

Canadians' Attitudes and Awareness Towards Colorectal Cancer Screening: Results of a National Survey

Janet A. Parsons^{*,1,2}, Yola Zdanowicz³, Christine Brezden-Masley^{4,5}, Amanda J. Sheppard⁶, Andrew Grenville^{7,14}, Ciela Kauffman^{7,14}, Depeng Jiang⁸, Nancy N. Baxter^{9,10}, Heather Bryant^{11,12} and David Klein^{1,5,13}

¹Applied Health Research Centre, Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, Canada; ²Department of Physical Therapy, University of Toronto, Canada; ³Ensemble Strategies, and formerly of Angus Reid Strategies, Vision Critical, Toronto, Canada; ⁴Medicine & Haematology-Oncology, and Keenan Research Centre, Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, Canada; ⁵Department of Medicine, University of Toronto, Canada; ⁶AboutKidsHealth, Hospital for Sick Children, Toronto, Canada; ⁷Angus Reid Strategies, Vision Critical, Toronto, Canada; ⁸Community Health Sciences, University of Manitoba, Winnipeg, Canada; ⁹General Surgery, and Keenan Research Centre, Li Ka Shing Knowledge Institute, St. Michael's Hospital, Toronto, Canada; ¹⁰Departments of Surgery and Health Policy Management and Evaluation, University of Toronto, Canada; ¹¹Cancer Control, Canadian Partnership Against Cancer, Toronto, Canada; ¹²Departments of Community Health Sciences and Oncology, University of Calgary, Canada; ¹³Division of Critical Care, St. Michael's Hospital, Toronto, Canada; ¹⁴Rogers Communications, Canada

Abstract: *Background and Purpose:* Colorectal cancer (CRC) is a significant cause of morbidity and mortality worldwide, and screening is widely accepted as a means of improving outcomes. However, screening uptake remains low amongst Canadians aged 50-74. The study's objective was to obtain national-level baseline data regarding Canadians' attitudes towards and awareness of CRC screening.

Methods: A telephone survey using random digit dialing methodology was conducted. A total of 2,444 respondents aged 50-74 were surveyed regarding their attitudes, awareness and past screening behaviours related to cancer generally and CRC specifically. Logistic regression identified predictors of CRC screening participation.

Results: While 80.9% of respondents were aware that screening tests for CRC exist, far more had heard of colonoscopy (87.2%) than fecal occult blood testing (FOBT, 42.8%). Only a minority (40.0%) recognized that cancer screening occurs before symptom onset. The strongest predictor of CRC screening participation was having discussed it with their doctor (OR 6.81); yet only 29.0% recalled having such discussions. Belief that early detection increases one's chance of survival was positively associated with prior screening (OR 2.50), while belief that CRC screening was unnecessary in the absence of symptoms showed a negative association (OR 0.42).

Conclusion: This study provides important national-level baseline data regarding Canadians' attitudes towards and awareness of CRC and its screening, and identifies factors associated with screening behaviour. The findings indicate important gaps in respondents' understanding regarding CRC screening. Potential interventions include public education to promote awareness of FOBT and optimal timing of screening, and greater support for physicians in promoting screening uptake.

Keywords: Cancer screening, colorectal cancer, health promotion, health surveys, primary care.

INTRODUCTION

Colorectal cancer (CRC) is a significant cause of mortality and morbidity worldwide [1-5]. In Canada, an estimated 22,000 persons were diagnosed with CRC in 2009, over 9,000 deaths were attributed to it [6], and it is the second leading cause of cancer death [7]. Early detection is considered the cornerstone of cancer control, and CRC screening is promoted as a means of reducing the burden of disease.

Widespread screening for other forms of cancer (e.g. breast, cervical) is common place in most industrialized nations, and widely accepted as part of preventive health care [8]. Numerous international studies have demonstrated that CRC screening (by fecal occult blood testing, FOBT) for older adults has led to improvements in early detection and reduced morbidity and mortality [5, 9-13]. The Canadian Task Force on Preventive Health Care has recommended population screening for CRC since 2001 [14]. While a number of guidelines have been issued regarding CRC screening [14-17], it is generally recommended that persons at average risk for CRC aged 50 or older undergo FOBT biannually or endoscopic examination every 5 years [16,18]. Colonoscopy is recommended for follow-up of positive FOBT [15-18]. De-

*Address correspondence to this author at the Applied Health Research Centre, Li Ka Shing Knowledge Institute of St. Michael's Hospital, 30 Bond St., Toronto, ON, M5B 1W8, Canada.; Tel: +1-416-864-6060; Ext. 7111; Fax: +1-416-864-3016; E-mail: parsonsj@smh.ca

spite widespread acceptance of screening programs for other cancers, development of CRC screening guidelines, and considerable evidence supporting population-based screening for CRC, uptake remains lower than for other cancers in Canada and abroad [5, 12, 13].

Numerous factors influencing CRC screening rates have been identified, including socioeconomic status (SES), insurance coverage, physician recommendation, ethnicity, knowledge, and health beliefs [3, 4, 19, 20]. Screening rates vary considerably between jurisdictions nationally and internationally [5]. We were interested in the role attitudes and awareness play in CRC screening uptake amongst Canadians. Prior studies in various jurisdictions indicate that attitudes (e.g. willingness to follow physician recommendation, embarrassment, fear) and awareness (e.g. of CRC risk factors, timing of screening) are important to screening uptake [21-24]. None of these attitudinal and awareness factors has been looked at systematically in a large national survey in Canada. Our study sought to acquire national-level baseline data about Canadians' *attitudes and awareness* regarding CRC screening and their relationship to screening behaviours. Ultimately, these data are intended to inform future strategies to improve screening uptake among Canadians aged 50-74.

MATERIALS AND METHODOLOGY

Study Design

A telephone survey, commissioned by the Canadian Partnership Against Cancer, was designed and undertaken jointly by a survey research organization (Angus Reid Public Opinion, a division of Vision Critical) and a hospital-based academic research unit (Applied Health Research Centre, St. Michael's Hospital). The study was approved by an independent clinical research ethics review board (Canadian Shield Ethics Review Board).

Sampling and Recruitment

A modified random digit dialing (RDD) method¹ [25, 26] was used to identify a population-based sample of Canadians aged 45-74. The reason for including a subset of 45 to 49 year olds in addition to 50 to 74 year olds was because this younger cohort is fast approaching screening-eligible age and understanding their attitudes can inform the design of future interventions aimed at improving screening uptake. Telephone interviews were conducted in English and French between March 10 and April 17, 2009 using computer-assisted technology. For each number selected, an initial call was placed and up to seven callbacks made.

Recruitment was stratified by province and territories. Within each province and the overall territories, quotas were set using 2006 Canadian Census data to ensure adequate representation across gender, age groups and community size [27]. One respondent was sampled per household. A total of 3,153 Canadians completed the survey. In total, 132,078 households were reached, 97,159 were disqualified because they did not meet the age or language requirements or were

hearing impaired, and 31,766 refused to participate. Therefore, of those that qualified for the study, 9.0% agreed to participate. Final results were weighted within each province by age, gender and education and across provinces to the 45-74 year-old Canadian population [27].

Data Collection Procedures

Survey content was informed by prior research [13, 28], information from existing screening programs (provincially, internationally), and the collective experience of the project team. Survey topics included: attitudes towards cancer generally and CRC specifically; awareness and attitudes regarding cancer screening generally and CRC screening; prior screening participation (for CRC, other cancers); and whether individuals had discussed CRC screening with their doctors. Specific questions related to prior CRC screening participation were based on those of the Canadian Community Health Survey (CCHS) [28]². The survey was pilot tested for clarity and length. Selected questions from the survey instrument appear in Table 1.

Analysis

Data were weighted using 2006 Canadian Census estimates [27]. Provincial and overall territory data were weighted by age, gender and education to reflect the demographic composition within these areas. Data were also weighted across provinces and the territories to adjust for oversampling. All descriptive and regression analyses were conducted using the weighted sample. Comparisons between groups (e.g. men and women, age cohorts, SES groups) were made using the Chi-square test. For comparisons between provinces, we conducted logistic regression and used Bonferroni method to correct for multiple pair-wise comparisons. Multivariate logistic regression was conducted to examine factors predictive of prior CRC screening behaviours. All statistical analyses were performed using SAS Version 9.1 (SAS Institute, Cary, NC). All p-values were two-tailed and p-values < 0.05 were considered significant.

RESULTS

Demographic characteristics for the entire sample (n=3,153, respondents 45-74 years of age) appear in Table 2. We sampled a subset of persons aged 45-49 because these persons are approaching screening age. Because persons aged 50-74 are the target population for screening, we emphasize the results from this cohort in this paper (n = 2,444). All results are weighted, therefore figures are reported as percentages only.

Attitudes and Awareness

The 50-74-year-old respondents demonstrated considerable experience with, and awareness of, cancer in general. For example, 93.4% (95% confidence interval (hereafter abbreviated as CI): 92.4-94.4%) indicated they had

¹Random Digit Dialing was facilitated by the Canada Survey Sampler from ASDE which develops random samples at various geography levels (e.g., Province, Federal Electoral District, or Census Division). These samples incorporate listed and unlisted telephone numbers to ensure adequate coverage of all phone numbers in Canada.

²While these CCHS questions do not differentiate between tests performed for CRC screening versus those performed for other reasons/health conditions such as investigation of symptoms; these questions were included for purposes of comparison.

Table 1. Selected Questions* from Survey Instrument

No.	Question Content	Response Options
5	<p>Now I am going to read you a series of statements people have made about cancer. For each, please tell me if you strongly disagree, moderately disagree, moderately agree, or strongly agree:</p> <ul style="list-style-type: none"> ▪ The thought of developing cancer really frightens me ▪ Cancer is something you survive and live with ▪ Getting cancer is inevitable the older you get ▪ You can do a lot to prevent getting cancer ▪ I'd rather not know I have cancer than be subjected to cancer treatments such as surgery, chemotherapy or radiation therapy. ▪ I'll never get cancer 	<ul style="list-style-type: none"> ▪ Strongly disagree ▪ Moderately disagree ▪ Moderately agree ▪ Strongly agree ▪ Refuse
7	<p>To your knowledge, which of the following comes closest to best describing the term 'cancer screening'? Is it a:</p> <ul style="list-style-type: none"> ▪ A medical test that is performed to detect cancer ▪ A treatment for cancer ▪ A vaccination against cancer ▪ Don't know ▪ Refused 	
8	<p>And to your knowledge, are individuals first screened for cancer:</p> <ul style="list-style-type: none"> ▪ After they experience symptoms ▪ When they are well, before they experience symptoms ▪ Don't know ▪ Refused 	
13	<p>Now I'll read you a list of items and for each please tell me to the best of your knowledge whether it puts people at increased risk of developing colorectal cancer? If you don't know please also tell me. How about [READ ITEM] does it put people at increased risk of developing colorectal cancer?</p> <ul style="list-style-type: none"> ▪ Being male ▪ Being over the age of 50 ▪ Having had chickenpox ▪ Family history of colorectal cancer ▪ Having high blood pressure ▪ Having inflammatory bowel disease like Crohn's or ulcerative colitis ▪ Having polyps or growths in your intestines 	<ul style="list-style-type: none"> ▪ Yes ▪ No ▪ Don't know ▪ Refused
15	<p>I am going to read you a few statements that people have made regarding colorectal cancer. For each statement, please tell me if you strongly disagree, moderately disagree, moderately agree, or strongly agree.</p> <ul style="list-style-type: none"> ▪ I think there is no real risk of me ever developing colorectal cancer ▪ If caught early enough, colorectal cancer can be treated successfully ▪ I am very concerned about the possibility of developing colorectal cancer ▪ I don't really know anything about colorectal cancer ▪ Colorectal cancer is one of the worst kinds of cancer you can get ▪ I feel I am very knowledgeable about colorectal cancer 	<ul style="list-style-type: none"> ▪ Strongly disagree ▪ Moderately disagree ▪ Moderately agree ▪ Strongly agree ▪ Refused
16	<p>To your knowledge, is there a test or tests that you can take to determine whether you have colorectal cancer?</p>	<ul style="list-style-type: none"> ▪ Yes ▪ No ▪ Don't know ▪ Refused

Table 1. Contd.....

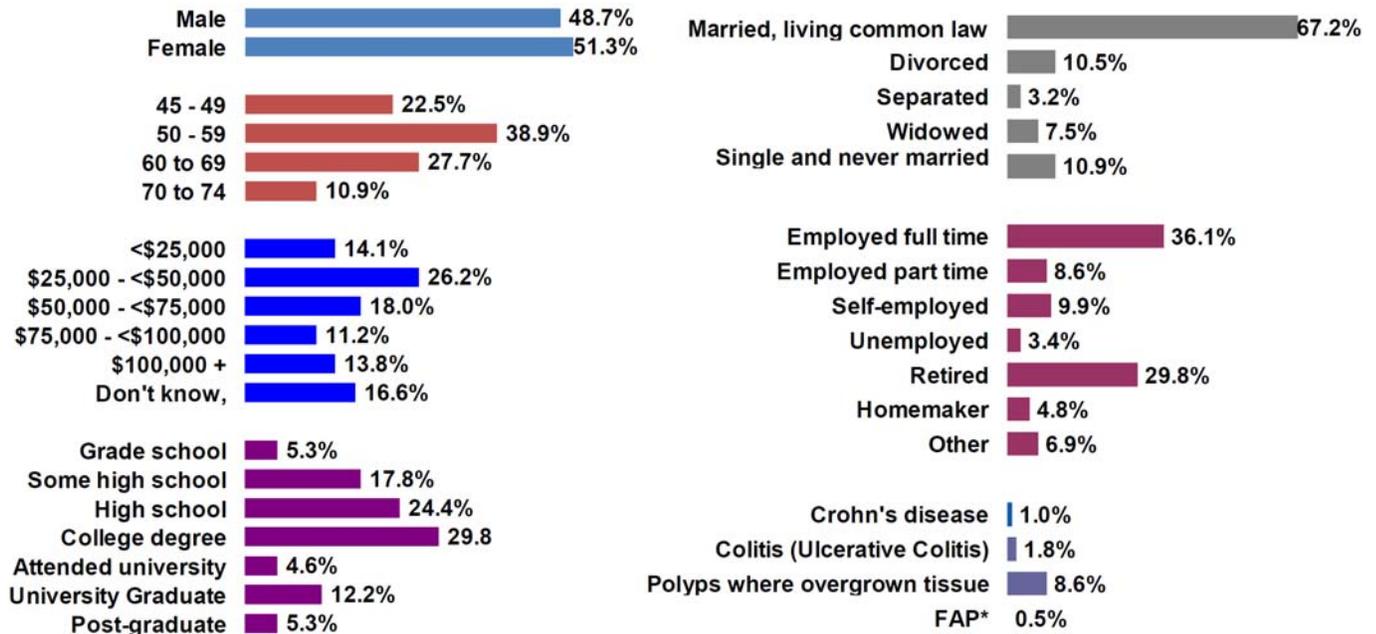
17	Have you ever had a test to see whether you have colorectal cancer?	<ul style="list-style-type: none"> ▪ Yes ▪ No ▪ Don't know ▪ Refused
18	[DEPENDING ON ANSWER TO 17 ASK ONE OF FOLLOWING QUESTIONS]: [IF NO TO 17 ASK q 18] Can you tell me a bit about <u>why</u> have you not been tested for colorectal cancer? Any other reasons [INTERVIEWER NOTE: Probe for details]	<ul style="list-style-type: none"> ▪ Open ended question ▪ Interviewer records response
19	[IF YES TO 17 ASK q 19] Can you tell me a bit about <u>why</u> you have been tested for colorectal cancer? Any other reasons [INTERVIEWER NOTE: Probe for details]	
21	I am going to read you statements people have made about testing for colorectal cancer. For each statement, please tell me if you strongly disagree, moderately disagree, moderately agree, or strongly agree: <ul style="list-style-type: none"> ▪ I don't see the need to get tested for colorectal cancer when I don't have any symptoms ▪ If I have colorectal cancer, I'd really rather not know ▪ I'd be embarrassed to talk to my doctor about testing for colorectal cancer ▪ If I found out I had colorectal cancer, I'd be worried that I'd have to use a colostomy bag instead of going to the toilet. ▪ If colorectal cancer is found early, it greatly improves your chances of survival ▪ People my age should get screened for colorectal cancer ▪ I'm afraid the tests to detect colorectal cancer are painful ▪ The time and effort need to prepare for colorectal tests is too much of a hassle ▪ Getting tested for colorectal cancer would give me some peace of mind ▪ I am scared to take the test for colorectal cancer ▪ The test is a small price to pay for such a large potential benefit to my health ▪ The idea of the test just grosses me out ▪ I am not convinced that the tests can deliver accurate results 	<ul style="list-style-type: none"> ▪ Strongly disagree ▪ Moderately disagree ▪ Moderately agree ▪ Strongly agree ▪ Refused
22	1. Before today, had you ever heard the following terms? <ul style="list-style-type: none"> ▪ A fecal blood test or FOBT ▪ Sigmoidoscopy ▪ Colonoscopy 	<ul style="list-style-type: none"> ▪ Yes ▪ No ▪ Don't know ▪ Refused
23	Have you ever had: [RANDOMIZE, READ LIST; RECORD RESPONSE FOR EACH] <ul style="list-style-type: none"> ▪ An FOBT, that is, a test to check for blood in your stool, where you have a bowel movement and use a stick to smear a small sample on a special card? ▪ A colonoscopy or sigmoidoscopy, that is, when a tube is inserted into the rectum to view the bowel for early signs of cancer and other health problems? 	<ul style="list-style-type: none"> ▪ Yes ▪ No ▪ Don't know ▪ Refused
25	Has a doctor ever discussed getting tested for colorectal cancer with you?	<ul style="list-style-type: none"> ▪ Yes ▪ No ▪ Don't know ▪ Refused

*Out of a total of 32 questions with subsections

experience with cancer in some way (either through their own, family members' or friends' cancer diagnoses). Ap-

proximately half had experience with CRC (48.7%, CI: 46.7-50.7%), although very few (2.0%) had ever been diagnosed

Table 2. Sample Demographics (45-74 yrs, old, n = 3,153)



themselves. Most respondents who had never been diagnosed with cancer agreed that “you could do a lot to prevent getting cancer” (84.1%, CI: 82.7-85.5%) and that “cancer is something you survive and live with” (74.5%, CI: 72.8-76.2%), although 64.9% (CI: 63.0-66.8%) of these respondents reported being frightened by the prospect of developing cancer. Despite this, only 29.4% (CI: 27.6-31.2%) of respondents said they would prefer to not know they had cancer rather than being subjected to cancer treatments.

Most respondents were knowledgeable regarding specific CRC risk factors: three quarters knew that family history of CRC (76.8%, CI: 75.1-78.5%) and history of intestinal polyps (75.7%, CI: 74.0-77.4%) are considered risk factors. Despite this, 51.2% (CI: 49.2-53.2%) of respondents who had never been diagnosed with CRC stated they felt they knew very little about CRC. Focusing on attitudes towards CRC, 40.1% (CI: 38.2-42.0%) of those who had never had CRC agreed that CRC is “one of the worst kinds of cancer you can get”, 92.5% (CI: 91.5-93.5%) felt that CRC could be treated successfully if caught early enough, and 41.2% (CI: 39.2-43.2%) indicated they were “very concerned” about developing the disease. Only 29.0% (CI: 27.2-30.8%) of respondents reported having discussed CRC screening with their doctor (Fig. 1).

Survey respondents were asked about their understanding of cancer screening generally. Fully 90.1% (CI: 88.9-91.3%) of respondents understood that cancer screening is “a medical test performed to detect cancer” versus a “treatment for cancer” (5.1%, CI: 4.2-6.0%) or a “vaccination against cancer” (2.5%, CI: 1.9-3.1%). However, only 40.0% (CI: 38.1-41.9%) knew that screening is performed in the absence of symptoms, versus 44.3% (CI: 42.3-46.3%) who believed it occurred *after* experiencing symptoms and 15.7% (CI: 14.3-17.1%) who were unable to answer this question.

Understanding of CRC screening followed a similar pattern to that of cancer screening generally. While 80.9% (CI: 79.3-82.5%) of respondents were aware that screening tests for CRC exist, and 87.2% (CI: 85.9-88.5%) had heard of the term ‘colonoscopy’, only 48.3% (CI: 47.0-51.0%) described or named colonoscopy ‘top of mind’ as a test for CRC. Far fewer respondents (42.8%, CI: 40.8-44.8%) had heard of FOBT, with only 16.8% (CI: 15.5-18.5%) being able to describe or name it top of mind as a test for CRC.

Among respondents who reported *never* having been screened, the key reason offered was that they did not see a need to get tested because they felt fine/had no symptoms (49.3%, CI: 47.3-51.3%). Among respondents who indicated that they had been screened, the most commonly cited reason was that their “doctor told them to” (27.4%, CI: 25.6-29.2%). Focusing on attitudes toward CRC screening, only 11.0% (CI: 9.8-12.2%) of respondents agreed that they would be too embarrassed to discuss CRC testing with their doctor.

A majority (83.5%, CI: 82.0-85.0%) of 50-74 year-old respondents agreed that “people my age should get screened for CRC”. Potentially unpleasant features of the test itself were not perceived as barriers to screening for most respondents. Only 27.5% (CI: 25.7-29.3%) indicated that the tests “gross them out”, 27.5% (CI: 25.7-29.3%) were afraid that the tests would be painful, and 19.1% (CI: 17.5-20.7%) felt that the time and effort to prepare for tests was a deterrent. Despite these relatively positive attitudes, 56.1% (CI: 54.1-58.1%) indicated they worried receipt of a CRC diagnosis would result in colostomy.

Self-reported CRC Screening Behaviour

While the study’s intention was to document Canadians’ attitudes and awareness of CRC screening, we also sought data regarding self-reported screening *behaviours*. In terms

of past screening participation, almost half of respondents had had at least one FOBT test previously (48.6%, CI: 46.6-50.6%), compared with 38.6% (CI: 36.7-40.5%) who had ever had colonoscopy or sigmoidoscopy. The overall proportion of people with *up-to-date* screening was 43.9% (CI: 41.9 – 45.9) (FOBT in past 2 years, or colonoscopy/sigmoidoscopy in past 5 years). Specifically, 26.9% (CI: 25.1-28.7%) reported up-to-date FOBT, and 26.8% (CI: 25.0-28.6%) reported up-to-date colonoscopy/sigmoidoscopy. These data were important to understanding the relationship between screening behaviour, and attitudes and awareness.

Factors Predictive of CRC Screening Behaviour

Multivariate logistic regression identified factors associated with CRC screening behaviour. Table 3 depicts the factors most strongly associated with prior participation in CRC screening, listing odds ratios (OR) for each factor. Because of the study's focus on attitudinal and awareness factors, we primarily emphasize these results here. Having had discussions with one's doctor regarding CRC screening was the strongest predictor of screening participation. Respondents who recall such discussions were 6.81 (CI: 5.54-8.38) times more likely to have been screened for CRC than those who

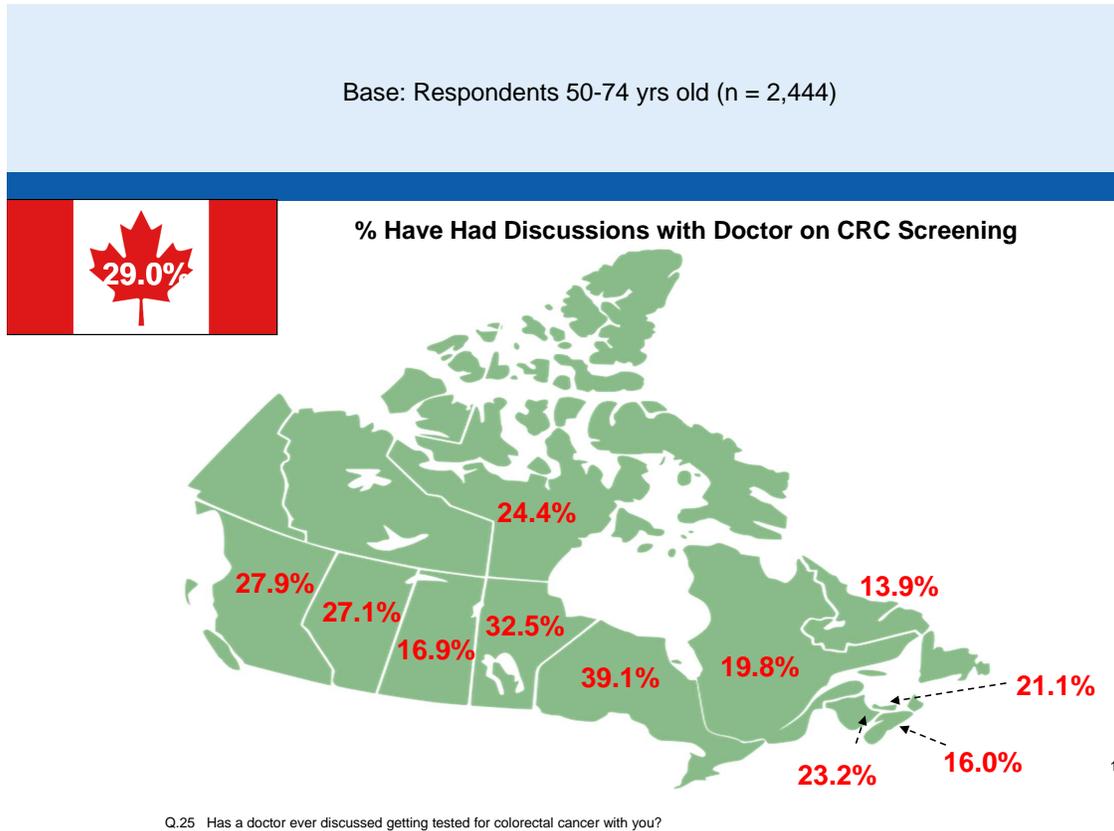


Fig. (1). CRC Screening Discussions with Doctor.

Table 3. Factors Associated with CRC Screening Behaviours

Awareness/Attitudinal Factors	Crude OR (95% CI)	Adjusted OR
Has a doctor ever discussed getting tested for CRC	11.5 (9.53-3.90)***	6.81 (5.54-8.38)***
Agree "if CRC is found early it greatly improves your chances of survival"	3.49 (2.23-5.47)***	2.50 (1.45-4.28)***
Agree "getting tested for CRC would give me some peace of mind"	4.46 (3.50 – 5.69)***	2.01 (1.51-2.68)***
Agree "people my age should get tested for CRC"	4.52 (3.49-5.85)***	1.74 (1.28-2.38)***
Agree "I don't see the need to get tested for CRC if I don't have any symptoms"	0.21 (0.17-0.25)***	0.42 (0.33-0.52)***
Agree "I really don't know anything about CRC"	0.32 (0.27-0.37)***	0.56 (0.46-0.67)***
Other factors		
Prev Dx with GI conditions (Crohn's, UC, Polyps, FAP)	4.84 (3.77-6.20)***	3.12 (2.31-4.20) ***
Engaged in other cancer screening tests (gender-relevant)	2.64 (2.21 – 3.15)***	1.99 – (1.60-2.47)***

Unweighted base no. for logistic regression: n=3129*** P<0.001

had not ($p < 0.001$). Having a pre-existing gastrointestinal condition was also strongly associated with screening participation (OR 3.12, CI: 2.31-4.20, $p < 0.001$), as was prior engagement in other forms of cancer screening (OR 1.99, CI: 1.60-2.47, $p < 0.001$). Those who believed early detection would improve their chances of survival were 2.50 (CI: 1.45-4.28) times more likely to engage in screening compared with those who disagreed with this statement ($p < 0.001$). And those who agreed that getting tested would provide “peace of mind” were twice as likely to have been screened for CRC (OR 2.01, CI: 1.51-2.68, $p < 0.001$). Factors predictive of *not* engaging in screening were *not* recognizing the need to get tested in the absence of symptoms (OR 0.42, CI: 0.33-0.52, $p < 0.001$) and low self-rated knowledge of CRC screening (OR 0.56, CI: 0.46-0.67, $p < 0.001$).

DISCUSSION

This study provides, for the first time, national baseline data regarding Canadians’ attitudes towards and awareness of CRC screening. It also provides important information on attitudinal and awareness factors associated with self-reported screening behaviours. We specifically focused on respondents 50 to 74 years old as they are the group targeted by provincial screening programs. Our results indicate that respondents were relatively aware of some features of CRC and were aware of colonoscopy. However only 42.8% had heard of FOBT and far fewer named it top of mind as a screening test for CRC. The findings will be informative to those designing interventions to improve screening uptake. The self-reported behaviours offered by our sample were similar to those described in the 2008 CCHS [18].

Some of our study’s findings confirm those from other jurisdictions, while others demonstrate important differences. Similar to our respondents, Salkeld and colleagues (2003) found that 40% of their Australian survey respondents had heard of FOBT, while considerably more had heard of colonoscopy (79%) [32]. McCaffery’s (2003) study in the United Kingdom demonstrated much lower levels of awareness of CRC risk factors, however they sampled individuals over a much wider age range (16-74 years of age) [3]. Other authors have identified the importance of family practitioners’ roles in CRC screening uptake [2, 11, 20, 29-32]. Here in Canada, Zarychanski and colleagues (2007) – and Wilkins and Shields (2009) – identified a positive relationship between frequency of self-reported *contact* with a family physician and participation in CRC screening [13,18], with similar findings reported by other investigators [7,33]. An Ontario-based qualitative study identified recommendation by one’s family doctor as the primary motivation for being tested amongst participants at average risk for CRC [33]. This same study included family physician participants, who indicated that they rarely performed CRC screening, and often only ‘screen’ in the presence of symptoms; these same family doctors expressed skepticism regarding the accuracy of FOBT and confusion regarding screening guidelines [33]. International studies have identified family practitioner *recommendation* as the factor most likely to encourage participation in CRC screening [11, 33-36]. In Australia for example, 94% of respondents cited recommendation by their family doctor as the single strongest motivator for being screened, but unfortunately respondents were not asked

whether they had indeed discussed it with their physicians [32]. Our results confirm that Canadians see recommendations by their family practitioners as primary motivators for engaging in screening, yet few are having these discussions with their doctors. While family physicians’ skepticism regarding FOBT may partly explain this trend, a recent survey of Alberta physicians indicated that only 41.9% were familiar with CRC screening guidelines [37]. It is also possible that physician misperceptions of their patients’ preferences for certain screening tests may be influencing doctors’ willingness to recommend CRC screening tests, as has been found in American studies [11].

The finding that Canadians did not report being overly embarrassed to discuss CRC screening with their doctors is encouraging. Recent studies from the United Kingdom identified embarrassment and fear of detecting cancer as the most frequently cited barriers to screening (and screening discussions) amongst both white and ethnic-minority Britons [4]. While we did not collect data regarding ethnicity, it would be useful to do so in future. Ethnicity appears to play a role in screening uptake. For example, a study of Asian-American minority groups demonstrated lower screening rates than Caucasian participants [12]. A study of urban African Americans suggest that knowledge and fear are important barriers to screening uptake by respondents [39].

The prevalent misperception that screening occurs with the onset of symptoms is important. Authors in other jurisdictions (e.g. Australia, United States) have found an association between understanding the importance of screening in the absence of symptoms and intention to participate in screening in future [2,38]. Such misperceptions regarding CRC screening may explain why so few people are discussing it with their doctors and why only a minority participate – patients may see it as unnecessary in the absence of symptoms. Thus interventions aimed at encouraging family physicians to initiate discussions regarding CRC screening with their patients may be the most effective approach to improving screening uptake.

Study Limitations

A stratified RDD sampling approach was used to help obtain a sample whose demographic profile was representative of the Canadian population between the ages of 45-74. Despite this, our investigation has a number of limitations. First, it employed telephone survey methodology, in which only those with household land lines were contacted. Those who use cellular phones exclusively (a growing segment of the population), and those without access to land lines (e.g. low income groups) were excluded [25]. It is difficult to assess the net impact of this bias. We suggest that future research be undertaken with these groups, to ensure their attitudes towards and awareness of colorectal cancer screening are understood and considered when planning public education initiatives.

The response rate for the survey was low (9.0%). However, we used a RDD approach and quotas and weighting to ensure the sample was reflective of the demographic profile of Canadians (45-75 years of age). Nevertheless, this raises the possibility of non-response bias. However the screening rates in our sample match those of the CHSS [28] (considered the

'gold standard' for health behaviour in Canada), suggesting that our sample was not 'unrepresentative'. When contacted, individuals were told that the survey focused on health issues (but neither cancer nor screening was mentioned initially). It is possible that survey participants were more interested and/or educated about health issues than those who chose not to participate.

CONCLUSION

This study provides for the first time important national-level baseline data regarding Canadians' attitudes towards and awareness of CRC and its screening, and identifies factors associated with screening behaviour. The findings suggest that Canadians need education about FOBT and the optimal timing for CRC screening (before symptom onset). In addition, designing interventions to support family physicians as key players in promoting CRC screening should be a priority. Because different provinces are at different stages of (and employ different strategies for) implementing population-based CRC screening programs, any interventions supporting family practitioners' roles should be tailored to meet provincial models of care. The study's findings can be used to inform policy makers, practitioners and cancer control agencies designing interventions to improve CRC screening uptake. It will allow those provinces with population-based screening programs already in place to gauge their performance over time, and to evaluate enhancements made to current programs.

CONFLICT OF INTEREST

The authors indicate that they have no conflicts of interest to declare. This study was funded by the Canadian Partnership Against Cancer.

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