or polyps, and education less than 9 years were excluded from the study.

The questionnaire

Demographic variables included age, gender, marital status, employment, education, and medical insurance, and family history of CRC or polyps.

Thirteen validated knowledge items drawn from our earlier study (Salimzadeh et al., 2011) were adapted for use in the current study (Reliability Alpha= 0.95). This measure actually contained true–false knowledge statements to assess knowledge of CRC symptoms, knowledge of CRC risk-factors and screening tests as follows: 'People with family history of CRC or polyps should start screening at a younger age than others'; 'Colorectal cancer often starts with no symptoms'; 'Blood in or on the stool is a symptom for CRC'; 'unexplained weight loss is a symptom for CRC'; 'A change in bowel habits is a symptom for CRC'; 'Both men and women ≥ 50 get colorectal cancer'; 'People with a family history of CRC are at higher risk for CRC'; 'Over time, some colon polyps can turn into cancer'; 'CRC only affects men'; 'The risk of developing CRC does not increase with age'; 'CRC/polyps can be found early by screening tests'; 'All people aged 50 year and older should get screened regularly for CRC'; 'Finding and removing polyps early helps prevent cancer'; and 'People with a family history of CRC may get tested at a younger age than 50'.

Individuals were instructed to choose 'unsure' if they were uncertain about correct answers.

To prepare a simple frame of reference, a brief description about FOBT and colonoscopy was read aloud to participants and after description, they were asked if they had heard about the corresponding test. Since all respondents had never had CRC screening tests, they were asked about the most important reason for not being screened (barriers to CRC screening). For this a list of seven coded checkboxes was provided. The instrument took about 20 minutes to be completed. Individuals were classified as high risk if they reported having a first-degree relative with CRC or colon polyps.

Analysis

Using baseline survey we analyzed the data collected on knowledge related to CRC and barriers to screening tests. Continuous variables were computed in the form of mean and standard deviation (±SD). Categorical variables were presented as relative and absolute frequency.

Ethics

The current study had approval from the Tehran University of Medical Sciences Institutional Review Board. All participants were informed about confidentiality of data, the significance and purpose of the study. Informed consent was obtained from participants and their participation in our study was voluntary.

Results

In all 360 members from 12 health houses participated in the study. The mean age of participants was 58.04 (±7.13) ranging from 50 to 86 years; 69% were female, 85% were married, 52% were unemployed. Most individuals (65%) completed high school, and 90% had medical insurance. Only 4 % reported a positive history of CRC or polyps among their first-degree relatives. A considerable number of the respondents stated that they had never heard about FOBT (61%) and colonoscopy as CRC screening tests (51%). Approximately 73% (n = 266) of the respondents rated their general health as good or better than good (Table 1).

Knowledge of CRC symptoms

In general knowledge on CRC symptoms was poor. More than 50% of the respondents were not able to recognize correct answers.

Knowledge of CRC risk factors

In regard to CRC risk factors, only three items were answered correctly by at least 50% of the respondents. The misunderstanding on the relationship between age and risk of developing CRC was apparent. In fact 22% of individuals could not realize the association between age and the risk of developing CRC, and extra 49 % were

Table 1. Demographic Characteristics of the Study Participants (N = 360)

Variables	Frequency	Percent
Gender		
Male	113	31
Female	247	69
Marital status		
Single	14	4
Married	307	85
Widowed/divorced	39	11
Education(years)		
9-12	126	35
Completed high school	141	39
>12	91	26
Employment status		
Employed	57	16
Retired	114	32
Unemployed	189	52
Family history of colorectal cancer/polyps		
Yes	16	4
No	344	96
Medical insurance		
Yes	324	90
No	36	10
Heard about FOBT*		
Yes	139	39
No	221	61
Heard about colonoscopy		
Yes	176	49
No	184	51
General rating of health		
Excellent	11	3
Very good	59	16
Good	196	54
Fair	89	25
Poor	5	2

*FOBT indicates fecal occult blood test

unsure. However, 49% of the respondents could correctly indicate that some polyps might turn into cancer over time.

Knowledge of CRC screening tests

Fifty-two percent of the respondents indicated that CRC/polyps might be found early by screening tests and similarly 53% knew that people with a family history of CRC might receive CRC test at a younger age. The detailed findings are presented in Table 2.

Table 3. Perceived Barriers to Colorectal Cancer Screening (n =360)

	Frequency	Percent
Absence of clinical symptoms	103	29
Doctor did not recommend the test	96	26
Never think of the test	80	22
Did not think it was needed	39	11
Fear of developing cancer	25	7
Costs of tests	17	5
Total	360	100

Barriers to screening

Finally when the respondents were asked about barriers for screening, four commonly cited reasons for not being screened were: 'Absence of clinical symptoms' (29%); 'Doctor did not recommend the test' (26%); 'Never think of the test' (22%); and 'Did not think it was needed' (11%). In addition, results indicated that 'Fear of developing CRC' and 'Costs of tests' were less important barriers to screening tests; cited only by 7% and 5% of individuals respectively (Table 3).

Discussion

To our best of knowledge, very little is known about colorectal cancer and screening behaviors in Iran. We studied participants who were age-eligible for CRC screening but non-compliant according to CRCS guidelines. The results of our study demonstrated that individuals were less likely to respond the knowledge items about CRC and screening, correctly, suggesting an overall lack of understanding about CRC and screening tests. Furthermore, results of the current study showed that a high percentage of the individuals had never heard about FOBT (61%) and colonoscopy (51%). This finding provides support for our earlier study that showed poor knowledge among at risk population aged 50 years and older. Indeed, this result is congruent with Shiraz study

Table 2. Knowledge of Colorectal Cancer and its Screening Tests (N = 360)

Responses (%)	True	False	Unsure
CRC symptoms			
A change in bowel habits	35	6	59
Blood in or on the stool	40	10	50
Unexplained weight loss	34	8	58
CRC often starts with no symptoms	42	8	50
CRC risk factors			
Both men and women ≥ 50 get CRC	57	2	41
Over time, some polyps can turn into cancer	49	2	49
People with a family history of CRC are at higher risk	51	3	46
CRC only affects men	3	53*	44
The risk of developing CRC does not increase with age	22	29*	49
CRC screening tests			
CRC/polyps can be found early by screening tests	52	2	46
All people ≥ 50 y should get screened regularly for CRC	41	8	51
Finding and removing polyps early helps prevent cancer	48	2	50
People with a family history of CRC may get tested at a younger age than 50	53	3	44

that reported lack of awareness as the most common barrier for CRC screening tests (Roozitalab et al., 2008; Salimzadeh et al., 2011). However, as suggested by other investigators lack of knowledge might lead to low rate of CRC screening tests (Vernon et al., 2001; Wolf et al., 2001; Shokar et al., 2005; Greiner et al 2005; Harewood et al., 2009; Guessous et al., 2010; Suha et al., 2010).

Given that all respondents had at least basic literacy skills in reading and writing, therefore it is not reasonable to infer that the lack of knowledge was due to illiteracy. Meanwhile, studies have shown that people with limited literacy often have trouble in obtaining and understanding appropriate information from available sources (Dolan et al., 2004; Shokar et al., 2005).These findings are challenging and the lack of knowledge can be partly attributed to low level of health literacy among our respondents, resulting in poor basic information about CRC and the significance of undergoing screening tests with a limited capacity to understand educational materials and certain features of colorectal cancer screening. Moreover the result might be due to lack of national guideline and screening programs for colorectal cancer in Iran. These observations indicate that we can anticipate even much greater knowledge deficits on CRC screening tests among diverse populations with lower level of literacy in the country.

'Absence of clinical symptoms' was the most frequently reported explanation for not being current with CRC screening tests. The result reported herein is consistent with our earlier investigation and other studies suggesting that lack of clinical symptoms as one of the often cited barriers to CRC screening independent of the country (Wolf et al., 2001; Hoffman et al., 2011; Salimzadeh et al., 2011).

With regard to other barriers, 'Lack of physician recommendation' was the second most important barrier in obtaining CRC screening tests. This result also provides support for findings that identified lack of doctor recommendation as main barrier for CRC screening (Roozitalab et al., 2008 ; Salimzadeh et al., 2011). In other studies when adherent people were asked why they had not been screened, lack of doctor recommendation was the second most important reason after "lack of awareness" (Klabunde et al., 2006; 2007). Moreover, a growing body of literature has documented the influence of physician recommendation on screening compliance (James et al., 2002; Jagot, 2004; Katz et al., 2004; Wee et al., 2005; Jonathan 2006). This study provides further evidence to highlight physician involvement as ways of overcoming CRC screening barriers. However, the lack of doctor recommendation can be a challenging issue. However, our investigation cannot address physicians' perspectives. They may have different perspectives on barriers to CRC screening than general population. Moreover, there is no relevant literature in Iran that has explored the perspective of physicians or health providers on screening programs in general. Therefore, future efforts should focus on this issue and identify opportunities to engage physicians and health providers in screening programs.

Other important barriers to receive CRC screening in the present study were 'Did not think it was needed' and "Never think of the test". The results reinforce and update findings of earlier study conducted on smaller population (Salimzadeh et al., 2011). In addition, results of the Behavioral Risk Factor Surveillance System (BRFSS) in 2008, in the US reported that the most common barrier for not being screened was the belief that screening was not necessary, followed by lack of doctor/provider recommendation (Montana Behavioral Risk Factor Surveillance System 2008).These factors considered cumulatively could reflect and confirm the lack of knowledge and awareness among participants.

Even though fear of the detection of cancer and costs of tests were not cited as frequent reasons by our respondents, the literature suggests otherwise (Greiner et al., 2005; Hannon et al., 2005; Rawl et al., 2005; Green et al., 2008; Ward et al., 2008; Suha et al., 2010).This thought may stem from the belief that people usually prefer not to look for difficulties that are not currently annoying them, especially if they think of cancer as a serious disease (Beeker et al., 2000; Wong-Kim et al., 2003).Only a minority of participants in the current study stated that fear and costs were the most important features in not being screened. Since nearly all participants (90%) had medical insurance and CRC screening procedures could be partially covered by it, so they were less likely to report that cost of tests prevented them from getting tested. Our former study and other relevant observations suggested that adults aged 50 years or older rarely considered costs and fear to be primary barriers to screening (Hoffman et al., 2011; Salimzadeh et al., 2011).

This study has some limitations. The present study was undertaken in a part of Tehran, and it may not reflect the views of people with different cultural traditions and beliefs throughout Iran. In addition, because of the predominance of women among the health house members, men were under-represented in our study. Although the questionnaire was tested for face validity and construct validity as discussed in the methods section, some other important barriers may have been overlooked in our study. However, the findings of this study provide knowledge of and barriers to colon cancer screening that exist among at risk population.

In conclusion, our findings indicated lack of knowledge about CRC and various barriers to screening tests exists among Iranians. Given these knowledge deficits, there is consequently a great need to educate the general public about CRC risk factors, importance of early detection, family history and screening tests. Our results may facilitate the development of effective educational strategies aimed primarily at high-risk people. While continuing to increase public awareness, future efforts will need to develop national guideline and implement screening program for colorectal cancer.

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References

American Cancer Society (2011). Cancer Facts and Figures 2011. Atlanta, Ga: American Cancer Society.

Beeker C, Kraft J, Southwell B, Jorgensen C (2000). Colorectal cancer screening in older men and women: qualitative research findings and implications for intervention. *J Commun Health*, **25**, 263–78.

Dolan NC, Ferreira MR, Davis TC, et al (2004). Colorectal Cancer screening knowledge, attitudes, and beliefs among veterans: Does literacy make a difference? *J Clin Oncol*, **22**, 2617-22.

Ferlay J, Shin HR, Bray F, et al (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *International J of Cancer*, **127**, 2893–917.

Green AR, Peters-Lewis A, Percac-Lima S, et al (2008). Barriers to screening colonoscopy for low-income Latino and White patients in an urban community health center. *J Gen Intern Med*, **23**, 834–40.

Greiner A, Born W, Nollen N, Ahluwalia J (2005). Knowledge and perception of colorectal cancer screening among urban African Americans. *J Gen Intern Med*, **20**, 977-83.

Guessous I, Dash C, Lapin P, et al (2010). Colorectal cancer screening barriers and facilitators in older persons. *Prev Med*, **50**, 3–10.

Hannon P, Harris JR, Martin D, VanEenwyk J, Bowen D (2005). Colorectal cancer screening in Washington State: predictors of current screening and explanations for no screening. *Prev Chronic Dis*, **12**, 1006-13.

Harewood GC, Murray F, Patchett S, et al (2009). Assessment of colorectal cancer knowledge and patient attitudes towards screening: is Ireland ready to embrace colon cancer screening? *Ir J Med Sci*, **178**, 7–12.

Hoffman RM, Rhyne RL, Helitzer DL, et al (2011). Barriers to colorectal cancer screening: physician and general population perspectives, New Mexico, 2006. Prev Chronic Dis, 8, http://www.cdc.gov/pcd/issues/2011/mar/10_0081.htm. Accessed [March 2011].

Holmes-Rovner M, Williams GA, Hoppough S, et al (2002). Colorectal cancer screening barriers in persons with low income. *Cancer Pract*, **10**, 240–7.

Jagot C (2004). The importance of improving awareness of colorectal cancer. *Nurs Times*, **100**, 30-1.

James AS, Campbell MK, Hudson MA (2002). Perceived barriers and benefits to colon cancer screening among African Americans in North Carolina: how does perception relate to screening behavior? *Cancer Epidemiol*, **11**, 529-34.

Jonathan P (2006). Embarrassment is a major barrier to colon cancer prevention, especially among women. *Gastroenterology*, **130**, 1364-65.

Katz ML, James AS, Pignone MP, et al (2004). Colorectal cancer screening among African American church members: a qualitative and quantitative study of patient-provider. *BMC Public Health*, **4**, 62. Accessed [date]. Dec 15

Klabunde C, Schenck A, Davis W (2006). Barriers to colorectal cancer among Medicare consumers. *Am J Prev Med*, **30**, 313-9.

Klabunde CN, Meissner HI, Wooten KG, Breen N, Singleton, JA (2007). Comparing colorectal cancer screening and immunization status in older Americans. *Am J Prev Med*, **33**, 1–8.

Kolahdoozan S, Sadjadi A, Radmard AR, Khademi H (2010). Five common cancers in Iran. *Arch Iran Med*, **13**,143-6.

Levin B, Lieberman DA, McFarland, et al (2008). Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. *CA Cancer J Clin*, **58**, 130-60.

Montana Behavioral Risk Factor Surveillance System (2008). Barriers to Colorectal Cancer Screening in Montana, BRFSS 2008. QUARTERLY SURVEILLANCE REPORT. OCTOBER, Available from: http://74.205.72.25/html/brfss-index.shtml.

Rawl S, Menon U, Champion VL, et al (2005). Do benefits and barriers differ by stage of adoption for colorectal cancer screening? *Health Educ Res*, **20**, 137-48.

Roozitalab M, Moatari M, Gholamzadeh S, Saberi Firoozi M, Zare N (2008). The effect of health belief on participation of the official administrative personnel in colorectal cancer screening programs in Shiraz University of Medical Sciences: 2004. *Govaresh, Iranian Association of Gastroenterology and Hepatology*, **13**, 19-24.

Salari AA, Dehghan HR (2007). Evaluation and treatment of colorectal cancer in Shahid Rahnemoon and Afshar hospitals, Yazd-Iran. *J Shahid Sadoughi Univ Med Sci Health Serv* **15**, 20-5.

Salimzadeh H, Delavari AR, Montazeri A, Mirzazadeh A (2011). Knowledge and practice of Iranians toward colorectal cancer, and barriers to screening. *Int J Prev Med*, **2**, 87-93..

Shokar N, Vernon S, Weller S (2005). Cancer and colorectal cancer: knowledge, beliefs, and screening preferences of a diverse patient population. *Fam Med*, **37**, 341–7.

Smith, RA, Cokkinides V, Brawley OW (2008). Cancer screening in the United States, 2008: A review of current American Cancer Society guidelines and cancer screening issues. 2008. *CA Cancer J Clin*, **58**, 161-79.

Suha O, Ahmad Abedalkareem I (2010). Knowledge and Beliefs of Jordanians toward Colorectal Cancer Screening. *Cancer Nursing*, **33**, 141-8.

Tang TS, Solomon LJ, McCracken LM (2001). Barriers to fecal occult blood testing and sigmoidoscopy among older Chinese-American women. *Cancer Prev*, **9**, 277–82.

US Preventive Services Task Forces (2006). The Guide to Clinical Preventive Services. Agency for Healthcare Research and Quality: Rockville, MD.

Vernon SW, Myers RE, Tilley BC, Li S (2001). Factors associated with perceived risk in automotive employees at increased risk of colorectal cancer. *Cancer Epidemiol Biomarkers Prev*, **10**, 35-43.

Vernon SW, Myers RE, and Tilley BC (1997). Development and Validation of an Instrument to Measure Factors Related to Colorectal Cancer Screening Adherence. *Cancer Epidemiology, Biomarkers & Prevention*, **5**, 825-32.

Walsh J, Kaplan C, Nguyen B, et al (2004). Barriers to colorectal cancer screening in Latino and Vietnamese-Americans. Compared with non-Latino white Americans. *J Gen Intern Med*, **19**, 156–66.

Walter L. Straus, Edward C. et al (2005). Colorectal Cancer Screening Attitudes and Practices in the General Population: A Risk-adjusted Survey. *J Public Health Management Practice*, **11**, 244–51.

Ward SH, Lin K, Meyer B, et al (2008). Increasing colorectal cancer screening among African Americans, linking risk perception to interventions targeting patients, communities and clinicians. *J Natl Med Assoc*, **100**,748–58.

Wee CC, McCarthy EP, Phillips RS (2005). Factors associated with colon cancer screening: the role of patient factors and physician counseling. *Prev Med*, **41**, 23-9.

Winawer S, Fletcher R, Rex D, et al (2003). Colorectal cancer screening and surveillance: clinical guidelines and rationale-Update based on new evidence. *Gastroenterology*, **124**, 544–60.

Wolf RL, Zybert P, Brouse CH, et al (2001). Knowledge, beliefs,

and barriers relevant to colorectal cancer screening in an urban population: a pilot study. *Fam Community Health*, **24**, 34-47.

Wong-Kim E, Sun A, DeMattos M (2003). Assessing cancer beliefs in a Chinese immigrant community. *Cancer Control*, **10**, 22–8.