

BMJ Open What are common barriers and helpful solutions to colorectal cancer screening? A cross-sectional survey to develop intervention content for a planning support tool

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To cite: Kotzur M, Macdonald S, O'Carroll RE, *et al.* What are common barriers and helpful solutions to colorectal cancer screening? A cross-sectional survey to develop intervention content for a planning support tool. *BMJ Open* 2022;**12**:e062738. doi:10.1136/bmjopen-2022-062738

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-062738>).

Received 09 March 2022
Accepted 05 August 2022



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ABSTRACT

Objective Colorectal screening using faecal immunochemical tests (FITs) can save lives if the people invited participate. In Scotland, most people intend to complete a FIT but this is not reflected in uptake rates. Planning interventions can bridge this intention-behaviour gap. To develop a tool supporting people willing to do colorectal screening with planning to complete a FIT, this study aimed to identify frequently experienced barriers and solutions to these barriers.

Design This is a cross-sectional study.

Setting Participants were recruited through the Scottish Bowel Screening Programme to complete a mailed questionnaire.

Participants The study included 2387 participants who had completed a FIT (mean age 65 years, 40% female) and 359 participants who had not completed a FIT but were inclined to do so (mean age 63 years, 39% female).

Outcome measures The questionnaire assessed frequency of endorsement of colorectal screening barriers and solutions.

Results Participants who had not completed a FIT endorsed significantly more barriers than those who had completed a FIT, when demographic, health and behavioural covariates were held constant ($F(1,2053)=13.40$, $p<0.001$, partial $\eta^2=0.01$). Participants who completed a FIT endorsed significantly more solutions than those who did not ($U=301\,585.50$, $z=-3.21$, $p<0.001$, $r=0.06$). This difference became insignificant when covariates were controlled. Participants agreed on the most common barriers and solutions regardless of screening history. Barriers included procrastination, forgetting, fear of the test result, screening anxiety, disgust and low self-efficacy. Solutions included hand-washing, doing the FIT in private, reading the FIT instructions, benefit of early detection, feelings of responsibility, high self-efficacy and seeing oneself as a person who looks after one's health.

Conclusion This survey identified six barriers and seven solutions as key content to include in the development of a planning tool for colorectal screening using the FIT. Participatory research is required to codesign an engaging and accessible planning tool.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Collaboration with the Scottish Bowel Screening Programme enabled targeted recruitment of a large sample evenly matched in sex and socioeconomic status across participant groups.
- ⇒ Participants who had not completed screening were significantly older and more ethnically diverse than those who had, but this did not affect outcome measures.
- ⇒ Despite efforts to recruit similar numbers of people who had and had not completed screening, the proportions of participants who had completed screening were much larger due to an error.

BACKGROUND

Colorectal cancer is the third most common cancer and second most common cause of cancer death globally.^{1,2} In the UK and in Scotland, it is the second biggest cancer killer, responsible for over 16 600 and 1700 deaths annually, respectively.^{3,4} Colorectal cancer screening can save lives and reduce healthcare spending.⁵

In November 2017, the Scottish Bowel Screening Programme replaced the Faecal Occult Blood Test (FOBT, samples collected at home over 3 days) with the Faecal Immunochemical Test (FIT). The FIT requires participants to take one faecal sample and mail it for testing. People aged 50–74 years are invited to complete a FIT every 2 years. In a survey of a convenience sample of 200 Scottish adults, 85% of people reported intending to complete a FIT and rated it easier to complete and less disgusting than FOBT used previously.⁶ While uptake rose to 63%,⁷ a gap remains between screening intentions and participation. A major reason may be that people are 'not getting round to it'⁸ which is

consistent with previous work on ‘inclined abstainers,’⁹ showing that a proportion of people intending to do screening fail to do it. This explanation seems particularly likely for colorectal screening which, unlike other screening tests, is self-completed at home¹⁰: in a recent Australian survey 64% reported intentions to do the FIT.¹¹

Systematic reviews demonstrate that interventions supporting people to plan how to enact a behaviour can change the behaviour of inclined abstainers.¹² Planning support interventions have been shown to be more effective than other approaches, such as self-monitoring,¹³ and have high adherence rates.¹⁴ Planning support promotes behaviour change using ‘if-then’ plans.¹⁵ They are often embedded in planning support tools¹⁶ encouraging people to plan better by offering a solution where a key barrier (‘if’) is linked with an appropriate solution (‘then’), for instance: “If I am tempted to eat when I am at a party”—“then I will tell myself that if I try hard enough I can keep from overeating”.¹⁶

Behavioural theories, such as the Integrated Screening Action Model (I-SAM), show that a range of individual and environmental factors may hinder or facilitate screening participation.¹⁷ We aimed to establish the most relevant content for a planning support tool to overcome barriers to colorectal screening using the FIT, by identifying frequently experienced barriers and the solutions perceived as most helpful among people invited to complete a FIT and intending to do so. As the FIT is relatively new to Scotland, little is known about people’s experience with this test which continues to rely on faecal self-sampling at home and research is required to establish what barriers remain and how people who complete colorectal screening overcome them.

This study seeks to answer five research questions in a cross-sectional survey to inform the development of planning support tool:

- i. What are the most common perceived barriers to completing a FIT among people willing to do so?
- ii. How frequently are colorectal screening barriers experienced by people who have or have not completed a FIT?
- iii. What are the most common solutions used to overcome colorectal screening barriers among people who have completed a FIT?
- iv. What are the most common solutions to overcome colorectal screening barriers suggested by people who have not completed a FIT, but are willing to do so?
- v. Are sociodemographic characteristics associated with differences in reporting colorectal screening barriers and solutions for a FIT?

METHOD

Recruitment

To recruit a well-stratified sample, we planned to invite potential participants based on colorectal screening

history (completed a FIT vs not completed a FIT), sex (female vs male), age (50–62 years vs 63–74 years), area-based socioeconomic status (SES), and location in Scotland (Greater Glasgow and Clyde health board vs other health board). Area-based SES was derived from the Scottish Index of Multiple Deprivation based on home postcodes (40% most affluent vs 40% most deprived).¹⁸

We collaborated with the Scottish Bowel Screening Centre who used the sampling frame to identify eligible potential participants (see online supplemental table S1) and send them a questionnaire.

We aimed to recruit 1000 people who had completed a FIT and 1000 people who had not completed a FIT. Based on our previous work, we anticipated low response rates from people who had not completed a FIT by oversampling this group. We therefore planned to send questionnaires to 1250 people who had completed a FIT and 5000 people who had not completed a FIT. However, due to an error, we sent 4482 people who had completed a FIT and 5000 who had not a questionnaire between January and May 2019. People who did not complete a FIT who had not returned questionnaires or declined participation in the study were sent reminder questionnaires after 3 weeks.

Materials

The questionnaire was designed with public and patient involvement (PPI) input to be easy to read. The questionnaire is available in online supplemental file 2.

Health and experience of cancer

We measured perceived general health with one item *Would you say that for someone of your age your own health in general is:* with response options: *poor, fair, good, excellent*.¹⁹ Based on questions by Miles *et al*,²⁰ we also asked participants whether they, their close family, or friends had ever had cancer, and if so, what type.

Intentions and past FIT completion

The questionnaire showed an image of the FIT kit and then assessed past screening behaviour with two items: *Have you received a new bowel screening test like the one pictured above?* (response options: *yes, no, not sure*) and *If yes, did you complete and post the new test?* (response options: *yes, no, not applicable*).

We assessed future screening intentions with one item adapted from McCaffery and coauthors²¹: *If you receive a new bowel screening test in the future, will you do the test?* with response options: *definitely not; probably not; yes, probably; yes, definitely*. Participants who selected *definitely not* or *probably not* were excluded from the study in line with eligibility criteria (see online supplemental table S1).

We also assessed self-efficacy for completing a FIT with one item: *How easy or hard do you think the new bowel screening test is to do?* with six response options:

very easy, easy, neither easy nor hard, hard, very hard, and don't know.

Barriers and solutions

Barrier and solution items were developed based on semi-structured interviews with people who had and had not completed a FIT in previous research.²²

To assess colorectal screening barriers, 33 barrier items were presented (see online supplemental file 2) with response options on a five-point Likert-scale from 1, *strongly disagree* to 5, *strongly agree*. Participants were also asked, *Is there anything else that makes bowel screening hard for you? Please can you describe:*

Similarly, 25 solution items (see online supplemental file 2) were presented with response options on a five-point Likert-scale from 1, *strongly disagree* to 5, *strongly agree*. Participants were also asked: *Can you think of any other ways that bowel screening could be made easier? Please can you describe:*

Responses to barrier and solution items were dichotomised as follows: *Strongly disagree*, *Disagree*, and *Not sure* were grouped into a *Not endorsed* category; *Strongly agree* and *Agree* were grouped into an *Endorsed* category.

Demographic characteristics

Demographic characteristics included: age; gender; marital status; ethnic group.²⁰ We assessed individual SES as an aggregate score of housing arrangement (rent from local authority/housing association, rent from private landlord, own your home/have a mortgage, other), car ownership, education level.^{23 24}

Procedure

Potential participants received a mailed invitation letter, a 10-page questionnaire, and a prepaid reply envelope. The reminder included another questionnaire and prepaid reply envelope.

Analysis

Analyses were carried out using IBM SPSS Statistics V.28. Data from ineligible participants who did not meet the inclusion criteria were excluded from the analysis. Less than 5% of cases had missing data for demographic and behavioural characteristics, except for individual SES with 14.99% of cases missing data. Missing data for barriers and solution items were greater with 16.24% and 10.31% of cases, respectively. Cases with missing data were excluded test wise. χ^2 tests were used to compare demographic characteristics of included participants and those who did not return a questionnaire.

Analyses comparing the demographic and behavioural characteristics of participant who completed a FIT and those who did not were performed using χ^2 and Mann-Whitney U tests. Ethnicity was dichotomised for χ^2 -testing because several categories contained fewer than five participants. Self-efficacy responses were also dichotomised for χ^2 -testing.

Frequency analyses were carried out to rank barriers and solutions by the proportion of participants who

completed a FIT and those who did not who endorsed each item. We used Mann-Whitney U tests to compare frequency of endorsed barriers and solutions between participants who completed a FIT and those who did not. To do this, the number of endorsed barriers and solutions was counted for each participant. We used analysis of covariance to assess whether significant differences in the number of endorsed barriers and solutions persisted when demographic, health, and behavioural sample characteristics (see [table 1](#)) were held constant.

Patient and public involvement

Two patient and public representatives provided feedback on the design of the study and reviewed all participant-facing documents and materials to be accessible and engaging. Participant will be sent a summary of the findings if they have requested this.

RESULTS

Sample

Of 2904 completed questionnaires, 156 responses were excluded (n=130 reported no intention to complete a FIT or had not answered this question; n=21 reported having colorectal cancer, and n=5 were aged younger than 50 years). Our study included 2387/4482 participants who had complete a FIT (response rate 53.3%) and 359/5000 participants who had not completed a FIT (response rate 7.2%).

Compared with those who did not return a questionnaire, included participants were more likely to have completed a FIT (30.7% vs 87.2%, $p<0.001$), to reside in a health board other than NHS Greater Glasgow and Clyde (48.7% vs 55.1%, $p<0.001$), and to be more affluent (39.0% vs 50.5%, $p<0.001$). Contrary to those who did not return a questionnaire, included participants were more likely to be older if they had completed a FIT than if they had not completed a FIT (59.6% vs 49.6%). There was no significant difference in sex between those who did not return a questionnaire and included participants.

Demographic and behavioural characteristics are shown in [table 1](#). The age of the total sample ranged from 50 to 75 years with a mean age of 63.4 years (SD: 7.3 years). There were no significant differences between participants who completed a FIT and those who did not in sex, area-based SES, or having ever had cancer; however, screening participants who did not complete a FIT were significantly older than those who did. Participants who did not complete a FIT were significantly more likely to have a lower individual SES score, report poor or fair health, to be single, divorced/separated or widowed, to be unsure whether their family or friends had cancer, and to be from an ethnic background other than white than participants who completed a FIT.

Although area-based SES and individual SES had differing associations with screening history, area-based SES was significantly associated with individual SES,

**Table 1** Demographic, health-related and colorectal screening characteristics

	Completed a FIT (n=2387)	Did not complete a FIT (n=359)	Significance
Age			
<i>Median*</i>	63 years	65 years	U=501 898.5, z=5.3, p<0.001, r=0.1
	n (%)	n (%)	
Sex			
Female	947, 39.7%	140, 39.0%	
Male	1437, 60.2%	219, 61.0%	$\chi^2(2)=0.5$, p=0.9
Other	3, 0.1%	0, 0.0%	
Marital status			
Single	219, 9.2%	40, 11.1%	
Married	1609, 67.4%	224, 62.4%	
Cohabiting/living with a partner	162, 6.8%	16, 4.5%	$\chi^2(4)=9.6$, p<0.05
Divorced/separated	204, 8.5%	35, 9.7%	
Widowed	161, 6.7%	35, 9.7%	
Ethnic group			
White background	2317, 97.1%	339, 94.4%	
<i>Other ethnic background</i>	46, 1.9%	14, 3.9%	$\chi^2(1)=5.8$, p<0.005
Missing	24, 1.0%	6, 1.7%	
Area-based SES			
Scottish Index of Multiple Deprivation 1 & 2 (most deprived)	1166, 48.8%	191, 53.2%	$\chi^2(1)=2.9$, p=0.1
Scottish Index of Multiple Deprivation 4 & 5 (least deprived)	1221, 51.2%	165, 46.0%	
Individual SES			
0 (most deprived)	97, 4.1%	24, 6.7%	
1	181, 7.6%	46, 12.8%	
2	425, 17.8%	79, 22.0%	$\chi^2(4)=31.5$, p<0.001
3	731, 30.6%	95, 26.5%	
4 (least deprived)	649, 27.2%	63, 17.5%	
Self-reported health			
<i>Poor</i>	96, 4.0%	31, 8.6%	
<i>Fair</i>	480, 20.1%	97, 27.0%	$\chi^2(3)=35.1$, p<0.001
Good	1356, 56.8%	190, 52.9%	
<i>Excellent</i>	422, 17.7%	34, 9.5%	
Cancer history			
Has/had cancer	233, 9.8%	37, 10.3%	
Does not have cancer	2113, 88.5%	316, 88.0%	$\chi^2(2)=0.2$, p<0.94
Unsure	16, 0.7%	2, 0.6%	
Family or friends with cancer			
Yes	1813, 76.0%	260, 72.4%	
No	461, 19.3%	79, 22.0%	$\chi^2(2)=6.7$, p<0.05
<i>Not sure</i>	52, 2.2%	15, 4.2%	
Colorectal screening experience and intention			

Continued

Table 1 Continued

	Completed a FIT (n=2387)	Did not complete a FIT (n=359)	Significance
Ever received a FIT in post (N, per cent)			
Yes	2157, 90.4%	194, 54.0%	
No	195, 8.2%	138, 38.4%	$\chi^2(2)=334.3, p<0.001$
Not sure	33, 1.4%	26, 7.2%	
Perceived ease of doing a FIT			
Not easy	146, 6.1%	68, 18.9%	$\chi^2(1)=122.2, p<0.001$
Easy	2110, 88.4%	184, 51.3%	
Intention to do a FIT			
Yes, probably	110, 4.6%	118, 32.9%	$\chi^2(1)=327.4, p<0.001$
Yes, <i>definitely</i>	2277, 95.4%	241, 67.1%	

*Significantly different groups are italicised.
FIT, Faecal Immunochemical Test; SES, socioeconomic status.

$\chi^2(4)=461.65, p<0.0001$. Therefore, subsequent analyses used area-based SES only.

Past FIT experience and colorectal screening intentions

Participants who completed a FIT (90.4%) were twice as likely to recall having received a FIT in the post as participants who did not complete a FIT (54.0%; [table 1](#)).

All participants reported intentions to do a FIT in the future as this was an eligibility criterion. Participants who completed a FIT (95.4%) were significantly more likely than those who did not (67.1%) to report they would definitely do a FIT in the future. Participants who completed a FIT were also significantly more likely to report that the FIT was easy to complete (88.4%) compared with participants who did not complete a FIT (51.3%).

Most common barriers and solutions

[Table 2](#) shows the proportion of participant who completed a FIT and participant who did not complete a FIT who endorsed each barrier. The barrier items are grouped into seven types, based on their face-value meaning, and ranked from most to least frequently endorsed by participants who did not complete a FIT. Participants most frequently endorsed practical, emotional, and self-efficacy barriers, regardless of screening history. Across barrier types, participant who had and had not completed a FIT agreed on the six most important barriers.

[Table 3](#) shows the proportion of participants who had and had not completed a FIT who endorsed each solution, ranked from most to least frequently endorsed by those who had not completed a FIT. Similar to barrier items, there were seven types of solutions, according to their face-value meaning. Solutions that improved self-image and increased the perceived efficacy of the FIT were on average most often endorsed by participants, regardless of screening history. Eight solutions were each endorsed by more than 80% of participants who had not completed a FIT. Seven of these were each also endorsed by over 90% of participants who had completed a FIT,

suggesting general agreement on the most helpful solutions to FIT barriers.

Demographic and behavioural differences in endorsed barriers and solutions

Participants who had not completed a FIT endorsed significantly more barriers (Mdn.=2) compared with participants who had (Mdn.=0, $U=410\,791.50, z=14.59, p<0.01, r=0.30$). This difference remained significant in ANCOVA controlling for age, sex, marital status, family history of cancer, intention to do a FIT, and perceived ease of doing a FIT ($F(1, 2053)=13.40, p<0.001$, partial $\eta^2=0.01$), as shown in [table 4](#). The following groups endorsed significantly more barriers in the multivariable analysis: younger participants, women, those who were single, who were unsure whether their friends or family had had cancer, with weaker intention to do a FIT, and those who thought the FIT was not easy to complete endorsed significantly more barriers (see online supplemental table S2).

Participants who had not completed a FIT endorsed significantly fewer solutions (Mdn.=18) compared with those who had (Mdn.=19), $U=301\,585.50, z=-3.21, p<0.001, r=0.06$. This difference was not significant in ANCOVA with demographic and behavioural characteristics ($F(1, 2143)=0.40, p=0.53; \eta^2=0.00$; see [table 4](#)). The number of solutions endorsed, however, was related to several covariates: more deprived participants, with stronger intention to complete a FIT, who thought the FIT was easy to complete, and women endorsed more solutions (see online supplemental table S2).

DISCUSSION

The results suggest that participants who had not completed a FIT perceived significantly more barriers than participants who had. Participants who had not completed a FIT also found significantly fewer solutions helpful than those who had. This difference in solutions,

**Table 2** Frequency of barriers endorsed

It's hard for me to do the bowel screening test because...	Completed a FIT	Did not complete a FIT
Practical barriers	4.0%*	20.9%
... <i>I never get round to doing it.</i> †	6.2%	36.9%
... <i>I keep forgetting.</i>	6.2%	32.3%
... I don't have time.	1.8%	7.4%
... I don't have all the things I need to do it.	1.7%	6.9%
Emotional barriers	3.9%	11.9%
... <i>I'm worried about the results.</i>	6.3%	19.6%
... <i>I get anxious when I think about screening.</i>	7.3%	17.9%
... <i>I think it is messy.</i>	6.0%	16.6%
... I'm worried I might touch my poo.	3.2%	10.7%
... I find this test too embarrassing to do.	2.1%	10.1%
... I think doing it is disgusting.	4.3%	9.8%
... I didn't know I was going to be asked to do this test.	1.9%	9.3%
... I'm embarrassed to put the bowel screening kit by the toilet to remind me to do it.	2.0%	6.6%
... I don't like others telling me what to do.	1.7%	6.3%
... I'm embarrassed that somebody might see this test in my house.	1.2%	4.5%
Low self-efficacy	2.9%	11.5%
... <i>I'm not used to doing a test like this.</i>	6.6%	23.8%
... I'm unsure how to do it.	2.3%	12.8%
... I'm unsure how to take a sample of my poo.	2.8%	11.5%
... I think a bowel screening test should be done by a doctor or nurse.	1.3%	5.3%
... I find the new test difficult to use.	1.3%	4.2%
Comorbidities	3.9%	8.7%
... I have a physical disability or health condition.	4.3%	10.8%
... I'm often constipated.	3.9%	8.9%
... I often have diarrhoea.	3.5%	6.3%
Fatalism	1.8%	6.5%
... I don't want to tempt fate.	1.9%	9.0%
... I feel that no matter what I do, if I'm meant to get cancer, I will get cancer.	2.6%	8.7%
... I don't want to know if I have bowel cancer.	1.7%	5.7%
... I don't think it matters if I do it or not.	0.9%	2.4%
Low perceived screening test efficacy	1.1%	4.7%
... I get asked to do too many medical tests.	1.2%	5.7%
... I don't think it is necessary.	0.9%	3.6%
Lack of social support	1.0%	3.1%
... I don't think I can talk to anybody about how to do it.	1.8%	6.9%
... people close to me don't care if I do it or not.	0.8%	3.0%
... I think the NHS doesn't really care if I do it or not.	0.7%	2.1%
... people close to me don't want me to do it.	0.7%	1.8%
... someone important to me decided they will not do it.	0.9%	1.5%

*For groups of barriers average percentage of endorsement is presented to account for the varying number of barriers in each group.

†Italicised items denote the six most frequently endorsed barriers.

Table 3 Frequency of endorsed solutions

It would be helpful for me to...	Completed a FIT	Did not complete a FIT
Identity	91.8%*	84.9%
<i>... tell myself that I'm responsible for my health.†</i>	97.4%	94.7%
<i>... remember that I am the kind of person who looks after their health in this way.</i>	93.0%	82.0%
... make myself do this test anyway because I know I'll feel better about myself afterwards.	85.1%	78.0%
High perceived screening test efficacy	90.9%	83.7%
<i>... remember that this test can find bowel cancer early when it can often be cured.</i>	98.0%	94.7%
... tell myself that I'll feel more confident in my health if I do this test.	87.9%	79.9%
... tell myself that doing this test could make me a healthier person.	86.7%	76.4%
Self-encouragement	76.3%	75.8%
<i>... tell myself that this test will be quick and easy to do.</i>	92.7%	88.7%
... tell myself that if I try hard enough, I can do this test.	59.9%	62.9%
Practical solutions	76.8%	75.8%
<i>... wash my hands after doing this test.</i>	98.5%	95.6%
<i>... do the test when I won't be interrupted.</i>	93.2%	89.9%
<i>... read the instructions carefully.</i>	95.9%	89.6%
... put everything I need to do this test in the bathroom.	86.2%	82.6%
... think about how I would do this test.	82.5%	77.3%
... put the bowel screening kit somewhere I would see it on my way to the bathroom.	70.6%	71.0%
... use toilet paper to make sure I don't need to touch my poo.	78.5%	68.8%
... put a reminder in my diary/ calendar/ elsewhere.	59.3%	65.9%
... pick a day and a time when I can do this test.	58.1%	57.9%
... use rubber gloves to do this test.	45.2%	52.4%
Increase perceived social support	78.0%	69.8%
... think about how my not doing this test affects those people who are close to me.	84.3%	75.1%
... think about how I'll be a better role model for others if I do this test.	76.4%	69.9%
... think about people around me encouraging me to do this test.	73.3%	64.3%
Manage emotions	46.0%	34.8%
... joke about doing this test.	46.0%	34.8%
Seek advice	25.4%	22.9%
... speak to someone close to me about how to do this test.	38.7%	33.1%
... speak to my GP about doing this test.	16.4%	18.3%
... call the bowel screening helpline.	21.1%	17.4%

*For groups of solutions average percentage of endorsement is presented to account for the varying number of barriers in each group.
 †Italicised items denote the seven most frequently endorsed solutions.

Table 4 Analysis of covariance of number of endorsed barriers and solutions

	Number of endorsed barriers*		Number of endorsed solutions†	
	Mean (95% CI)	P value	Mean (95% CI)	P value
Screening history				
Completed a FIT	33.9 (33.75, 33.98)	F(1, 2053)=13.4, p<0.001	43.2 (42.97, 43.35)	F(1, 2143)=0.4, p=0.53,
Did not complete a FIT	34.6 (34.25, 35.04)	partial $\eta^2=0.01$	42.9 (42.32, 43.57)	partial $\eta^2=0.0$

*Means are adjusted for significant covariates: age, sex, marital status, family history of cancer, intention to do a FIT, and perceived ease of doing the FIT.
 †Means are adjusted for significant covariates: area-based SES, sex, intention to do a FIT, and perceived ease of doing the FIT.

however, was not significant when demographic, health and behavioural characteristics were held constant.

The I-SAM identifies six categories of influences that hinder or facilitate cancer screening across individual and environmental contexts: automatic motivation, reflective motivation, psychological capability, physical capability, social opportunity and physical opportunity.¹⁷ Our findings show that people who intended to do colorectal screening experienced similar types of barriers regardless of their screening history, and they also agreed on the most important specific barriers. These included practical barriers (capability): not 'getting around' to completing a FIT and forgetting to do a FIT; emotional barriers (automatic motivation): feeling worried about the result of the FIT, anxiety in response to thinking about screening, and disgust; and also low self-efficacy (psychological capability) in not being used to doing a test like the FIT.

Similarly, participants, regardless of screening history, agreed that solutions related to identity (social opportunity) and increased perceived efficacy of the FIT (reflective motivation) were most helpful. Seven solutions were considered helpful by almost all participants regardless of screening history. These related to handwashing, finding bowel cancer early, feeling responsible for one's health, seeking privacy when doing a FIT, reading the FIT instructions, emphasising how easy the FIT is to do, and seeing oneself as a person who looks after one's health. Although the I-SAM categories of the most endorsed barriers appear to differ from those of endorsed solutions, [figure 1](#) demonstrates that these solutions can address the most commonly experienced barriers. The figure shows that four of the six included barriers can be addressed by more than one solution; and that five of the seven included solutions may address more than one barrier. This is crucial to the development of a planning support tool for colorectal screening using the FIT, as multiple possible combinations will allow users of the tool to create their own plans which are acceptable to them.¹⁶ Recent research indicates that suggesting specific action plans to those invited to complete a FIT was less acceptable to

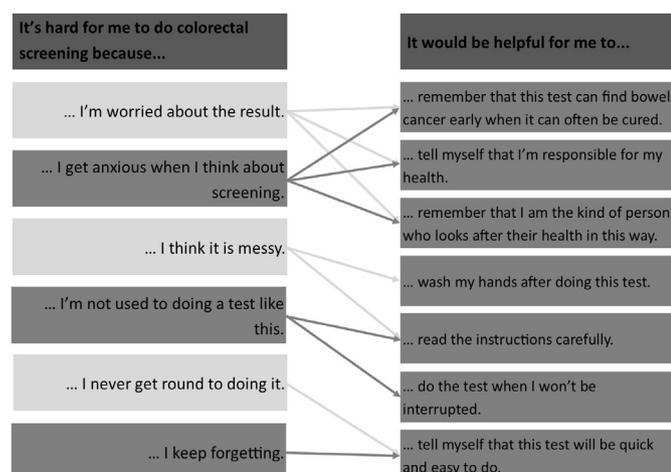


Figure 1 Common barriers and solutions matched.

screening eligible participants than other interventions.²⁵ Supporting people with planning rather than providing plans directly may be more engaging.

Akin to existing evidence, younger and single participants and those with low self-efficacy experienced more screening barriers.^{8 26} Previous research shows that people with family or friends with cancer are more likely to complete screening.^{27 28} Our findings suggest that they may experience fewer barriers to screening than people who are unsure whether their family or friends have had cancer. Women reported more barriers, which is not reflected in the UK literature,^{26 29} but matches lower uptake rates among women of FOBt and colonoscopy.³⁰ Yet, women endorsed significantly more solutions than men. Together with higher FIT uptake, these findings suggest that women may more successfully overcome FIT barriers. While reported intention to complete colorectal screening is frequently not translated into screening uptake,⁹ it is unsurprising that people with stronger intentions reported fewer barriers and found more solutions helpful. Similarly, people who perceive the FIT as easy to complete may think this way because they have more solutions to overcoming FIT barriers. The greater number of solutions endorsed among people living in deprived areas is contrary to consistently lower colorectal screening uptake in this group.^{26 30} This finding may suggest that people living in deprived areas who complete the FIT engage in more problem-solving than people living in affluent areas. Consequently, people living in deprived areas who do not complete the FIT may need more support with this same problem-solving.

Strengths and limitations

Collaborating with the Scottish Bowel Screening Centre on participant recruitment allowed us to recruit a sample evenly matched in sex and SES across people who had and had not completed a FIT. Participants who had not completed a FIT in our study were significantly more ethnically diverse and older than those who had. This difference is contrary to international evidence that screening uptake is lower among younger people, yet the difference in age appeared to be insufficiently large to mask the established association of younger age and greater perceived barriers.^{8 26} Ethnicity was not associated with the number of barriers or solutions endorsed by either group, but future research should confirm this lack of association in a more ethnically diverse sample. Despite our efforts to recruit similar numbers of participants who had and had not completed a FIT, our sample contains a much larger proportion of those who had completed a FIT. This is partly due to the erroneous invitation of additional participants who had completed a FIT, but also to the much larger difference in response rates among them (53%) and those who had not completed a FIT (7%) than anticipated. G*Power³¹ calculations, however, found the total sample size to be large enough for sufficient statistical power of our analyses.

The large number of barriers (33 items) and solutions (25 items) in the questionnaire, may have produced order effects and fatigue in participants. Although PPI feedback did not critique the length of the questionnaire, fatigue may explain the larger number of missing data in these sections.

Implications

Among people who are willing to participate in colorectal screening using the FIT, those who complete a FIT and those who do not, appear to experience the same screening barriers, providing an opportunity to learn from people who complete a FIT about how to overcome these barriers. Our findings suggest that those who complete a FIT and those who do not, agree on the most helpful solutions to overcoming these barriers. Nevertheless, people who do not complete a FIT, despite being willing to do so, may benefit from additional support in enacting the solutions identified in our survey. Planning interventions may provide this support. The present study has informed the development of a brief planning support tool which we will evaluate in a large-scale trial within the Scottish Bowel Screening Programme.³²

CONCLUSIONS

This study has identified six barriers and seven solutions as key content for a planning support tool for colorectal screening using the FIT. While there is strong evidence for screening barriers and facilitators, little previous research has linked barriers to facilitators, or solutions, that can overcome them. Our findings provide the basis for the development of a planning support tool for colorectal screening which we will evaluate in the next phase of our research.

Acknowledgements We wish to thank Mary Cameron and Lucy Robertson for their support of our work as patient and public representatives contributing to the development of the research and reviewing all participant-facing materials.

Contributors All authors were involved in the conception of the study and development of the study protocol. AI facilitated participant recruitment. MK carried out the data collection and analysis under supervision of KR. The findings were discussed with all of the author team. MK drafted the manuscript and all authors contributed revisions. KR is guarantor.

Funding This work was supported by the Scottish Government, Chief Scientist Office grant number HIPS/17/23.

Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

Ethics approval This study received ethical approval from the NHS Research Ethics Committee York and Humber – South Yorkshire, reference 17/YH/0439. Return of a completed questionnaire indicated consent to participate in the study.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request.

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Supplementary Tables

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What are common barriers and helpful solutions to colorectal cancer screening? A cross-sectional survey to develop intervention content for a planning support tool**—Supplementary Tables—****Table S1 Participant eligibility criteria**

- were aged 50 to 74 years according to their date of birth on the Scottish Bowel Screening Programme dataset
- were eligible for colorectal screening on the Scottish Bowel Screening Programme dataset
- had been sent a FIT in the period between 12.05.2018 and 17.07.2018 according to the Scottish Bowel Screening Programme dataset
- had a recorded result on the Scottish Bowel Screening Programme dataset within six months of having been sent FIT (completers) OR had no recorded result on the Scottish Bowel Screening Programme dataset at six months after having been sent FIT (non-completers)
- reported intention to complete FIT in the future on the questionnaire
- did not report colorectal cancer on the questionnaire
- were able to read and write in English

Note.

Supplementary Tables

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Table S2 Analysis of covariance of number of endorsed barriers and solutions—Covariates

	Number of endorsed barriers			Number of endorsed solutions		
	B (95% CI)	P	Partial η^2	B (95% CI)	P	Partial η^2
Age	-0.02 (-0.04, -0.01)	$F(1, 2053)=7.5, p<0.01$	0.004	0.01 (-0.01, 0.04)	$F(1, 2143)=1.0, p=0.32$	0.000
Area-based SES						
SIMD+ 1&2 (most deprived)	comparison group			comparison group		
SIMD 4&5 (least deprived)	-0.20 (-0.43, -0.03)	$F(1, 2053)=2.9, p=0.09$	0.001	-0.88 (-1.26, -0.51)	$F(1, 2143)=21.5, p<0.001$	0.010
Sex†						
Male	comparison group			comparison group		
Female	0.24 (0.01, 0.47)	$F(1, 2053)=4.3, p<0.05$	0.002	1.39 (1.02, 1.76)	$F(1, 2143)=53.8, p<0.001$	0.025
Ethnic group						
White background	comparison group			comparison group		
Other ethnic background	-0.21 (-1.02, 0.60)	$F(1, 2053)=0.3, p=0.61$	0.000	-0.74 (-2.04, 0.57)	$F(1, 2143)=1.2, p=0.27$	0.001
Marital status						
Married	comparison group			comparison group		
Single	0.54 (-0.15, 0.93)	$F(1, 2053)=7.5, p=0.01$	0.004	0.30 (-0.33, 0.93)	$F(1, 2143)=0.9, p=0.36$	0.000
Cohabiting	0.07 (-0.37, 0.52)	$F(1, 2053)=0.1, p=0.75$	0.000	0.40 (-0.32, 1.13)	$F(1, 2143)=1.2, p=0.27$	0.001
Separated/divorced	0.10 (-0.32, 0.51)	$F(1, 2053)=0.2, p=0.65$	0.000	0.11 (-0.76, 0.54)	$F(1, 2143)=0.1, p=0.74$	0.000
Widowed	0.13 (-0.35, 0.60)	$F(1, 2053)=0.3, p=0.60$	0.000	0.33 (-0.42, 1.08)	$F(1, 2143)=0.7, p=0.39$	0.000
Self-reported health						
Good	comparison group			comparison group		
Poor	0.48 (-0.11, 1.06)	$F(1, 2053)=2.5, p=0.11$	0.001	-0.57 (-1.49, 0.35)	$F(1, 2143)=1.5, p=0.22$	0.001
Fair	-0.10 (-0.39, 0.20)	$F(1, 2053)=0.4, p=0.52$	0.000	-0.32 (-0.79, 0.15)	$F(1, 2143)=1.8, p=0.18$	0.001
Excellent	0.22 (-0.07, 0.52)	$F(1, 2053)=2.2, p=0.14$	0.001	-0.03 (-0.51, 0.46)	$F(1, 2143)=0.1, p=0.91$	0.000
Cancer history						
Does not have cancer	comparison group			comparison group		

Supplementary Tables

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Table S2 Analysis of covariance of number of endorsed barriers and solutions—Covariates

	Number of endorsed barriers			Number of endorsed solutions		
	B (95% CI)	P	Partial η^2	B (95% CI)	P	Partial η^2
Has/had cancer	-0.06 (-0.43, 0.31)	F(1, 2053)=0.1, p=0.74	0.000	0.20 (-0.40, 0.80)	F(1, 2143)=0.4, p=0.52	0.000
Unsure	-0.80 (-2.08, 0.49)	F(1, 2053)=1.5, p=0.23	0.001	-1.64 (-3.65, 0.37)	F(1, 2143)=2.6, p=0.11	0.001
Family or friends with cancer						
Yes	comparison group			comparison group		
No	-0.10 (-0.38, 0.17)	F(1, 2053)=0.5, p=0.46	0.000	0.18 (-0.27, 0.63)	F(1, 2143)=0.6, p=0.43	0.000
Not sure	<i>0.76 (0.02, 1.49)</i>	<i>F(1, 2053)=4.0, p<0.05</i>	<i>0.002</i>	0.48 (-0.72, 1.68)	F(1, 2143)=0.6, p=0.43	0.000
Ever received FIT in post						
Yes	comparison group			comparison group		
No	0.20 (-0.33, 0.73)	F(1, 2053)=0.6, p=0.46	0.000	0.70 (-0.14, 1.54)	F(1, 2143)=2.6, p=0.10	0.001
Not sure	0.16 (-0.77, 1.08)	F(1, 2053)=0.1, p=0.74	0.000	1.16 (-0.32, 2.63)	F(1, 2143)=2.4, p=0.12	0.001
Intention to do FIT						
Yes, probably	comparison group			comparison group		
Yes, definitely	<i>-2.38 (-2.86, -1.90)</i>	<i>F(1, 2053)=94.8, p<0.001</i>	<i>0.044</i>	<i>2.71 (1.95, 3.48)</i>	<i>F(1, 2143)=48.5, p<0.001</i>	<i>0.022</i>
Perceived ease of doing FIT [§]						
Not easy	comparison group					
Easy	<i>-1.21 (-1.20, -0.36)</i>	<i>F(1, 2053)=30.4, p<0.001</i>	<i>0.015</i>	<i>0.91 (0.22, 1.61)</i>	<i>F(1, 2143)=6.7, p<0.05</i>	<i>0.003</i>
Note. Significant associations are italicised. † Scottish Index of Multiple Deprivation, ‡ Three participants reporting <i>Other</i> excluded § Participants reporting <i>Don't know</i> excluded (N=226).						

What are common barriers and helpful solutions to colorectal cancer screening? A cross-sectional survey to develop intervention content for a planning support tool Supplementary Information

We want to know what you think about your health and bowel cancer screening

This is a survey about your health and bowel cancer screening.

Your answers will be treated in strict confidence. We would like to find out what you think about bowel screening so that we can improve the information we give to others in the future.

We are asking people living in Scotland aged 50 to 74 who have recently been invited to do the new bowel screening test to complete this survey.

It is up to you to decide whether you want to fill in this survey or not. Your decision will not affect the quality of medical care you will receive now or in the future.

You can return the questionnaire in the enclosed FREEPOST envelope. No stamp is required.

**If you wish to complete the questionnaire by telephone or
if you have any questions, please contact:**

**Dr Marie Kotzur
Institute of Health and Wellbeing
University of Glasgow
[research mobile]
[email address]**

FIRST, SOME QUESTIONS ABOUT YOUR HEALTH. Please tick your answers.

Would you say that for someone of your age your own health in general is:			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poor	Fair	Good	Excellent

Have you ever had cancer?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
If yes, what type of cancer? _____			
Have your family or close friends had cancer?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>

IN SCOTLAND, MEN AND WOMEN AGED 50-74 ARE NOW SENT A NEW BOWEL SCREENING TEST LIKE THE ONE PICTURED BELOW.



NOW SOME QUESTIONS ABOUT BOWEL SCREENING

Have you received a new bowel screening test like the one pictured above?					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yes	No	Not sure			
If yes, did you complete and post the new test?					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yes	No	Not applicable			
If you receive a new bowel screening test in the future, will you do the test?					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Definitely not	Probably not	Yes, probably	Yes, definitely		
How easy or hard do you think the new bowel screening test is to do?					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Very easy	Easy	Neither easy nor hard	Hard	Very hard	Don't know

PEOPLE OFTEN TALK ABOUT THINGS THAT MAKE IT HARD FOR THEM TO DO BOWEL SCREENING.

There are no right or wrong answers. Please indicate how much you agree or disagree with each statement below by ticking the appropriate box.

It's hard for me to do the new bowel screening test...					
... because I don't have time.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I keep forgetting.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I never get round to doing it.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I get asked to do too many medical tests.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I don't have all the things I need to do it.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I'm unsure how to do it.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I'm unsure how to take a sample of my poo.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I think a bowel screening test should be done by a doctor or nurse.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I'm not used to doing a test like this.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I didn't know I was going to be asked to do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I find the new test difficult to use.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I often have diarrhoea.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I'm often constipated.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I have a physical disability or health condition.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I think doing it is disgusting.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I'm worried that I might touch my poo.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I think it is messy.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree

SOME MORE QUESTIONS ABOUT WHAT YOU THINK ABOUT THE NEW BOWEL SCREENING TEST.

It's hard for me to do the new bowel screening test...					
... because I'm worried about the results.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I get anxious when I think about bowel screening.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because people close to me don't want me to do it.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because someone important to me decided they will not do it.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I don't like others telling me what to do.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I don't think it's necessary.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I don't think it matters if I do it or not.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because people close to me don't care if I do this test or not.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I think the NHS doesn't really care if I do it or not.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I find this test too embarrassing to do.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I'm embarrassed that somebody might see this test in my house.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I'm embarrassed to put the bowel screening kit by the toilet to remind me to do it.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I don't want to tempt fate.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I feel that no matter what I do, if I'm meant to get cancer, I will get cancer.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I don't want to know if I have bowel cancer.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... because I don't think I can talk to anybody about how to do it.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree

Is there anything else that makes bowel screening hard for you? Please can you describe:

HERE ARE SOME SUGGESTIONS OF THINGS THAT PEOPLE MIGHT DO TO MAKE THE NEW BOWEL SCREENING TEST EASIER TO COMPLETE.



Please indicate how much you agree or disagree with each statement below by ticking the appropriate box. Remember, there are no right or wrong answers.

It would be helpful to me to...					
... put a reminder in my diary/ calendar/ elsewhere.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... put the bowel screening kit somewhere I would see it on my way to the bathroom.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... put everything I need to do this test in the bathroom.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... speak to my GP about doing this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... pick a day and a time when I can do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... use toilet paper to make sure I don't need to touch my poo.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... call the bowel screening helpline.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... tell myself that if I try hard enough I can do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... read the instructions carefully.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... do the test when I won't be interrupted.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... tell myself that this test will be quick and easy to do.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... think about how I would do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... tell myself that doing this test could make me a healthier person.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... use rubber gloves to do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree

SOME MORE QUESTIONS ABOUT WHAT MIGHT HELP PEOPLE COMPLETE THE NEW BOWEL SCREENING TEST.

It would be helpful to me to...					
... wash my hands after doing this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... think about how I'll be a better role model for others if I do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... make myself do this test anyway because I know I'll feel better about myself afterwards.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... speak to someone close to me about how to do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... tell myself that I'll feel more confident in my health if I do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... tell myself that I'm responsible for my health.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... think about how my not doing this test affects those people who are close to me.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... think about the people around me encouraging me to do this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... remember that this test can find bowel cancer early when it can often be cured.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... joke about doing this test.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
... remember that I am the kind of person who looks after their health in this way.	<input type="checkbox"/>				
	Strongly disagree	Disagree	Not sure	Agree	Strongly agree

Can you think of any other ways that bowel screening could be made easier? Please can you describe:

PLEASE CONTINUE TO THE NEXT PAGE

NOW SOME QUESTIONS ABOUT YOU TO HELP US ANALYSE THE SURVEY

What is your age? <input type="checkbox"/> <input type="checkbox"/>				
Are you	<input type="checkbox"/> Male	<input type="checkbox"/> Female	<input type="checkbox"/> Other: _____	<input type="checkbox"/> Prefer not to say

What is your marital status?				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single	Married	Cohabiting/ living with partner	Divorced/ separated	Widowed

Which of these best describes your ethnic group?				
White	Black	Asian/ Asian British	Mixed	Chinese/other
<input type="checkbox"/> White British	<input type="checkbox"/> Caribbean	<input type="checkbox"/> Indian	<input type="checkbox"/> White and Black Caribbean	<input type="checkbox"/> Chinese
<input type="checkbox"/> White Irish	<input type="checkbox"/> African	<input type="checkbox"/> Pakistani	<input type="checkbox"/> White and Black African	<input type="checkbox"/> Any other
<input type="checkbox"/> Other white background	<input type="checkbox"/> Other Black background	<input type="checkbox"/> Bangladeshi	<input type="checkbox"/> White and Asian	
		<input type="checkbox"/> Other Asian background	<input type="checkbox"/> Other Mixed background	

Please tick the box which best describes your living arrangement:			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rent from local authority/housing association	Rent from private landlord	Own your home/have a mortgage	Other
Does your household have a car or a van?			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
No	Yes, 1	More than 1	

Are you currently:		
<input type="checkbox"/> employed full-time	<input type="checkbox"/> full-time homemaker	<input type="checkbox"/> disabled or too ill to work
<input type="checkbox"/> employed part-time	<input type="checkbox"/> retired	<input type="checkbox"/> self-employed
<input type="checkbox"/> unemployed	<input type="checkbox"/> student	

What is the highest level of educational or professional qualification you have obtained?	
<input type="checkbox"/> GCSE/ O-level/ CSE	<input type="checkbox"/> Masters/ PhD or equivalent
<input type="checkbox"/> Vocational qualifications (e.g. NVQ1+2)	<input type="checkbox"/> Other (Specify.....)
<input type="checkbox"/> A-level or equivalent (e.g. NVQ3)	<input type="checkbox"/> No formal qualifications
<input type="checkbox"/> Bachelor Degree or equivalent (e.g. NVQ4)	

Thank you very much for taking the time to complete the questionnaire. Your answers are very important to our research.



The Institute of Health and Wellbeing at the University of Glasgow carries our studies looking at cancer prevention and early diagnosis.

Please let us have your contact details if you are willing to be contacted about future studies.

We will not link this information with your answers in the questionnaire. We will store your contact details securely and only the research team at the University of Glasgow will have access to them.

Name _____

Address _____

Telephone: _____

Mobile: _____

Email: _____

If you would like us to send you a copy of the results of this survey please let us have your contact details.

We will not link this information with your answers in the questionnaire. We will store your contact details securely and only the research team at the University of Glasgow will have access to them.

Name _____

Email: _____

Please return the questionnaire in the enclosed FREEPOST envelope.

No stamp is required.

Dr Marie Kotzur
[postal address]

study mobile: XXX
[email address]

The return of a completed questionnaire is confirmation of your consent to take part in the study and allows the researchers to use the information you provide in their research. This information will not be given to anyone outside the University of Glasgow.

All data you provide to the researchers will be treated in the strictest confidence and will be stored securely in accordance with the Data Protection Act 2018.

