**Supplementary Table S1** Search strategy used for current systematic review and meta study synthesis in Medline, from inception to February 2015.

1 exp Colorectal Neoplasms/

2 exp Colonic Neoplasms/

3 exp Rectal Neoplasms/

4 (anal adj cancer$).mp.

5 (anal adj carcinoma$).mp.

6 (anal adj adeno?carcinoma$).mp.

7 (anal adj neoplasm$).mp.

8 (anal adj tumo?r$).mp.

9 (anal adj lesion$).mp.

10 (anal adj adenom$).mp.

11 (anal adj sarcom$).mp.

12 (anal adj malignan$).mp.

13 (anus adj cancer$).mp.

14 (anus adj carcinoma$).mp.

15 (anus adj adeno?carcinoma$).mp.

16 (anus adj neoplasm$).mp.

17 (anus adj tumo?r$).mp.

18 (anus adj lesion$).mp.

19 (anus adj adenom$).mp.

20 (anus adj sarcom$).mp.

21 (anus adj malignan$).mp.

22 (bowel adj cancer$).mp.

23 (bowel adj carcinoma$).mp.

24 (bowel adj adeno?carcinoma$).mp.

25 (bowel adj neoplasm$).mp.

26 (bowel adj tumo?r$).mp.

27 (bowel adj lesion$).mp.

28 (bowel adj adenom$).mp.

29 (bowel adj sarcom$).mp.

30 (bowel adj malignan$).mp.

31 (colorectal adj cancer$).mp.

32 (colorectal adj carcinoma$).mp.

33 (colorectal adj adeno?carcinoma$).mp.

34 (colorectal adj neoplasm$).mp.

35 (colorectal adj tumo?r$).mp.

36 (colorectal adj lesion$).mp.

37 (colorectal adj adenom$).mp.

38 (colorectal adj sarcom$).mp.

39 (colorectal adj malignan$).mp.

40 (colon$ adj cancer$).mp.

41 (colon$ adj carcinoma$).mp.

42 (colon$ adj adeno?carcinoma$).mp.

43 (colon adj neoplasm$).mp.

44 (colon$ adj tumo?r$).mp.

45 (colon$ adj lesion$).mp.

46 (colon$ adj adenom$).mp.

47 (colon$ adj sarcom$).mp.

48 (colon$ adj malignan$).mp.

49 (rectal adj carcinoma$).mp.

50 (rectal adj cancer$).mp.

51 (rectal adj adeno?carcinoma$).mp.

52 (rectal adj neoplasm$).mp.

53 (rectal adj tumo?r$).mp.

54 (rectal adj lesion$).mp.

55 (rectal adj adenom$).mp.

56 (rectal adj sarcom$).mp.

57 (rectal adj malignan$).mp.

58 (rectum adj carcinoma$).mp.

59 (rectum adj cancer$).mp.

60 (rectum adj adeno?carcinoma$).mp.

61 (rectum adj neoplasm$).mp.

62 (rectum adj tumo?r$).mp.

63 (rectum adj lesion$).mp.

64 (rectum adj adenom$).mp.

65 (rectum adj sarcom$).mp.

66 (rectum adj malignan$).mp.

67 (sigmoid adj cancer$).mp.

68 (sigmoid adj adeno?carcinoma$).mp.

69 (sigmoid adj neoplasm$).mp.

70 (sigmoid adj tumo?r$).mp.

71 (sigmoid adj lesion$).mp.

72 (sigmoid adj adenom$).mp.

73 (sigmoid adj sarcom$).mp.

74 (sigmoid adj malignan$).mp.

75 or/1-74

76 Early Detection of Cancer/

77 exp Occult Blood/

78 exp Immunochemistry/

79 exp Endoscopy, Gastrointestinal/

80 exp Colonoscopy/

81 exp Sigmoidoscopy/

82 Colonography, Computed Tomographic/

83 (disease adj2 detect$).tw.

84 endoscop$.mp.

85 colonograph$.mp.

86 colonoscop$.mp.

87 sigmoidoscop$.mp.

88 rectosigmoidoscop$.mp.

89 proctosigmoidoscop$.mp.

90 COL.mp.

91 SIG.mp.

92 FSIG.mp.

93 (flex$ adj3 sig$).mp.

94 faecal.mp.

95 fecal.mp.

96 feces.mp.

97 faeces.mp.

98 gFOBT.mp.

99 FOBT.mp.

100 FOB.mp.

101 haemoccult.mp.

102 hemoccult.mp.

103 sensa.mp.

104 hemocare.mp.

105 (hema adj screen).mp.

106 hemofec.mp.

107 fecatest.mp.

108 fecatwin.mp.

109 coloscreen.mp.

110 seracult.mp.

111 colocare.mp.

112 flexsure.mp.

113 immocare.mp.

114 hemochaser.mp.

115 hemeselect.mp.

116 immudia.mp.

117 monohaem.mp.

118 insure.mp.

119 hemodia.mp.

120 immocare.mp.

121 magstream.mp.

122 guaiac.mp.

123 (occult adj blood).mp.

124 (stool adj3 occult).mp.

125 (immunochemical$ adj3 test$).mp.

126 (immunochemical$ adj3 screen$).mp.

127 (immunochemical$ adj3 diagn$).mp.

128 (immunologic$ adj3 test$).mp.

129 (immunologic$ adj3 screen$).mp.

130 (immunologic$ adj3 diagn$).mp.

131 EIA.mp.

132 RPHA.mp.

133 exp Mass Screening/

134 exp Population Surveillance/

135 surveillance.mp.

136 (early adj3 detect$).mp.

137 (early adj3 prevent$).mp.

138 screen$.mp.

139 or/76-138

140 interview$.mp. [ qualitative search filter - validated ]

141 experience$.mp.

142 qualitative.tw.

143 or/140-142

144 75 and 139 and 143

145 exp Animals/ not (exp Animals/ and Humans/)

146 144 not 145

**Supplementary Table S2.** Descriptive characteristics of included studies and main findings, by qualitative design and quality.

|  |  |  |
| --- | --- | --- |
| Lead authorYear Country | Study Design | Main Findings (Italicized text represents quotes or utterances) |
| Sample/ Age (years) | Ethnicity | SES | Theoretical framework | Analytical method | K: Knowledge; P: Perception; C/B: cue/barrier to action; HCS: Health care system; G: Gender; SES: Socioeconomic; C: Cultural |
| Focus Groups |
| *Quality: Meeting ≥ 8/10 CASP criteria* |
| Beeker2000USA([1](#_ENREF_1)) | 14 focus groups (10-11/ group)Range: >50 | White- American/ African American (AA) | N/R | PPM  | Organizing data based on predefined categories | K: *Overall, they were poorly informed about colorectal cancer and the possible benefits of screening, reporting little or no information from physicians or mass media.*P: *Negative attitudes toward screening procedures, and fear of cancer.* C/B: *Despite references to the subject matter as embarrassing or private, both men and women, African Americans and whites, appeared to talk candidly and comfortably in the permissive context of the focus group.* |
| Weitzman 2001 USA([2](#_ENREF_2)) | Females (F): 22Males (M): 17Range: >50 | White-American(one younger AA male was also included) | N/R | HBM, Social Cognitive Theory | Content analysis and organizing data based on predefined categories,Narrative analysis  | K: *CRC-related knowledge is low, and misperceptions are common.* HCS: *Provider practices reinforce low levels of perceived risk.* *Multiple barriers to screening exist, of which many are remediable.*  |
| Holmes-Rovner2002USA([3](#_ENREF_3)) | All:21AA range: 55-86. White: range: 60-64  | White-American/AA | Mixed | N/R | Thematic analysis  | K: *White women were better informed about screening purposes and procedures.* P: *All participants believed in the efficacy of cancer screening.*C/B: *Potential for pain from screening or treatment of CRC, should it be discovered.*HCS: *The major barriers to screening were quality of care (ie. the perceived lack of offering screening and the follow-up of test results).* |
| O'Malley 2002USA([4](#_ENREF_4)) | F: 34M: 36 Range: 20-80 | Latin American | Low  | N/R | Content analysis | K: *Lack of knowledge about cancer screening particularly colorectal cancer screening.*C/B: Fatalism and embarrassment.HCS: Non-concordant physician gender and resource constraints of *primary care serving the uninsured*.SES: Perceived costs of screening tests.  |
| Goel2004Canada([5](#_ENREF_5)) | F: 22M: 19 Mean: 61  | N/R | N/R | N/R | Thematic analysis | K: *Low levels of knowledge about colorectal cancer and its prevention in the general population.* C/B: *FOBT was an acceptable screening modality. Colonoscopy was not perceived to be a good choice for a primary screen in the general population.* |
| O'Sullivan 2004United Kingdom([6](#_ENREF_6)) | F: 11M: 25Range: 35-70  | White (UK) | N/R | HBM | Thematic analysis | K: *Colorectal cancer viewed as having severe quality of life impacts.* Regarded as being caused by diet. C/B: *Having to complete the FOBT oneself may also be viewed as giving an individual more personal control over the procedure*; *The psychological impact of actually handling faecal matter; completing a screening test raises anxiety and fear amongst those invited to participate.* *Fear of an abnormal test outcome was viewed by participants as a potential barrier to compliance.* |
| Royak-Schaler2004USA([7](#_ENREF_7)) | F: 42Range: 40-60  | AA, Hispanic American | Low  | Approaches to Risk Communication  | Code-based analysis  | C/B: *Strong participant interest in strategies necessary to understand and reduce the risk of developing breast and colorectal cancers. Preferred risk communication tools presented information about family history and personal risk in graphic and quantitative formats.*  |
| Dube2005USA([8](#_ENREF_8)) | All: 53Range: 18-75 | Non-Hispanic White-American, Hispanic, AA,Asian-American | Mixed  | N/R | Code-based analysis  | HCS: *Lack of explanations during physical exams resulted in negative experiences. Men were eager to learn more about their health, but commonly complained that they received neither appropriate cancer screening nor sufficient explanations from their physicians.* *These men desired more discussion and better sources of health information during medical encounters.*G: *Men in this study prefer physicians who establish interpersonal relationships with male patients.*  |
| Greiner 2005 USA([9](#_ENREF_9)) | All: 55Mean: 56  | AA  | Low  | HBM | Thematic analysis  | K: *Knowledge—lack of CRC knowledge and a desire for more information* P: *Hope—a positive attitude toward screening.*HCS: *Mistrust—distrust that the system or providers put patients first.*C/B: *Fear—fear of cancer, the system, and of CRC screening procedures**Fatalism—the belief that screening and treatment may be futile and surgery causes spread of cancer,**Accuracy—a preference for the most thorough and accurate test for CRC* |
| Coronado 2006 USA([10](#_ENREF_10)) |  All:43> 50 | Hispanic-American | Low  | N/R | Principles of qualitative research suggested by Morgan and Krueger([11](#_ENREF_11)) | K: *Few focus group participants had ever heard of colorectal cancer or specific screening exams to detect early forms of cancer.* P: *Respondents commonly expressed fatalistic attitudes about their chances of recovering from cancer, some preferred not to know if they had cancer or believed that they would refuse treatment if diagnosed with cancer.*C/B: *Participants identified cost of medical care and embarrassment about receiving colorectal exams as barriers to screening participation.* *Nevertheless, many participants noted that strong support from family and friends or a strong will would allow one to survive cancer.* |
| Goodman 2006USA([12](#_ENREF_12)) | All: 70F: 43 M: 27Mean: 60Range: 50-80  | South American (Peru, Bolivia, Colombia),Central America (El Salvador, Honduras(US) | Low  | N/R | Content analysis | K: *Lack of understanding of the screening procedures, inadequate knowledge about CRC.*HCS: *Inadequate number of Spanish speaking providers, lack of funding and resources. Physician recommendation.* SES: *Cost of screening* |
| Greisinger 2006USA([13](#_ENREF_13)) | In FG1: F: 17 M: 2Median:58Range: 50-81 In FG2: F: 13M: 10Median59Range: 51-65 | White-American,AA,Asian,Hispanic | N/R | N/R  | Thematic analysis | K: *Low knowledge about CRC. Some participants initially failed to recognize the difference between sigmoidoscopy (SIG) and colonoscopy (COL).* C/B: *Fear and embarrassment about CRC and CRCS. Attitudes towards the fecal occult blood test (FOBT) were mixed, with some participants considering it difficult to finish and others preferring the privacy it afforded. Several endoscopy-specific barriers were identified such as dislike or fear of test preparation. Some participants felt that endoscopy was likely to be more effective than FOBT, and others clearly preferred COL to SIG.* HCS: *System-specific barriers to endoscopy (e.g. difficulty scheduling appointments and insurance coverage) were also identified.* |
| Fernandez 2008USA([14](#_ENREF_14)) | All: 88F: 55M: 33Range: ≥40 | Hispanic American | Low  | PRECEDE | Thematic analysis  | K: *Lack of patient knowledge about CRC and screening appeared to be a critical factor influencing screening.* P: *Themes about death and pain due to cancer were prevalent.* C/B: *Machismo and embarrassment*. HCS: *Frustration and a lack of confidence in the U.S. healthcare system.* *Few participants had been advised by their providers to obtain CRC screening.* Medical insurance. SES: Transportation impacted screening.. |
| Friedemann-Sanchez2007USA([15](#_ENREF_15)) | All: 70Range: 50-78  | AA, White-American,Hispanic, Asian  | Low  | N/R | Grounded and interpretive text analysis | G: *Women viewed the preparation for endoscopic procedures as a major barrier to screening while men did not; women and men expressed different fears and information preferences regarding endoscopic procedures; and women perceive CRC as a male disease thus feeling less vulnerable to CRC.* *Gender-specific barriers may explain women’s lower rate of screening for CRC.* |
| Goldsmith 2008USA([16](#_ENREF_16)) | All: 15Mean: 56  | AA,Caucasian-American, Latinos | N/R | N/R | Thematic analysis | K: Lack of information.P: Fear. HCS: *Failure of the physician to strongly recommend CRC screening.*  |
| Baron-Epel 2009Israel([17](#_ENREF_17)) | F: 41M: 41Range> 50 | Jewish Israelis | N/R | Learning hierarchies | Thematic analysis | K: *Medical knowledge expressed in the focus groups was high. Cancer was regarded as many distinct diseases, each one with different chances of early detection and cure.*P: CRC was regarded as fatal. *Participants expressed great fear of cancer, particularly fear of treatments and death. Genetics was expressed as having a fatalistic role and as prompting early detection.* |
| Feeley2009USA([18](#_ENREF_18)) | All: 103F: 54M:49Range: 50-80 | White-American  | Mixed | N/R | Content analysis and constant comparative analysis  | HCS: *Physician recommendation and knowing someone who has/had cancer were the most common factors motivating patients' decision to complete CRC screening. Results are framed according to patient and clinician perceptions of self-efficacy related to CRC screening.* |
| Francois 2009USA([19](#_ENREF_19)) | F: 27M: 18MedianF:49 / M:55 | Haitian | Low  | N/R | Thematic analysis | P: *Many expressed that they simply do not want to know whether there is something wrong with them*; *going to a doctor only when there is an obvious reason to do so.*HCS: *Without insurance it may not be possible to get quality care*; concordant physician gender, *English language was a significant barrier to health care access*. *Participants had not undergone screening because their doctors never talked to them about it.* SES: *The majority of the participants did not know where, or what, the colon was.* C: *There was the belief among some that home remedies such as ‘‘ti bonm’’ (peppermint leaves) can cure anything* |
| Holt2009USA([20](#_ENREF_20)) | All: 165 Mean:63  | White-American,AA | Mixed  | Standard focus group discussion guide consistent with the HBM | Miles and Huberman’s process,([21](#_ENREF_21)) close-textual analysis  | K: *Knowledge among participants was limited regarding age to begin screening, insurance coverage and risk factors for CRC.* P: *Perceived barriers to screening included lack of physician recommendations cost/lack of insurance coverage, pain/discomfort and embarrassment.* C: *African-American men reported postponement in seeing their physicians. White women were proactive at initiating discussion of CRC screening with their providers while African-American women felt that providers should drive the process.* |
| Oscar2009USA([22](#_ENREF_22)) | All: 37Mean: 69.2  | AA  | Middle  | HBM, Trans-theoretical model, and resilience theory | Grounded theory, constant comparative method | K: Lack of knowledge.P: Fear, lack of symptoms.C/B: Embarrassment. peace of mind, *open communication with family/friends, and presence of symptoms*HCS: *Screening as part of comprehensive care, doctor’s recommendation*.SES: Lack of money/insurance.C: Homeopathic remedies |
| Ruffin2009USA([23](#_ENREF_23)) | All: 93Mean: 60  | AA, Caucasian Americans | Mixed  | N/R | Thematic analysis  | *K: Participants had modest knowledge about CRC and there were fewer correct answers to knowledge questions by African Americans.* *P: Participants recognized value of early detection, and identified health symptoms.* *C/B: They chose colonoscopy and FOBT as the most preferred tests, while barium enema was least preferred.**HCS: Doctor’s recommendation as influential for obtaining CRC screening.* |
| Bass2011USA([24](#_ENREF_24)) | All: 23F: 15M: 8Range:50-64 | AA | N/R | N/R | N/R | K: *A general lack of knowledge about CRC and screening modalities.*C/B: *All groups were also found to have a negative attitude about the use of fecal occult blood testing and felt colonoscopy was the superior screening modality.*G: *Women had an overall sense that health screenings were needed and indicated a stronger need to have a positive relationship with their doctor.* *Women also reported that African American men do not get colonoscopy because of the perceived sexual connotation. Men who had never been screened, compared to those who had been screened, had less trust of their doctors and the health care system and indicated an overall fear of going to the doctor. They also reiterated the sexual connotation of having a colonoscopy and were apprehensive about being sedated during the procedure.*  |
| Diaz2011USA([25](#_ENREF_25)) | All: 37F: 19M: 18MeanF:58.7 M:56.3 | Spanish-speaking Latinos(US) | Low | HBM, the PAPM, the Preventive health model | Immersion/crystallization  | K: *Participants frequently referred to the role of diet in keeping the colon "clean," suggesting that retained feces increase CRC risk.* P: *General cancer risks, risks related to nutrition and the digestive tract, and risks related to sexual practices.* G: *Among both men and women, rectal sex was commonly associated with increased CRC risk* |
| Molina-Barcelo2011Spain([26](#_ENREF_26)) | All: 56Range50-69  | Spanish (Spain) | Mixed | HBM and Social Determinants of Health | Discursive analysis  | K: *Non-participants and those with lower SES tended to have less knowledge about both the disease and the programme.* G: *Women were motivated because they value the importance of self-care and early detection in order to prevent personal and family suffering while men were encouraged by their partners.* *Women feared the results and considered the test unpleasant whereas men showed carelessness and lack of concern.* SES: *In population-based programmes people with lower SES and men are those with the most obstacles to participation due to low health literacy and traditional gender roles respectively.* |
| Garcia-Dominic 2012USA([27](#_ENREF_27)) | All: 82F: 42M: 40Range26-77 | Latino(US) | Low  | HBM | Content analysis  | P: *Fear of having/getting cancer*; *Inability to accept bad news;*and lack of spousal support, fatalism, *fear of no cancer cure*. HCS*: Lack of medical teams visiting the community, scheduling challenges, lack of CRC education, incorrect CRC information, cost, lack of health insurance to pay doctor/treatment or co-pay, and lack of payment instalment options for screening or treatment services**Wait time,**Not trusting the doctor or medical system**The exclusion of family members at the doctor’s visit and health education opportunities as barriers.* G: Male machismoSES: *Language barriers due to limited English proficiency*, lack of transportation, lack of nearby clinic, limited income, time constraints. |
| Jilcott Pitts 2013USA([28](#_ENREF_28)) | All: 45Median50 | AA,White-American non-Hispanic,American Indian/Alaskan native, Other | Low  | HBM | Thematic analysis  | C/B: *Support from family and friends, and the desire to live a long and healthy life.* Fear of the test itself (colonoscopy), fear of cancer diagnosis, and fear of burdening family members. HCS: Doctor’s recommendation.G: *Violation (among men) and embarrassment (among women).* SES: *High cost of tests and follow-up care.* |
| Palmer2014UK([29](#_ENREF_29)) | All: 128F: 61M: 67Range60-74 | White-English,South-Asian,African-Caribbean,West-African(UK) | Mixed | N/R | Grounded Theory | K: *Feeling well was associated with low perceived relevance of screening.*P: *Not knowing screening results was reported to be preferable to the implications of a positive screening result.*C/B: *Participants described sampling faeces and storing faecal samples as broaching a cultural taboo, and causing shame.**Completion of the test kit within the home rather than a formal health setting was considered unsettling and reduced perceived importance.* *Talking about bowel cancer screening with family and peers emerged as the key to subsequent participation in screening*. |
| Ekberg2014UK([30](#_ENREF_30)) | All: 33F: 18M: 15Range60-69 | British  | Mixed | N/R | Thematic analysis | K: *Lack of disease symptoms.* HCS: *Prior experience with health systems.*P: *Association of screening with entry into old age*. *Individual perceptions of risk (and benefit);* *fear of becoming a cancer patient after the screening test.* C/B: *Embarrassment associated with completing the test and messages that adopt a paternalistic ethos;* *Support of a significant other.* |
| *Quality: Meeting 4-7/10 CASP Criteria* |
| Katz2004USA([31](#_ENREF_31)) | All: 45Mean: 63Range≥ 50  | AA | N/R | N/R | Factor analysis, analysis of variance, and logistic regression | HCS: *Quality of the participants' communication with their health care provider.*  |
| Fyffe2008USA([32](#_ENREF_32)) | M: 24Range:22-85  | AA  | Low | HBM | Immersion/ crystallization  | P: *Fear associated with screening*.HCS: *Patient–doctor relationships, insurance and mistrust of healthcare professionals.* |
| Woodrow 2008UK([33](#_ENREF_33)) | All:86Range: 60–69  | White British, Asian, European | N/R | N/R | Thematic analysis | K: Whilst some believed it was appropriate for information regarding the *potentially negative aspects of the programme to be communicated at the outset, others expressed concerns about the generation of anxiety and potential for decreased participation. A number of participants questioned the concept of informed choice, arguing that once in place a screening programme should be vigorously promoted*.P: *The majority of participants expressed positive attitudes towards bowel cancer screening, identifying items highlighting the benefits of the programme as important for others to know.* |
| Austin2009UK([34](#_ENREF_34)) | All: 53 Range50-78 | African-Caribbean, GujaratiIndian, Pakistani, White-British  | High  | HBM | Framework analysis approach | K: *Most participants expressed limited awareness of bowel cancer and cited this as a barrier to screening attendance.* C/B: *Anxiety regarding the invasiveness of the test, the bowel preparation and fear of a cancer diagnosis were common barriers across all ethnic groups.* C: *Language difficulties, failure to meet religious sensitivities and the expression of culturally influenced health beliefs were all discussed as specific barriers to uptake*.  |
| Jones2010USA([35](#_ENREF_35)) | All: 40Range45-75 | N/R | Low  | N/R | Thematic analysis  | K: *Lack of information.*P: *Participants also cited barriers that have little documentation in the literature, such as low self-worth, “para-sexual” sensitivities, fatalism, negative past experiences with testing, and skepticism about the fınancial motivation behind screening recommendations.*C/B: *Fear and the bowel preparation as the most important barriers to screening.* HCS: *The role of physicians, and access to care.* |
| Varela2010USA([36](#_ENREF_36)) | All: 35 Mean62.5 | Hispanic-American | N/R | Outline of topics based on available screening colonoscopy literature provided by Lina Jandorf (Second author), used to guide the focus groups | N/R | C/B: *Reasons for getting screened included peace of mind; influence from family and friends; and wanting to prevent CRC.* *Barriers included fear of finding cancer and fear of the examination*. |
| Hatcher2011USA([37](#_ENREF_37)) | All: 17 Patients:≥50  | N/R | Mixed  | N/R | Thematic analysis  | K: *Participants conceptualized their own barriers as fear, inadequate knowledge.* C/B: *Features of the screening tests themselves*.HCS: *Distrust of the medical system and providers*, *and to a lesser degree than anticipated, financial limitations; and more pressing health concerns*. |
| James2013USA([38](#_ENREF_38)) | All: 29Range≥50 | American Indian | N/R | N/R | Thematic analysis | K: *Men in the study felt that awareness about CRC was low, and people were interested in learning more.*HCS: Insurance and cost; negative perception of clinicians. |
| Ramos2013Spain([39](#_ENREF_39)) | 46Range50-69 | Spanish(Spain) | N/R | N/R | Thematic analysis | K: *The participants requested more information on cancer and felt they were at risk, mainly because of their age.* P: *The key element was diagnosis at an early stage. Until recently, cancer was considered an incurable disease but is currently perceived as a serious health problem that can be cured if diagnosed promptly.* C/B: *Attitudes to colorectal cancer screening were generally positive, even to colonoscopy. Some barriers to screening were identified in women, such as a fear of having cancer.*G: *Men tended to pay attention to symptoms while women tended to ignore them.*  |
| In-depth interviews |
| *Quality: Meeting ≥ 8/10 CASP criteria* |
| Taylor2000UK([40](#_ENREF_40)) | All: 60Range55-64 | N/R | N/R | N/R | N/R | C/B: *The sensations caused by air in the bowel were also a source of embarrassment to some interviewees.*HCS: *Information giving—When interviewees referred to staff as “helpful” they frequently linked this with positive comments about the way staff explained procedures, volunteered information, answered and encouraged questions: “It was all explained and we were talked through it all the way—I thought it was marvellous.”*G: *Male embarrassment in comparison to female familiarity with medical examinations: “It’s not like you’re a woman and you go and have babies”.**One woman said she would have been less embarrassed with a female doctor.* |
| Denberg 2005USA([41](#_ENREF_41)) | F: 27M: 25Range>50 | Hispanic,AA,White-American, Other | Mixed | N/R | Grounded Theory | K: *Only 40% of patients were aware of alternative screening options.*P: *Lack of perceived risk for CRC, fear of pain.* C/B: *Concerns about modesty and the bowel preparation*. *Women reported more concerns about modesty and other aspects of the procedure than men.*HCS: *Scheduling challenges, long waiting times.* |
| Frew2005UK([42](#_ENREF_42)) | All: 106Mean55.5  | British  | N/R | N/R | N/R | C/B: *Individual preferences were subjective and dependant on attitudes towards a variety of method characteristics, such as discomfort, convenience and perceived sophistication.* SES: *Characteristics such as age and low income, which had predicated preferences in the questionnaire study.* |
| Shokar2005USA([43](#_ENREF_43)) | All: 30MeanWhite:65AA: 65.3Hispanic:63.1Range51-80  | White-American,AA,Hispanic | N/R | HBM | Call-recall technique | K: *All groups, but particularly minority groups, lack knowledge of cancer, CRC, and screening. They did not understand the concept of screening, had difficulty listing common cancer and CRC screening tests, and had trouble understanding simplified medical terms and procedure names*. P: *Patients were hopeful about the benefit of early cancer diagnosis but remained reluctant to get tested if they are symptom free.* |
| Wackerbarth2005USA([44](#_ENREF_44)) | All: 30Range48-55Mean54  | White-American, AA, Asian, Native American  | High  | HBM | Thematic analysis  | C/B: *Concern for one's personal well-being, competing demands, preparing for the procedure, the screening process, gender concerns, fear of having cancer, feeling healthy, cost, the experiences of others, and turning 50 years old.* |
| Choe2006USA([45](#_ENREF_45)) | All: 30 Range50-79 | Chinese American  | Low  | Bastani’s Health Behaviour Framework([46](#_ENREF_46))  | Thematic analysis | P: *Participants presumed that FOBT is unnecessary in the absence of symptoms.*C: *When asked about CRC, interviewees discussed such concepts as maintenance of positive energy (qi) and spirit (jing shen) and moderation of exercise and diet. Interviewees believed that colorectal cancer was caused by diets high in food with ‘heat’ (hus qi) or by intestinal toxins from frequent constipation.*.  |
| Chapple2008 UK([47](#_ENREF_47)) | All: 44Range>58 | White British, Black Caribbean(UK) | N/R | HBM | Thematic analysis,constant comparative analysis  | C/B: *Reasons for accepting screening included: knowing someone with cancer, previous positive experience of women's screening programmes, being a "good citizen", previous bowel problems, and encouragement from others.* *Reasons for reluctance to take part included: feeling healthy, fear of outcome, lack of time, disgust at the idea of handling stools, concern about posting samples in the mail, misunderstanding instructions, and past (negative) experience or fear of colonoscopy.* |
| Green2008USA([48](#_ENREF_48)) | All: 40 Range53-70Mean60.3 | Latino-American, Non-Latino White-American | Low  | N/R | Framework method  | P: *Fear of pain or complications of colonoscopy and fear of diagnosis (cancer).*HCS: *Scheduling, financial, transportation, and language difficulties*. *Lack of provider recommendation including not hearing about colonoscopy or not understanding the preparation instructions.*C/B: *Lack of desire or motivation, including "laziness" and “procrastination";**Dissuasion by others’ influencing participants' decision regarding colonoscopy.* |
| Hoffman Goetz2008Canada ([49](#_ENREF_49)) | F: 74M: 26Range50-90 | N/R | Middle | N/R | Constant comparative | K: *Surprise at CRC information, and barriers to understanding cancer information*.HCS: *Physician screening recommendations*. |
| Lasser2008USA([50](#_ENREF_50)) | All: 23Mean 62.3 | White-American, AA, Hispanic/ Latino  | Low  | N/R | Constant comparative analysis | K: *Unscreened patients identified lack of symptoms as the reason they had not been screened*.P*: Patients, but not their physicians, cited fatalistic views about cancer as a barrier.* HCS: *Unscreened patients cited lack of trust in doctors as a barrier to screening whereas few physicians identified this barrier; A doctor's recommendation, or lack thereof, significantly influenced patients' decisions to be screened.* |
| Wackerbarth 2008USA([51](#_ENREF_51)) | All: 30Mean54 | White-American, AA, Asian or Pacific Islander, Native American or Alaskan Native | Mixed | Kurt Lewin’s field theory([52](#_ENREF_52))  | Constant comparative analysis | *C/B: “internal” and “external” factors that “pushed” a person away from or “pulled” a person toward CRC screening. Internal factors included health beliefs and prior experiences with health screening. External factors included the influences of health care providers, family, friends, and health insurance coverage.* *7 different patterns found for the decision making process among the participants.* |
| Ge2009USA([53](#_ENREF_53)) | All: 44 Range 50-77Mean61 | AA, Hispanic-American,Chinese-American, non-Hispanic White-American, Mixed cultural heritage | N/R | N/R | Thematic analysis | HCS: *Interpersonal relationship themes such as power distance, trust, directness/ indirectness, and an ability to listen, as well as personal health beliefs, emerged as affecting patients' definitions of provider-patient effective communication.* *In discordant physician-patient interactions physicians did not solicit or address cultural barriers to CRC screening and patients did not volunteer culture-related concerns regarding CRC screening.*Note: included observation |
| Goldman 2009USA([54](#_ENREF_54)) | All: 147Range>18  | DominicanAmerican, Puerto Rican-American | Mixed | Fields-of-interaction Theoretical framework([55](#_ENREF_55), [56](#_ENREF_56)) | N/R | K: *Many participants had not previously heard of CRC* P: *The most commonly mentioned cause of CRC was anal sex. Also considered risks were "bad food," digestion leading to constipation, and strained bowel movements. Screening barriers included stigma, misperceptions, embarrassment, and machismo.*  |
| Severino2009 Australia([57](#_ENREF_57)) | All: 20 F: 13M: 7Range54-78 | Italian-Australian | N/R | HBM, Kleinman & Helman’s cultural explanatory models for CRC([58](#_ENREF_58)) | Thematic Framework analysis  | C: *Participants articulated specific beliefs about the nature of cancer, risk factors, prevention possibilities, and variety of potential barriers and benefits to FOBT. Although participants' beliefs overlapped with conventional medical models of cancer, the results also demonstrated the presence of specific cultural perceptions that might influence FOBT participation.* |
| Winterich 2009USA([59](#_ENREF_59)) | M:64Range40-64 | White American,AA | Mixed  | Masculinity and health theory framework | Identified major and minor themes  | G: *Some men disliked colonoscopies because they associated any penetration as an affront to their masculinity.* *Many men avoid or dread cancer screening exams involving the rectum because of concerns related to masculinity and sexuality.* |
| Von Wagner 2009UK([60](#_ENREF_60)) | All: 49F: 35M: 14 Range57-92Mean71 | British  | N/R | N/R | Thematic analysis  | K: *Information provision was also an important determinant of experience*. HCS*: Social interactions with staff were perceived as very important in colouring the whole experience, particularly in controlling the feelings of embarrassment, which was critical for all procedures.* *Verbal feedback was most common during colonoscopy and invariably reassuring.* |
| Aubin-Auger 2011France([61](#_ENREF_61)) | F: 11M: 13Range50-74Mean60 | Parisian | N/R | Axial Coding framework | Grounded theory  | *K: Many patients had a poor knowledge about CRC screening, in particular those who were male, and being >60 years. Some thought that screening was only useful in the case of high-risk familial CRC*. *Lack of symptoms was one of the main reasons for doubting the test’s usefulness.*P: *Participants were afraid of having responsibility for the testing process and feared that a poor technical performance could induce a false positive or negative result.* *Screening for cancer did not match some patients’ perception of health* care. *These patients preferred to manage their health in a different way, such as eating healthy food or exercise.* *Forgot to perform the test; others lacked time or were indifferent.**HCS: Some patients stressed that feeling their GP’s involvement was important to them.* |
| Bong2011New Zealand([62](#_ENREF_62)) | All: 25Mean56 | New Zealand-Chinese (born in Asian countries) | High  | N/R | Grounded theory  | P*: Participants valued health care and preventive health measures**were highly prioritised. However, CRC suffered from the 'poor cousin' syndrome whereby other more highly publicised cancers, such breast cancer, or skin cancer, were perceived to be more relevant and serious, thus marginalising the perceived priority of CRC screening.* HCS: *Patient practitioner interaction was also found to be influential in the patient's decision to seek screening.* C: *Overall, participants paid close attention to their bodies' balance and were proactive in seeking medical advice*.  |
| Gwede2011USA([63](#_ENREF_63)) | All: 62 Range50-76 | AA (US born); Carribean born-American; Haitian born-American  | Mixed  | N/R | Content analysis,Constant comparison  | C*: No major differences among the 3 ethnic subgroups in their overall perceptions of cancer as well as their attitudes related to barriers, motivation, and resources for CRC screening. Subtle differences in perceptions of curability, preventive practices, and preferred sources of information*  |
| Ward2011Australia([64](#_ENREF_64)) | Overall: 121 Iranian: 24Greek: 23 Vietnamese: 24 Australian: 27 Indigenous: 23 Range35-75 | Greek Vietnam-eseIranianAnglo -Australian Indigenous | N/R | N/R | Mixed methods; Inductive and deductive coding process-exploratory  | K: *Very few participants were aware of CRC or CRC screenings. Low knowledge, and hence lack of awareness of high prevalence or mortality rates from CRC, in addition to potential for prevention through screening, was cited as a major barrier to participation.* C/B: Peace of mind.HCS: *Lack of a recommendation was the most commonly cited* barrier.SES*: Language barriers were considered a key issue for the majority of non-English-speaking participants.*  |
| Winterich 2011USA([65](#_ENREF_65)) | M: 65 Range40-64 | AA, White-American | Mixed  | Explanatory models of illness | Thematic analysis | C/B: *Education was associated with knowledge about CRC and the colonoscopy. Screening status and education were related to FOBT knowledge.* G: *Men knew little about the sigmoidoscopy* |
| Bapuji2012Canada([66](#_ENREF_66)) | Physicians: 15; Patients: 27; family members: 19Range (family members)≥50 | N/R | N/R | N/R | An interpretive description approach, Grounded approach | K: *Individuals at average-risk for* *CRC identified that FOBT instructions were confusing and burdensome, which in turn served as a barrier in their adherence to FOBT screening.* |
| Getrich 2012USA([67](#_ENREF_67)) | 8 ProvidersClinicstaff: 6; Patients52Range>50 | Health care providers mostly Non-Hispanic White-American; staff mostly Hispanic Patients: Hispanic | N/R | N/R | Iterative analysis;Thematic analysis  | G*: We found that machismo served as a dynamic influence on men’s health-seeking behaviors; however, it was conceptualized differently by two distinct Hispanic subpopulations, and therefore appeared to play a different role in shaping their screening attitudes and behaviors. Machismo emerged as more of an influence for Mexican men, who expressed concern over colonoscopies being potentially transformative and/or stigmatizing, but was not as salient for Hispanos, who viewed the colonoscopy as “strictly medical,” and were more concerned with discomfort and pain.* |
| Greiner2012USA([68](#_ENREF_68)) | F: 26M: 24Range50-78Mean60 | AA, Hispanic/Latino/ non-Hispanic White-American | N/R | Fishbein and Ajzen’s Theory of planned behaviour([69](#_ENREF_69)) | Constant comparative | *C/B: FOBT specific themes included: sample collection and return. For colonoscopy screening, themes included: scheduling, intervention questions, colonoscopy preparation, and transportation.* HCS: *Personal concerns, reminders, communication with healthcare providers and obtaining test results.*  |
| Lobchuk 2012 Canada([70](#_ENREF_70)) | 27 patients, 19 family membersMean66 | N/R | N/R | Social support theory  | Content analysis and constant comparative techniques.  | C/B: Family members and friends exhibited various *instrumental, emotional, informational, and appraisal roles outside the medical encounter in promoting adherence to FOBT screening recommendations. With increasing emphasis on preventive health behaviours, the vital role of ‘family as partner’ in promoting adherence to CRC screening should be recognized and supported by the health care system, policies, and care providers.* |
| Manne2012USA([71](#_ENREF_71)) | All: 36 MeanF:61.9 M: 64.5Range: 51-89 | White-American | N/R | Interdependence model  | Thematic analysis  | C/B*: Direct partner effects were evidenced when the impact of one spouse on the CRC screening decision of the other was clearly defined and intended. Three direct partner effect themes were leadership, persuasion, and partnership. Indirect partner effects were evidenced by one spouse considering the information, experience, or actions of the other in ways that informed CRC screening decision-making, even if that influence was not intentional or specifically directed at CRC screening. Three indirect partner effect themes were companionship, support, and peer socialization.* |
| Lee2013USA([72](#_ENREF_72)) | All: 26F: 15M:11Range50-88 | Korean American | N/R | N/R | Thematic analysis; Reflexive thinking | *K: Seeing a doctor only if they have symptoms.**Refusing health information.**P: Believing that they would not get CRC; balancing the will to stay healthy and fatalism.**C/B: Valuing their families before themselves.* |
| Ritvo2013 Canada([73](#_ENREF_73)) | F: 49M: 32MeanF:63.7M: 65.2 | N/R | N/R | Gender differences in disease prevention/PAPM | Constant comparative | *K: Men were less knowledgeable than women.* *P: Avoidant procrastination with underlying fatalism, unnecessary health care and uncomfortable vulnerability for males*. Men kept decision-making processes vague and emotionally distanced (i.e. at ‘arm’s length’).*C/B: Bodily intrusion, perforation anxiety, and embarrassment for females*.G: *Women had more consistent physician relationships, were more screening- knowledgeable and better able to articulate views on screening. Men reported less consistent physician relationships.*  |
| Sly2013USA([74](#_ENREF_74)) | All: 16Mea60  | AA | Low  | Social ecological framework | Thematic content analysis  | *K: Lack of knowledge about CRC.**C/B: Fear/anxiety about the procedure, including unknown expectations, fear of pain, and fear of cancer diagnosis and believing that cancer leads to death.**HCS: Inadequate physician communication about CRC and the colonoscopy exam. Participants felt that greater communication and explanation from their physician might help allay their fears.* |
| Oster2014Australia([75](#_ENREF_75)) | All:35Range50-74 | N/R | N/R | Hegeomonic Masculinity | Theoretical thematic analysis | P: Preventative health care in general as being important to them.*C/B: Discourses of responsibility, risk, rationality and control in discussing their views of screening for CRC.**The decision [to screen] occasionally involved some influence from partners/spouses and health professionals.* |
| Palmer2008USA([76](#_ENREF_76)) | All: 36Range: 51-89Mean 63.2; Husbands64.5, Wives 61.9 | White-American | Mixed | PRECEDE | Grounded theory  | K: Adherent individuals *demonstrated a more in-depth understanding of CRC screening including the purpose of the screening, types of CRC screening tests, and appropriate testing intervals.*P: *A theme that emerged only in nonadherent participants dealt with the fear of detection of CRC.*C/B: *CRC screening priority was reduced when chronic health conditions existed and when individuals faced financial and personal obligations*.G: *Nonadherent women believed that CRC is a disease that affects primarily men and therefore women are at lower risk.*HCS: *Adherent men and women discussed the importance of healthcare provider recommendations in their decision to screen* |
| *Quality: Meeting 4 – 7/10 CASP criteria* |
| Holt1991USA([77](#_ENREF_77)) | All: 20 | N/R | N/R | N/R | Close-textual analysis | HCS: *Respondents reported that their physician's recommendation had a strong positive influence on their decision to have sigmoidoscopic screening.* *In all cases, the patients stated that they would not have had a sigmoidoscopy without the recommendation of their physician.*C/B: *Family and personal experiences with cancer.* *Respondents were little influenced by exposure to the media or by famous personalities.* |
| McCaffery 2001UK([78](#_ENREF_78)) | All: 60Range55-64 | N/R | N/R | N/R | N/R | P*: The findings suggest that low perceived susceptibility to bowel cancer.**C/B: Family history or absence of bowel symptoms was an important factor in the decision to decline screening. Procedural barriers such as embarrassment, pain/discomfort and perceived unpleasantness of the test were reported as relatively minor, although the test was considered more physically intrusive than other screening tests.* *Avoidant attitudes emerged as an important theme and were reported by a third of respondents*.  |
| O'Malley 2004USA([79](#_ENREF_79)) | All:40F: 18M: 22Range50-75 | AA, Latino, American Indian | Low  | PPM  | Content analysis  | K: *Low level of patient knowledge about colorectal cancer screening, especially about the FOBT procedures. They also noted lack of knowledge about the test’s sensitivity, and the treatability of colorectal cancer when found at an early stage.**C/B: Procedural issues related to screening**HCS: Patients volunteered that clearer instructions from providers on how to take the samples (frequency, amount of stool needed,**food restrictions, etc.) would increase the likelihood that they would do the test in the future.*SES: *Prevention often took a back seat to acute illness or to daily survival for persons with low incomes.* |
| Hou2005Taiwan([80](#_ENREF_80)) | F: 20M:12Range39-58Mean42 | Chinese | N/R | N/R | Immersion/crystallization | K: *Intentions to have FOBT were influenced by current symptoms or family history*C/B*: Avoidance of facing problems. Embarrassment and lack of acceptance of preventative behaviour.*HCS*: Physician recommendation and self-health condition were more important for the intention to use flexible sigmoidoscopy or colonoscopy*. C: *Misconceptions about cancer screening and benefits of screening.*  |
| Ogedegbe 2005USA([81](#_ENREF_81)) | F: 187Range50-69 | AA, Latino | Low  | PPM | Content analysis  | K: *The most common barriers were a lack of cancer screening knowledge*P: *The perception of screening as routine was cited as a facilitator far more commonly for mammography and Pap tests than for CRC screening.* Patients' perception of good health or absence of symptoms attributable to ill health C/B*: Other facilitators of cancer screening identified by patients included personal medical history, presence of a symptom, and fear of pain from the cancer test*. HCS: *Clinician recommendation was the most commonly cited encouragement to cancer screening.* |
| Lasser2008USA([82](#_ENREF_82)) | F: 14M: 4 Mean71.9 | Hispanics, White-AmericanAA, Mixed, Other.  | Low  | PPM  | N/R | HCS: *Sharing of power and responsibility, the use of empathy, and treating the patient like a person were all important communication strategies which seemed to help address barriers to colonoscopy. PCP persistence as well as rapport and trust also appeared to facilitate receipt of CRC screening*. |
| McQueen 2009USA([83](#_ENREF_83)) | F: 47M: 17Range50-70 | White-American,AA, Hispanic | Mixed  | N/R | Thematic analysis Patient-audio recorded with physicians | P: *Patients expressed concerns about pain, side effects, and test invasiveness.*C: ‘*I’m of the opinion that if it ain’t broke, don’t fix it,’ or ‘never had any reason to’*SES*: Cost, distance to the clinic, needing a ride home, and scheduling/making time for the exam.*  |
| Palmer2010USA([84](#_ENREF_84)) | All: 60 Range50-76 | AA | Mixed  | N/R | Thematic analysis | C/B: *Most individuals interviewed preferred colonoscopy as compared to FOBT. Previous participation in CRC screening influenced how individuals made decisions about CRC screening. Enabling individuals without CRC screening experience to first complete FOBT might prepare them to later participate in colonoscopy screening.* |
| Reeder2011New Zealand([85](#_ENREF_85)) | All: 50F: 30M:20Range50-71Median59 | NZ European populationThat lived in or had access to urban health care facilities | N/R | N/R | Content analysis  | P: *Participants believed early CRC lacked distinguishing signs and symptoms, but was treatable and suitable for screening, although slow development may undermine any sense of urgency.* *C/B: FOBT inaccuracies caused concern, particularly false negatives, but ongoing testing could reduce anxiety. Specimen collection was awkward, challenged social norms and individual squeamishness, but provided peace of mind, was painless, simple and private without high cost technological or professional involvement. CRC lacked public profile, highlighting government responsibility, before programme implementation, to resource high-profile education, largely through* TV.HCS: *General practitioner support and promotion was seen as critical.**Inadequate health system capacity and resourcing was problematic.*G: *Lacking preventive attitudes and experience of health responsibilities and screening, men were less likely to participate than women.*  |
| Tarasenko 2011USA([86](#_ENREF_86)) | All: 41Range51-76Mean63 | White-American  | Mixed  |  N/R | Thematic analysis  | P: *Prevention was a secondary concern compared to disease management.**Preparation necessary for colonoscopy might interfere with disease management, particularly in the case of diabetes or other conditions requiring medication.* *C/B: Physical limitations, including mobility concerns, might make screening preparation difficult.**SES: Inadequate finances force people to choose disease management (which they know was necessary for their survival) or prevention (which seemed hypothetical and less urgent).* |
| Tarasenko 2011USA([87](#_ENREF_87)) | All: 30Mean54 | White-American, AA, Asian-American, Native-American | Mixed | PPM | N/R | C/B: *Commonly expressed barriers including unpleasant screening modality, lack of health insurance, and shortage of gastroenterologists to perform colonoscopy, participants described the ways in which multiple morbidities undermine screening. Barriers specific to multiple morbidity include competing demands from other conditions, such as financial pressures, physical limitations, and worries over regimen interference* |
| Foo2012 Singapore([88](#_ENREF_88)) | All: 72 Age: >50 | Chinese | N/R | N/R | Thematic analysis  | K: *CRC screening awareness was poor.* *Having no symptoms was the most common barrier.*  |
| Javanparast 2012 Australia([89](#_ENREF_89)) | All: 121Range50-75 | Greek, VietnameseIranian, Anglo-Australian, Indigenous | N/R | N/R | N/R | K: *Lack of knowledge about bowel cancer and its screening tests across all groups, and that the tests were viewed as unpleasant.* *P: Members of all groups expressed positive attitudes towards cancer screening.* *C/B: Issues that differed across groups included language barriers, fatalistic views about cancer, embarrassment, the importance of privacy,* *HCS: The significance of a doctor's recommendation, moral obligations.**C: Culture-specific concerns.* |
| Thompson 2012New Zealand([90](#_ENREF_90)) | Maori:30; non-Maroi:50RangeMaori40-60Non-Maroi50-70 | Māori and non-Māori (European/Anglo Saxon) | N/R | N/R | Thematic analysis  | G*: Perceived marginalization of men’s health with a sense that women had advocated for, and therefore monopolized, screening while men’s health had been left unattended. There were also perceptions of women’s responsibility for ensuring men’s access to health services. While health is perceived as being a feminine matter, it may be difficult to encourage men to engage in preventative behaviours, such as taking up the offer of screening. This article also highlights the heterogeneity of men, where different performances of masculinities were presented. A stereotypical ‘staunch’ or ‘macho image’ discourse was evident in some of the interviews where much emphasis was on maintaining and controlling bodily boundaries*. |
| Wong2013USA([91](#_ENREF_91)) | All: 29 Mean 68 | AA | Low | N/R | Content analysis | K*: Lack of knowledge about the importance of screening.* *Improved knowledge about colonoscopies is a significant facilitator to adherence.**C/B: Physician recommendation.* |
| *Quality: Meeting ≤ 3/10 CASP criteria* |
| Brouse2003USA([92](#_ENREF_92)) | F: 6M: 2Range54-72Mean61.4 | Hispanic, AA,White-American | Low  | N/R | Intensive qualitative analysis of the obtained information using pre-defined categories/ descriptive qualitative analysis  | *K:The main barriers were lack of CRC knowledge**P: Perceived lack of social support, and fear and concomitant denial that CRC ‘won’t happen to me.’* *HCS: Lack of communication skills and self-efficacy in skills to act on motivation, unavailability and inaccessibility of FOBT kits.*  |
| Good2010USA([93](#_ENREF_93)) | F: 131M: 66Mean47.6 | AA,White-American, Hispanic, Asian, Other | N/R | N/R | Thematic analysis  | *K: Lack of awareness: “No one told me that I should have a screening”.**P: Fear: “I am afraid what the doctor will find”.**Indifference: “I really do not want to know if I have colon cancer”.**SES: Transportation: “I have no transportation to get there and back home”.**Inconvenience: “The time when the office or hospital is operand is not a good time for me I work during the weekday and cannot get a day off“.* |
| In-depth interviews and focus group |
| *Quality: Meeting ≥ 8/10 CASP criteria* |
| Clavarino2004Australia([94](#_ENREF_94)) | In depth interviewF: 7M: 5No age rangeFocus groups: F: 9M: 9 Range52-70Mean58 | N/R | N/R | N/R | Iterative and inductive analysis.  | K: *Awareness of cancer was high, prior experience with FOBT.* *C/B: Respondents knew of someone, within their family or amongst their friends, who had experienced some form of cancer. This type of experience worked in two ways, it either motivated participation, or created such fear that it precluded participation: ‘. . . I just don’t want to know.’**HCS: With few exceptions, participants commented favourably on this approach kits were sent from the local GPs using the mail service. Some participants were especially motivated to complete the FOBT, since the kit was sent by the GP* |
| Beyer2011USA([95](#_ENREF_95)) | F: 30M: 30Mean61.8 | White-American, Taidam,Lao, Hispanic (US) | Mixed | The conceptual model of Salant andGehlert([96](#_ENREF_96)), with modifications based on Behringer and Friedell([97](#_ENREF_97)) | Concept mapping-exploratory  | K*: Nutritional risk factors associated with CRC, people don’t hear much about the tests.**P: Screening could result in bad news.* *HCS: Screening tests are not covered by insurance.* |
| James2011USA([98](#_ENREF_98)) | All: 38 Mean56.5Range47-75 | AA | Mixed | PAPM, HBM, Theory of planned behaviour | Standard text analysis, “modified” grounded theory | *K: Themes included low CRC knowledge.**P: Low perceived norms.**C/B: High barriers, and other screening beliefs.* |
| Oster2013Australia([99](#_ENREF_99)) | All: 63Telephone interview: 30Focus group: 33Range50-75 | N/R | N/R | Preventive Health Model/ PAPM | Framework analysis | P*: “Wanting to know” their CRC status, which operated on a continuum ranging from wanting to know, through varying degrees of ambivalence, to not wanting to know. The majority of participants expressed ambivalence about CRC screening.**C/B: Opportunity to screen without being too inconvenienced.* |
| Surveys (with a qualitative component) |
| *Quality: Meeting ≥ 8/10 CASP criteria* |
| Garcia2011Spain([100](#_ENREF_100)) | All: 560F: 276M: 284Range50-69 | Spanish (Spain) | N/R | N/R | Thematic analysis | P: *Barriers for participation mentioned in focus groups were competing perceived for other health problems and other demands as well as misunderstanding about personal relevance of the screening.* |
| Brouse2004USA([101](#_ENREF_101)) | All: 226Range52-80 | AA, White-American, Hispanic, Asian  | Low  | PPM | Content analysis  | K: *Most frequently observed barrier was lack of familiarity with CRC screening guidelines and tests.* HCS: *Availability and accessibility to screening tests was a barrier that was difficult to overcome for many participants.* |
| *Quality: Meeting 4 – 7/10 CASP criteria* |
| Hou2005Taiwan([102](#_ENREF_102)) | All: 304Mean48.2 | Chinese | Middle  | N/R | N/R | P: FOBT is convenient, simple and easy to use, and safe*C/B:* questioned the reliability and validity of FOBT*,* multiple testing*, sit-style toilets not always available*SES: worried about FOBT cost*, requires a certain educational level to comprehend and follow instructions*   |
| Robb2008UK([103](#_ENREF_103)) | All: 875Range>16 | Indian, Pakistani, Bangladeshi, Caribbean, African, andChinese(UK) | N/R | N/R | Content analysis  | *K: All respondents showed a notable lack of knowledge about causes of colorectal cancer, which was more pronounced in ethnic minority than white-British adults.* *C/B: Interest in FS screening was uniformly high (>60%), with more than 90% of those interested saying it would provide 'peace of mind'. The most frequently cited barrier to screening 'in your community' was embarrassment, particularly among ethnic minority groups* |
| Shaw2012USA([104](#_ENREF_104)) | All: 297Subsample: In-depth interview35focus groups47;chronic diseasediaries: 1; Home observ-ations: 12 | White-American,AA, VietnameseLatino  | Low  | N/R | N/R | C/B*: Never having had a cancer screening was generally associated with more unfavorable attitudes towards all screenings. Qualitative interviews indicate the importance of information circulated through social networks in shaping attitudes towards cancer screenings.* |

Abbreviations: AA, African-American; HBM, Health Belief Model; PPM, preceed-proceed model; PAPM, Precaution adoption process model; N/R, not reported

**Supplementary Table S3** Quality assessment of 94 included studies using CASP critical appraisal method.

|  |  |  |
| --- | --- | --- |
| Lead Author (Year)  | CASP Question | Score (Max is 10) |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Aubin-Auger et al (2011)([61](#_ENREF_61)) | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | 9 |
| Austin et al (2009)([34](#_ENREF_34)) | Y | Y | Y | Y | Y | U | N | U | Y | Y | 7 |
| Bapuji et al (2012)([66](#_ENREF_66)) | Y | Y | Y | U | Y | U | Y | Y | Y | Y | 8 |
| Baron-Epel and Klin (2009)([17](#_ENREF_17)) | Y | Y | N | Y | Y | N | N | Y | Y | Y | 7 |
| Bass et al (2009)([24](#_ENREF_24)) | Y | Y | Y | Y | Y | N | N | Y | Y | Y | 8 |
| Beeker et al (2000)([1](#_ENREF_1)) | Y | Y | Y | Y | Y | Y | U | Y | Y | Y | 9 |
| Beyer et al (2011)([95](#_ENREF_95)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Bong and McCool (2011)([62](#_ENREF_62)) | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | 9 |
| Brouse et al (2003)([92](#_ENREF_92)) | Y | Y | N | N | N | N | N | N | Y | N | 3 |
| Brouse et al (2004)([101](#_ENREF_101)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| Chapple et al (2008)([47](#_ENREF_47)) | Y | Y | Y | Y | Y | N | N | Y | Y | Y | 8 |
| Choe et al (2006)([45](#_ENREF_45)) | Y | Y | Y | Y | Y | Y | U | N | Y | Y | 8 |
| Clavarino et al (2004)([94](#_ENREF_94)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Coronado et al (2006)([10](#_ENREF_10)) | Y | Y | Y | Y | Y | U | Y | U | Y | Y | 8 |
| Denberg et al (2005)([41](#_ENREF_41)) | Y | Y | Y | U | Y | N | Y | Y | Y | Y | 8 |
| Diaz et al (2011)([25](#_ENREF_25)) | Y | Y | Y | Y | Y | N | N | Y | Y | Y | 8 |
| Dube et al (2005)([8](#_ENREF_8)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Ekberg et al (2014)([30](#_ENREF_30)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Feeley et al (2009)([18](#_ENREF_18)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Fernandez et al (2008)([14](#_ENREF_14)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Foo et al (2012)([88](#_ENREF_88)) | Y | Y | Y | Y | Y | N | N | N | Y | Y | 7 |
| Francois et al (2009)([19](#_ENREF_19))  | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Frew et al (2005)([42](#_ENREF_42)) | Y | Y | Y | Y | Y | U | Y | U | Y | Y | 8 |
| Friedemann-Sanchez et al (2007)([15](#_ENREF_15)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| Fyffe et al (2008)([32](#_ENREF_32)) | Y | Y | Y | U | Y | U | Y | Y | Y | Y | 8 |
| Garcia-Dominic et al (2012)([27](#_ENREF_27)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Garcia et al (2011)([100](#_ENREF_100)) | Y | Y | Y | Y | Y | N | N | N | N | Y | 6 |
| Ge et al (2009)([53](#_ENREF_53)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Getrich et al (2012)([67](#_ENREF_67)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| Goel et al (2004)([5](#_ENREF_5)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Goldman et al (2009)([54](#_ENREF_54)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Goldsmith and Chiaro (2008)([16](#_ENREF_16)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Good et al (2010)([93](#_ENREF_93)) | Y | Y | N | U | U | N | N | N | Y | N | 3 |
| Goodman et al (2006)([12](#_ENREF_12)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Green et al (2008)([48](#_ENREF_48)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Greiner et al (2012)([68](#_ENREF_68)) | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | 9 |
| Greiner et al (2005)([9](#_ENREF_9)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Greisinger et al (2006)([13](#_ENREF_13)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 9 |
| Gwede et al (2011)([63](#_ENREF_63)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Hatcher et al (2011)([37](#_ENREF_37)) | Y | Y | Y | Y | U | U | Y | U | U | N | 5 |
| Hoffman-Goetz et al (2008)([49](#_ENREF_49)) | Y | Y | Y | Y | Y | N | N | Y | Y | Y | 8 |
| Holmes-Rovner et al (2002)([3](#_ENREF_3)) | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | 9 |
| Holt et al (2009)([20](#_ENREF_20)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Holt (1991)([77](#_ENREF_77)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| Hou (2005)([102](#_ENREF_102)) | Y | Y | Y | Y | Y | N | N | Y | Y | Y | 8 |
| Hou (2005)([80](#_ENREF_80)) | Y | U | U | Y | Y | N | N | U | Y | Y | 5 |
| James et al (2011)([98](#_ENREF_98)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| James et al (2013)([38](#_ENREF_38)) | Y | Y | N | Y | Y | N | Y | U | Y | Y | 7 |
| Javanparast et al (2012)([89](#_ENREF_89))  | Y | Y | Y | Y | Y | U | U | U | Y | Y | 7 |
| Jilcott P et al (2013)([28](#_ENREF_28)) | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | 9 |
| Jones et al (2010)([35](#_ENREF_35)) | Y | Y | Y | U | U | N | Y | U | Y | Y | 6 |
| Katz et al (2004)([31](#_ENREF_31)) | Y | Y | N | U | Y | Y | Y | N | N | N | 5 |
| Lasser et al (2008)([50](#_ENREF_50)) | Y | Y | Y | Y | Y | N | Y | U | Y | N | 7 |
| Lasser et al (2008) ([82](#_ENREF_82)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Lee and Lee (2013)([72](#_ENREF_72)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Lobchuk et al (2012)([70](#_ENREF_70)) | Y | Y | Y | U, | Y | N | Y | Y | Y | Y | 8 |
| Manne et al (2012)([71](#_ENREF_71)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| McCaffery et al (2001)([78](#_ENREF_78)) | Y | Y | Y | Y | Y | U | U | U | Y | Y | 7 |
| McQueen et al (2009)([83](#_ENREF_83)) | Y | Y | Y | U | Y | N | Y | Y | Y | Y | 8 |
| Molina-Barcelo et al (2011)([26](#_ENREF_26)) | Y | Y | Y | N | Y | U | Y | Y | Y | Y | 8 |
| O'Malley et al (2002)([4](#_ENREF_4)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| O'Malley et al (2004)([79](#_ENREF_79)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| O'Sullivan and Orbel (2004) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Ogedegbe et al (2005)([81](#_ENREF_81)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Oscar et al (2009)([22](#_ENREF_22)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Oster et al (2013)([99](#_ENREF_99)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Oster et al (2014)([75](#_ENREF_75)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Palmer et al (2010)([84](#_ENREF_84)) | Y | Y | Y | Y | Y | U | Y | U | Y | Y | 8 |
| Palmer et al (2014)([29](#_ENREF_29)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Palmer et al (2008)([76](#_ENREF_76)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Ramos et al (2013)([39](#_ENREF_39)) | Y | Y | Y | U | Y | U | U | U | Y | Y | 6 |
| Reeder (2011)([85](#_ENREF_85)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| Ritvo, P. et al (2013)([73](#_ENREF_73)) | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | 9 |
| Robb et al (2008)([103](#_ENREF_103)) | Y | Y | Y | Y | Y | N | U | N | Y | Y | 7 |
| Royak-Schaler et al (2004)([7](#_ENREF_7)) | Y | Y | Y | Y | Y | U | Y | U | Y | Y | 8 |
| Ruffin et al (2009)([23](#_ENREF_23)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Severino et al (2009)([57](#_ENREF_57)) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 10 |
| Shaw et al (2012)([104](#_ENREF_104)) | Y | Y | Y | Y | Y | U | U | U | Y | Y | 7 |
| Shokar et al (2005)([43](#_ENREF_43)) | Y | Y | Y | Y | Y | Y | U | Y | Y | Y | 9 |
| Sly et al (2013)([74](#_ENREF_74)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Tarasenko and Schoenberg (2011)([86](#_ENREF_86)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| Tarasenko et al (2011)([87](#_ENREF_87))  | Y | Y | Y | Y | Y | N | Y | U | Y | Y | 8 |
| Taylor et al (2000)([40](#_ENREF_40)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Thompson et al (2012)([90](#_ENREF_90)) | Y | Y | Y | Y | Y | N | N | U | Y | Y | 7 |
| Varela A. et al (2010)([36](#_ENREF_36)) | Y | Y | Y | Y | Y | U | Y | N | N | N | 6 |
| Von Wagner et al (2009)([60](#_ENREF_60)) | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | 9 |
| Wackerbarth et al (2008)([51](#_ENREF_51)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Wackerbarth et al (2005)([44](#_ENREF_44)) | Y | Y | Y | Y | Y | Y | Y | U | Y | Y | 9 |
| Ward et al (2011)([64](#_ENREF_64)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Weitzman et al (2001)([2](#_ENREF_2)) | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | 9 |
| Winterich et al (2009)([59](#_ENREF_59)) | Y | Y | N | Y | Y | Y | N | Y | Y | Y | 8 |
| Winterich et al (2011)([65](#_ENREF_65)) | Y | Y | Y | N | Y | U | Y | Y | Y | Y | 8 |
| Wong et al (2013)([91](#_ENREF_91)) | Y | U | Y | Y | Y | N | Y | Y | Y | Y | 8 |
| Woodrow et al (2008)([33](#_ENREF_33)) | Y | Y | Y | Y | Y | U | U | Y | Y | Y | 8 |
| Total average score | 94 | 92 | 87 | 82 | 90 | 33 | 63 | 67 | 89 | 88 | 8 |

Abbreviations:Y, Yes; N, No; U, Unclear.

Question 1: Was there a clear statement of the aims of the research?

Question 2: Is a qualitative methodology appropriate?

Question 3: Was the research design appropriate to address the aims of the research?

Question 4: Was the recruitment strategy appropriate to the aims of the research?

Question 5: Was the data collected in a way that addressed the research issue?

Question 6: Has the relationship between researcher and participants been adequately considered?

Question 7: Have ethical issues been taken into consideration?

Question 8: Was the data analysis sufficiently rigorous?

Question 9: Is there a clear statement of findings?

Question 10: How valuable is the research?

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