Patients’ Preferences for Primary Colorectal Cancer Screening: A Survey of the National Colorectal Cancer Screening Program in Korea

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Background/Aims: The adoption of colonoscopy as a primary colorectal cancer (CRC) screening technique has been argued for in Korea, without evidence of patient preferences. This study aimed to investigate patients’ preferences for the primary CRC screening test for the National Cancer Screening Program (NCSP). Methods: Between June and August 2016, 414 individuals aged ≥50 years who participated in the NCSP were prospectively invited to complete a questionnaire regarding their preferences for the primary CRC screening test and the reasons for their selection. Results: Among the 396 respondents who completed the questionnaire, 124 individuals (31.3%) preferred the fecal immunochemical test (FIT), whereas 272 individuals (68.7%) preferred colonoscopy. Elderly participants preferred the FIT (p<0.001), whereas participants with a higher education level (p=0.030), a higher income level (p=0.009), or individuals with a family member (p=0.028) or acquaintance (p=0.013) with a history of CRC preferred colonoscopy. Conclusions: Colonoscopy was preferred to FIT in a 2.2:1 ratio as the primary CRC screening test for the NCSP. Patients’ preference for colonoscopy should be considered for the NCSP in Korea. (Gut Liver 2017;11:821-827)

Key Words: Colorectal neoplasms; Fecal occult blood test; Colonoscopy; Screening; Preference

INTRODUCTION

The incidence of colorectal cancer (CRC) has increased rapidly in Western and Asian countries.¹ Many countries have started CRC screening programs; however, screening modalities and strategies differ among countries.²-⁴ In Korea, the National Cancer Screening Program (NCSP) provides a single annual fecal immunochemical test (FIT) for adults aged ≥50 years, and secondary confirmatory colonoscopy for those with positive FIT results.⁵,⁶ The efficacy of a FIT-based screening program may ultimately depend on FIT and colonoscopy participation rates. However, the CRC screening rate in Korea has remained lower than those for other cancers, similar to other countries.⁷-⁸ Several Western countries such as Australia, Germany, Poland, Switzerland, and the United States use colonoscopy as a primary CRC screening test.¹ Therefore, the adoption of colonoscopy as a primary CRC screening method has been argued in Korea, but without evidence of patient preferences.

Information about CRC screening preferences will be used to plan a primary colonoscopy screening strategy as well as to identify deficits in the current colonoscopic resources in the NCSP. However, some studies have reported variations in patient preferences for FIT¹⁰-¹⁴ and colonoscopy¹²-¹⁸ as a primary CRC screening test. Information about CRC screening preference is essential for checking the availability of national resources to...
deliver a primary screening program. Until now, however, no data have been available about patient CRC screening method preferences under the NCSP in Korea. Here we conducted a survey to assess patient preferences about CRC screening methods in the NCSP.

MATERIALS AND METHODS

1. Patients

Between June and August 2016, 1,093 asymptomatic subjects aged ≥50 years, who participated in the NCSP, were invited to complete a questionnaire. The survey items were designed to investigate the patient’s preferences regarding FIT versus colonoscopy as a primary CRC screening method. The questionnaire included questions about sex, age, education, marital status, religion, occupation, income level, drinking, smoking, comorbid disease, history of colectomy, family history of CRC in ≥ first-degree relatives at any age, knowledge of CRC warning symptoms, previous participation in the NCSP, previous experience with FIT or colonoscopy, and preference as well as reason for the preference of FIT or colonoscopy as the primary CRC screening test. Comorbid disease included hypertension, type II diabetes mellitus, cardiovascular disease, chronic renal disease, cerebrovascular disease or any malignancy. Respondents who did not complete the questionnaire were excluded from the analysis. All responses were anonymous, and all respondents voluntary participated. This study was approved by the Institutional Review Board of Kyung Hee University Hospital at Gangdong (KHNMC IRB number: 2016-05-027).

2. Questionnaires for preference

The questionnaire regarding primary CRC screening test preference was designed to elicit the patient’s preference for the primary CRC screening method and the reasons therein. Patients were asked which screening strategy they would prefer, if given a choice in the future (Supplementary Material 1). The questionnaire asked patients about (1) experience with and opinions about the NCSP; and (2) preference and reason for the preference of a particular primary CRC screening test. The questionnaire was based on a literature review and semi-structured discussions with the “Committee of Endoscopy Quality Improvement in the Korean Society of Gastrointestinal Endoscopy.” To help participants choose an appropriate primary CRC screening test, an information sheet was provided to participants with reliable, accurate, and unbiased information about the advantages and disadvantages of FIT versus colonoscopy to enable patients to answer the study questionnaire as accurately and reliably as possible. The questionnaire was confirmed as reliable and valid by four gastroenterology fellows who were not involved in this study, and answers from this group were used to revise the survey questionnaire. Reported completion times were 10 to 15 minutes. The questions were dichotomous (yes/no) or multiple choice.

<table>
<thead>
<tr>
<th>Clinical data</th>
<th>Preference for FIT (n=124)</th>
<th>Preference for colonoscopy (n=272)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, yr</td>
<td>66.17±8.09</td>
<td>63.17±7.25</td>
<td>0.208</td>
</tr>
<tr>
<td>Male sex</td>
<td>39 (31.5)</td>
<td>100 (36.8)</td>
<td>0.304</td>
</tr>
<tr>
<td>Past/current smoker</td>
<td>14 (11.4)</td>
<td>42 (15.5)</td>
<td>0.278</td>
</tr>
<tr>
<td>Alcohol drinking</td>
<td>19 (15.4)</td>
<td>70 (25.8)</td>
<td>0.022</td>
</tr>
<tr>
<td>Education (university or above)</td>
<td>29 (23.8)</td>
<td>91 (34.9)</td>
<td>0.029</td>
</tr>
<tr>
<td>Marital status (married)</td>
<td>113 (91.1)</td>
<td>252 (93.3)</td>
<td>0.436</td>
</tr>
<tr>
<td>Religion (yes)</td>
<td>84 (67.7)</td>
<td>175 (64.3)</td>
<td>0.509</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td>0.139</td>
</tr>
<tr>
<td>Full-/part-time</td>
<td>33 (26.6)</td>
<td>92 (34.1)</td>
<td></td>
</tr>
<tr>
<td>Not working/homemaker</td>
<td>91 (73.4)</td>
<td>178 (65.9)</td>
<td></td>
</tr>
<tr>
<td>Income (dollars/mo)</td>
<td></td>
<td></td>
<td>0.013</td>
</tr>
<tr>
<td>&lt;1,818</td>
<td>75 (65.2)</td>
<td>141 (54.2)</td>
<td></td>
</tr>
<tr>
<td>1,818–4,545</td>
<td>37 (32.2)</td>
<td>90 (34.6)</td>
<td></td>
</tr>
<tr>
<td>&gt;4,545</td>
<td>3 (2.6)</td>
<td>29 (11.2)</td>
<td></td>
</tr>
<tr>
<td>Comorbid disease (yes)</td>
<td>63 (50.8)</td>
<td>126 (46.3)</td>
<td>0.408</td>
</tr>
<tr>
<td>Previous colectomy (yes)</td>
<td>2 (1.6)</td>
<td>17 (6.3)</td>
<td>0.043</td>
</tr>
<tr>
<td>Family history of CRC</td>
<td>6 (4.8)</td>
<td>33 (12.2)</td>
<td>0.023</td>
</tr>
<tr>
<td>Acquaintances with CRC (yes)</td>
<td>18 (14.6)</td>
<td>71 (26.1)</td>
<td>0.012</td>
</tr>
</tbody>
</table>

Data are presented as mean±SD or number (%).
CRC, colorectal cancer; FIT, fecal immunochemical test.
Table 2. Factors Influencing Patients’ Preference for a CRC Screening Method

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR (95% CI)</th>
<th>FIT preference</th>
<th>Colonoscopy preference</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group, yr</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50–59</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>60–69</td>
<td>1.582 (0.926–2.703)</td>
<td>0.632 (0.370–1.080)</td>
<td></td>
<td>0.094</td>
</tr>
<tr>
<td>≥70</td>
<td>3.037 (1.671–5.519)</td>
<td>0.329 (0.181–0.598)</td>
<td>&lt;.0001</td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.267 (0.806–1.992)</td>
<td>0.789 (0.502–1.240)</td>
<td></td>
<td>0.305</td>
</tr>
<tr>
<td><strong>Smoker</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.700 (0.367–1.337)</td>
<td>1.428 (0.748–2.726)</td>
<td></td>
<td>0.280</td>
</tr>
<tr>
<td><strong>Alcohol drinking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.525 (0.300–0.918)</td>
<td>1.906 (1.089–3.336)</td>
<td></td>
<td>0.024</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school or less</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University or more</td>
<td>0.583 (0.357–0.949)</td>
<td>1.717 (1.053–2.798)</td>
<td></td>
<td>0.030</td>
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<tr>
<td><strong>Marital status</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>0.734 (0.336–1.604)</td>
<td>1.363 (0.623–2.980)</td>
<td></td>
<td>0.438</td>
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<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.164 (0.742–1.827)</td>
<td>0.859 (0.547–1.349)</td>
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<td>0.509</td>
</tr>
<tr>
<td><strong>Full-/part-time employment</strong></td>
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<td></td>
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<tr>
<td>No</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>1.425 (0.890–2.283)</td>
<td>0.702 (0.438–1.124)</td>
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<td>0.140</td>
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<tr>
<td><strong>Income (dollars/mo)</strong></td>
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<td></td>
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<td>&lt;1,818</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td>0.025</td>
</tr>
<tr>
<td>1,818–4,545</td>
<td>0.773 (0.481–1.242)</td>
<td>1.294 (0.805–2.079)</td>
<td></td>
<td>0.287</td>
</tr>
<tr>
<td>&gt;4,545</td>
<td>0.194 (0.057–0.660)</td>
<td>5.142 (1.516–17.438)</td>
<td></td>
<td>0.009</td>
</tr>
<tr>
<td><strong>Comorbid disease</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.197 (0.782–1.831)</td>
<td>0.836 (0.546–1.278)</td>
<td></td>
<td>0.408</td>
</tr>
<tr>
<td><strong>Previous colectomy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.243 (0.055–1.069)</td>
<td>4.115 (0.936–18.096)</td>
<td></td>
<td>0.061</td>
</tr>
<tr>
<td><strong>Family history of CRC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.367 (0.149–0.900)</td>
<td>2.727 (1.112–6.690)</td>
<td></td>
<td>0.028</td>
</tr>
<tr>
<td><strong>Acquaintances with CRC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.485 (0.275–0.857)</td>
<td>2.061 (1.167–3.638)</td>
<td></td>
<td>0.013</td>
</tr>
</tbody>
</table>

CRC, colorectal cancer; OR, odds ratio; CI, confidence interval; FIT, fecal immunochemical test.
3. Statistical analysis

For the sample size estimation, we assumed that the 2-fold difference in the preference for CRC screening tools between colonoscopy and FIT would be sufficient for clinicians to recommend colonoscopy rather than FIT as a primary screening test. Based on these assumptions and 26.6% FIT participation rate of NCSP, 2014 in Korea, a minimum of 51 subjects were required for a power of 80% to detect a difference at p<0.05 level of significance.

Categorical variables are expressed as numbers (percentage), whereas continuous variables are expressed as mean±standard deviation. Factors influencing preference for CRC screening tests were evaluated using binary logistic regression with odds ratios and a 95% confidence interval. Two-tailed p-values <0.05 were considered statistically significant. Statistical analyses were performed using the SPSS version 18.0 for Windows (SPSS Inc., Chicago, IL, USA).

RESULTS

Among 1,093 asymptomatic subjects aged ≥50 years who participated in the NCSP in our hospital, 414 answered this survey for a response rate of 37.9%. Overall, the survey results from 396 respondents were analyzed after the exclusion of 16 surveys because of incomplete answers (n=4), duplicate answers (n=2), participant age <50 (n=4), or no preferred primary screening (n=8). The complete overall response rate was 36.2%.

1. Characteristics of the survey respondents

The respondents included 139 men (35.1%) and 257 women (64.9%) with a mean age of 64.1±7.6 years. Table 1 shows the demographic characteristics and baseline clinical information of the respondents by CRC screening method preference: FIT preference group versus colonoscopy preference group. In this study, colonoscopy was preferred to FIT at a ratio of 2.2 to 1 (68.7% vs 31.3%) as a primary CRC screening test in the NCSP. There was no intergroup difference in age or sex distribution. However, alcohol drinkers as well as participants with a higher education or income level, a previous colectomy history, a family history of CRC, or acquaintances with CRC preferred colonoscopy.

2. Factors influencing screening method preference and reasons

Elderly participants significantly preferred the FIT (p<0.001) with an age-dependent correlation (Table 2). However, sex did not influence preference. In contrast, participants who were alcohol drinkers (p=0.024), had a higher education (p=0.030) or income level (p=0.025), had a family history of CRC (p=0.028), or had acquaintances with CRC (p=0.013) preferred colonoscopy. For the patients’ preferences in Table 3, FIT was preferred for its convenience and simplicity (72.8%) as well as low cost (4.8%). In contrast, colonoscopy was preferred for its accuracy (79.4%) and ability to provide therapeutic options (15.8%).

3. Experience with and opinions about the NCSP

More than 90% of participants frequently participated in the NCSP (Table 4). Only 12.9% of participants had a bad experience with FIT, the major reasons for which were stool sampling (77.8%), and storage and transportation (20.0%). Conversely, 39.3% of participants had a bad experience with colonoscopy, primarily due to bowel preparation (68.9%) and the complicated examination process itself (25.5%).

DISCUSSION

Primary colonoscopy screening may be superior considering its ability to remove the adenomatous polyp, although FIT is a more efficient CRC screening method. Although FIT screening options differ among countries. Although some Western countries provide primary colonoscopy screening, its adoption should be based on patient preference about screening methods, socioeconomic considerations, the current capacity to perform colonoscopy in each country, and its efficacy at preventing CRC. The planning of a primary colonoscopy screening strategy in Korea should be based on NCSP participant preference data. Our results indicate that colonoscopy was preferred to FIT at a ratio of 2.2 to 1 (68.7% vs 31.3%) as a primary CRC screening test by NCSP participants. Our study showed that elderly participants preferred FIT, whereas participants with higher education and income levels as well as those with family members or acquaintances with CRC preferred colonoscopy. The current study is the first to evaluate primary CRC screening method preferences in NCSP participants.

Four large randomized controlled trials are currently evalu-
ating the completion rate of a primary colonoscopy screening program, and the long-term results are expected in the next decade. In a randomized controlled trial comparing primary colonoscopy with biannual FIT in Spain, the participation rate was higher in FIT group than in colonoscopy group (34.2% vs 24.6%, p<0.001). The different participation rates resulted in the same CRC detection rate in both groups. In a recent German population–based case-control study, only 1.7% of the patients with CRC underwent screening colonoscopy versus 12% of the patients without CRC. In a meta-analysis of prospective CRC screening studies, the overall participation rates for FIT and colonoscopy were 42% and 28%, respectively. In the United States, participation rates were higher for FIT group than colonoscopy group (58.8% vs 42.4%, respectively, p<0.001). Our study result contrasted those of previous studies in that colonoscopy was preferred to FIT; however, our findings may be cautiously interpreted as socioeconomic status, the capacity to perform colonoscopy, and perceived awareness of CRC may differ among countries. In Korea, the excellent accessibility and low cost of colonoscopy, and the availability of experienced colonoscopists may have influenced our results of a higher preference for colonoscopy. However, sufficient information should be provided to participants about the advantages and disadvantages of FIT versus colonoscopy to enable their informed decisions, as their choice may change after education. For example, in a CRC screening from Hong Kong, patients initially chose colonoscopy over FIT (47.4% vs 21.8%, respectively); however, 27.1% of participants changed to FIT from colonoscopy and 8% changed to colonoscopy from FIT after the educational session. As a result, the final participation rate was higher in the FIT group than in the colonoscopy group (61% vs 39%, respectively).

Considering the lower participation rate of CRC screening than those for other cancers, strategies to increase participation rates are needed. Accordingly, the choice of screening modality may encourage individuals to participate, as we noted substantial variation in CRC screening method preference by age, family history of CRC, and socioeconomic status. Furthermore, a detailed information system, such as interviews, an online system, or leaflets should be provided to increase the participation rate through their informed decisions. Considering that only 12.9% of participants reported a previous bad experience with FIT and 39.3% experienced a bad experience with colonoscopy, sufficient information about the advantages and disadvantages of FIT and colonoscopy may be essential to increasing CRC screening participation rates. In a multi-criteria decision analysis, inconvenience, safety, and testing frequency were most significantly associated with intention to attend.

This study had some limitations. First is the possibility of selection bias derived from its single-center design. In addition, there is likely some sampling bias in the participants since the complete overall response rate was only 36.2% and that all respondents are thought to be interested in the NCSP. Second, our study was based on a questionnaire rather than actual data from administrative or clinical trials. As demonstrated in a CRC screening program of Hong Kong, a significant number of participants may change their initial opinion just before the actual CRC screening tests are performed. Therefore, an actual clinical trial on this issue is warranted in the future. However, this kind of study may incur large economic and resource burdens. Third, this survey tool was not verified for the reliability and validity. However, members of “Committee of Endoscopy

<table>
<thead>
<tr>
<th>Table 4. Respondents’ Experiences with and Opinions about the NCSP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opinion</strong></td>
</tr>
<tr>
<td>Experience of NCSP participation</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Experience of FIT participation</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cause of bad experience from FIT</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Experience of colonoscopy participation</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cause of bad experience from colonoscopy</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

NCSP, National Cancer Screening Program; FIT, fecal immunochemical test.
Quality Improvement in the Korean Society of Gastrointestinal Endoscopy” checked this survey tool as we failed to find any verified survey tools on this issue. Finally, previous history of colon polyp was not investigated in this study. As patients with experience of polypectomy may be more aware of importance of colon polyp removal, it would be better if they were excluded from this study.

In conclusion, colonoscopy was preferred to FIT at a ratio of 2.2 to 1 in NCSP participants in Korea. The demonstrated colonoscopy preference should be considered in the creation of a primary colonoscopy screening strategy in Korea. However, actual clinical trial data about this issue are needed.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

ACKNOWLEDGEMENTS

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Author contributions: Y.H.C., D.H.K., and J.M.C. contributed to the conception and design of the study and were responsible for the acquisition, analysis, and interpretation of data. Y.T.J., J.S.M., J.O.K., S.K.L., and Y.K.C. were responsible for the analysis and interpretation of data as well as writing a manuscript. J.P.I., J.Y.J., J.E.S., S.M.Y., Y.J., E.S.K., K.N.L., and S.J.C. revised the manuscript. Y.K. and B.Y.P. rechecked final manuscript and English revision. All authors read and approved the final manuscript.

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Supplementary Material 1. Questionnaire for Patient Preference for Primary Colorectal Cancer Screening

The ‘National Cancer Screening Program (NCSP)’ for colorectal cancer (CRC) provides a single annual fecal immunochemical test (FIT) for adults aged ≥50 years, and secondary confirmatory colonoscopy for those with positive FIT results. This survey was developed to evaluate the preference of FIT or colonoscopy as the primary CRC screening tools for participants of NCSP.

FIT is a simple screening method to detect occult bleeding from CRC. It is widely used as a screening test for CRC in the world because it has the advantages in terms of discomfort, pain, and complications. However, the accuracy of FIT is poor, and colonoscopy should be performed additionally when FIT result is positive. Even though FIT is simple, its effect of preventing CRC is well documented. By contrast, colonoscopy has a high diagnostic accuracy and can remove adenomas and early cancers. However, troublesome bowel preparation is necessary for the colonoscopy, and some medications such as aspirin should be stopped before the colonoscopy. In addition, colonoscopy is more expensive than FIT, and associated with pain, discomfort, or procedure related complications (bleeding, perforation, cardiovascular complications, etc.). Therefore, colonoscopy may not be appropriate as a mass screening tool.

This survey will be used only as a research data related to the NCSP and the contents of the response are thoroughly protected. Your participation for this survey is free and there will be no disadvantage for non-participation. However, the results of this survey can be invaluable for the development of right policy in the NCSP, and as a result, it will be helpful to you.

Please cooperate with this survey.

Part 1. Questions about the basic information of the respondent

1. What is your gender?        (1) Male        (2) Female
2. What is your age in years? ____
3. What is your highest level of education?
   (1) Less than elementary school graduate        (2) Less than middle school graduate
   (3) Less than high school graduate        (4) Less than university graduate
   (5) More than university graduate
4. Which of following best describes your marital status?
   (1) Have never been married        (2) Married        (3) Divorced        (4) Widowed
5. Do you have a religion?        (1) No        (2) Yes
6. Which of following best describes your work status?
   (1) Self-employed        (2) Employed        (3) Homemaker        (4) Not employed
7. What is your approximate monthly household income (won, ₩)?
   (1) No income          (2) Less than 1,000,000        (3) 1,000,000—2,000,000
   (4) 2,000,000—3,000,000   (5) 3,000,000—5,000,000   (6) More than 5,000,000

8. Are you a drinker?    (1) No      (2) Yes

9. Which of the following best describes your smoking?
   (1) Non-smoker   (2) Current smoker   (3) Past smoker

10. Do you have any other private insurance that you have joined in addition to “National Health Insurance”?
    (1) No    (2) Yes

11. Which of the following have been diagnosed before? (Multiple selection possible)
    (1) Hypertension  (2) Diabetes mellitus  (3) Chronic kidney disease
    (4) Cardiovascular disease (myocardial infarction, angina)
    (5) Cerebrovascular disease (such as stroke)
    (6) Colorectal cancer and other cancers

12. Have you ever had a colorectal surgery before?    (1) No       (2) Yes

13. Has anyone in your family (grandparents, parents, brothers / sisters) suffered from colorectal cancer?
    (1) No       (2) Yes

14. Do you know of any patients with colorectal cancer?    (1) No       (2) Yes

15. How do you think the your risk for colorectal cancer?    (1) Low       (2) Average   (3) High

16. Do you know any colorectal cancer related symptoms when you have colorectal cancer?
    (1) No       (2) Yes

Part 2. Questions about National Cancer Screening Program

The following questions ask for your opinion about the National Cancer Screening Program of colorectal cancer. Please answer all the questions. If you are unsure about how to answer any question, just give the best answer you can. Do not spend too much time answering, as your first thoughts are likely to be the most accurate. If you do not wish to answer any of these questions, please leave it blank and complete the details of the question and reason(s) why it was not answered.

1. How often do you undergo the National Cancer Screening Program of colorectal cancer?
   (1) Annually     (2) Frequently     (3) Often     (4) Infrequently
2. Have you received a fecal immunochemical test (FIT) in the past?  
   (1) No    (2) Yes

   (Please answer only those who selected 'Yes' in question 2 below.)

2-1. If you underwent a FIT before, did you experience any inconvenience for the FIT?  
   (1) No    (2) Yes

2-2. If the FIT was inconvenience, what is the main reason?  
   (1) Stool sampling (2) Stool storage and transportation (3) Other (    )

3. Have you received a colonoscopy in the past?  
   (1) No    (2) Yes

   (Please answer only those who selected 'Yes' in question 3 below.)

3-1. If you underwent a colonoscopy before, did you experience any inconvenience for the colonoscopy?  
   (1) No    (2) Yes

3-2. If the colonoscopy was inconvenience, what was the main reason?  
   (1) Complicated preparation process (2) Complicated colonoscopy process itself  
   (3) High medical cost (4) Long procedure time (5) Other (    )

4. If you can choose the primary colorectal cancer screening test in your National Cancer Screening Program, which test would you choose?  
   (1) FIT    (2) Colonoscopy (3) I do not choose both

4-1. What was the main reason you chose FIT? (Please answer only if you selected item 1 in question 4.)  
   (1) FIT is convenient and simple (2) FIT is safe  
   (3) FIT is inexpensive (4) Colonoscopy takes a long time  
   (5) Colonoscopy is too complicated process (6) Other (    )

4-2. What was the main reason you chose colonoscopy? (Please answer only if you selected item 2 in question 4.)  
   (1) Colonoscopy is accurate (2) Colonoscopy can provide therapeutic options  
   (3) FIT is inconvenient (4) Colonoscopy is convenient  
   (5) Other (    )

Thank you for your precious time and answer!

This questionnaire will be used as an important resource for developing National Cancer Screening Program for colorectal cancer.
대장암검진 설문지

일련번호 (      )

국가 대장암 검진 사업에서 1차 선별 검사에 대한 선호도 조사

안녕하십니까?

현재, 국가 대장암 검진은 만 50세 이상의 남녀를 대상으로 매년 분변잠혈검사를 실시하여 양성일 때에만 2차 검사로 대장내시경 검사를 제공하고 있습니다. 이번 연구는 현행대로 1차 검사로 분변잠혈검사를 시행하는 경우와 비교하여 1차 검사로 대장내시경 검사를 시행하는 경우를 가정한 선호도 조사입니다.

이번 설문 조사는 국가암검진 사업과 관련된 기초 연구자료로만 사용되며 응답내용은 비밀이 철저히 보호됩니다. 설문 조사에 참여 여부는 자유이며 설문 조사에 참여하지 않더라도 불이익은 없습니다. 그러나 본 설문 조사의 결과는 국가 대장암 검진사업 발전에 귀중한 자료가 될 수 있으므로 결과적으로 검진대상자 분에게도 도움이 될 수 있을 것입니다.

본 설문조사에 협조하여 주실 것을 부탁 드립니다.

소화기내과 임상전문간호사 최선희/ 소화기내과 교수 차재명 드림

국가 대장암 검진에 대한 분변잠혈검사와 대장내시경 검사의 장단점

분변잠혈 검사: 대장암에서 스며나오는 출혈을 대변으로 찾아내는 검사로, 검사 방법이 간단하고, 검사에 따른 불편감, 통증, 합병증이 없다는 장점이 있어 전세계적으로 널리 대장암 1차 선별검사로 이용되고 있다. 하지만, 검사 정확도가 떨어지고, 검사결과가 양성일 때 대장내시경 검사를 추가로 시행해야 하는 단점이 있다. 검사가 단순해 보여도 대장암 예방효과에 대해서는 충분히 입증이 되어 있다.

대장내시경 검사: 내시경을 항문을 직접 삽입하여 검사하기 때문에 진단 정확도가 높고, 생명이나 조직검과 같은 병변을 제거할 수도 있다는 장점이 있다. 하지만, 검사 전 대장세척을 해야 하기 때문에 다양한 장정결 악물의 복용해야 하며, 일부 복용 중인 악물(예, 아스피린)을 중단해야 할 수도 있다. 분변잠혈 검사에 비해 비용이 비싸고, 검사 자체에 의한 통증, 불편감, 합병증(예, 출혈, 허혈, 심혈관 합병증 등)이 발생할 수도 있습니다. 따라서, 전국민을 대상으로 하는 1차 선별검사로는 적당하지 않을 수도 있다.
수검자 기본 정보에 대한 질문

1. 귀하의 성별은 무엇인가요?  
   (1) 남자  
   (2) 여자

2. 귀하의 현재 나이는 몇 살인가요? 만 ( )세

3. 귀하의 학력은 다음 중 어디에 해당합니다?  
   (1) 초등학교 졸업 이하  
   (2) 중학교 졸업  
   (3) 고등학교 졸업  
   (4) 대학교 졸업  
   (5) 대학원 졸업 이상

4. 귀하의 결혼 상태는 다음 중 어디에 해당합니다?  
   (1) 미혼  
   (2) 기혼  
   (3) 이혼  
   (4) 배우자 사망

5. 귀하는 종교가 있습니까?  
   (1) 없다  
   (2) 있다

6. 귀하의 직업은 무엇입니까?  
   (1) 자영업  
   (2) 직장인  
   (3) 전업 주부  
   (4) 무직

7. 귀하의 가족(본인+세대주)의 월 소득은 어느 정도입니까?  
   (1) 소득이 없다  
   (2) 월 100만원 미만  
   (3) 월 100만원 이상 - 200만원 미만  
   (4) 월 200만원 이상 - 300만원 미만  
   (5) 월 300만원 이상 - 500만원 미만  
   (6) 월 500만원 이상

8. 음주(소주 반병 이상/1주)를 하십니까?  
   (1) 예  
   (2) 아니오

9. 흡연을 하십니까?  
   (1) 예  
   (2) 아니오  
   (3) 과거 흡연을 했지만 지금은 중단하였다.

10. 귀하는 국민건강보험 외에 가입한 다른 사보험이 있습니까?  
    (1) 없다  
    (2) 있다
11. 다음 중에 이전에 진단 받았던 질환이 있습니까? (복수선택가능)
   (1) 고혈압          (2) 당뇨        (3) 만성콩팥병          (4) 심혈관질환 (심근경색, 협심증)
   (5) 뇌혈관 질환 (뇌졸증 등)      (6) 대장암 및 기타 암     (7) 염증성 장질환

12. 이전에 대장수술을 받았던 적이 있습니까?
   (1) 없음  (2) 있음

13. 가족 (조부모님, 부모님, 형제/자매) 중에 대장암을 앓았던 사람이 있었습니까?
   (1) 없다          (2) 있다

14. 귀하가 알고 있는 사람들 중에 대장암 환자가 있습니까?
   (1) 없다          (2) 있다

15. 귀하는 대장암에 걸릴 가능성이 얼마나 높다고 생각하십니까?
   (1) 낮다    (2) 평균 정도이다   (3) 높다

16. 대장암이 있을 때 나타날 수 있는 증상에 대해 알고 계십니까?
   (1) 모른다          (2) 알고 있다
대장암검진 설문지

국가 대장암 조기 검진 사업에 대한 설문

1. 평소에 국가 건강검진을 잘 받으십니까?
   (1) 항상 받는다       (2) 대부분 받는다       (3) 가끔 받는다       (4) 거의 안 받는다

2. 과거에 분변잠혈검사를 받아보셨습니까?  (1) 예       (2) 아니오

   (아래는 2번 문항에서 '예'를 선택하신 분들만 답해주십시오)

2-1. 이전에 분변잠혈검사를 받아 보았다면 당시 불편했던 경험이 있었습니까?
   (1) 없었다            (2) 있었다

2-2. 분변잠혈검사가 불편했던 경험이 있었다면 가장 큰 이유는 무엇입니까?
   (1) 채변 과정에서 불편감         (2) 병원까지 보관, 운반의 불편감
   (3) 기타 (____________________)

3. 과거에 대장내시경을 받아보셨습니까?  (1) 예       (2) 아니오

   (아래는 3번 문항에서 '예'를 선택하신 분들만 답해주십시오)

3-1. 이전에 대장내시경을 받아 보았다면 당시 불편했던 경험이 있었습니까?
   (1) 없었다            (2) 있었다

3-2. 대장내시경 검사가 불편했던 경험이 있었다면 가장 큰 이유는 무엇이었습니까?
   (1) 장정결 과정          (2) 내시경 시행 시 불편감          (3) 검사 금액
   (4) 검사 소요 시간에 대한 불만        (5) 기타 (____________________)
4. 국가 대장암 검진 사업에서 1차 선별검사를 선택할 수 있다면, 어떤 검사를 선택하시겠습니까?
(단, 대장내시경 검사는 수면내시경 검사 비용은 지원하지 않습니다.)

(1) 분변침혈검사  (2) 대장내시경 검사  (3) 둘 다 안 한다

(4번 문항에서 **1번**을 선택하신 분만 답변해주십시오.)

4-1. 분변침혈검사를 선택하신 가장 큰 이유는 무엇입니까?

(1) 검사가 간단하고 불편하지 않아서  (2) 합병증 위험이 없어서
(3) 추가금액이 없어서  (4) 대장내시경 검사를 받을 시간이 없어서
(5) 대장내시경 검사가 더 불편하고 번거로워서
(6) 기타 (______________)

(4번 문항에서 **2번**을 선택하신 분만 답변해주십시오.)

4-2. 대장내시경 검사를 선택하신 가장 큰 이유는 무엇입니까?

(1) 진단 정확도가 높아서  (2) 검사와 치료가 동시에 가능해서
(3) 분변침혈검사가 더 불편하고 번거로워서
(4) 대장내시경 검사도 불편하지 않아서
(5) 기타 (______________)

긴 설문에 응해 주셔서 대단히 감사합니다.

이 설문은 국가 대장암 검진 사업을 발전시키는데 중요한 자료로 이용될 예정입니다.