Participation in colorectal cancer screening: a review
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Authors' objectives
To study the prevalence, interventions to improve adherence to, predictors of adherence to, and reasons for nonadherence to faecal occult blood testing (FOBT) and sigmoidoscopy for colorectal cancer screening.

Searching
The following sources were searched: MEDLINE, Cancerlit and PsycINFO, all from 1973 to 1996; the Social Sciences Citation Index from 1981 to 1996; and Current Contents from 1993 to 1996. The search was limited to articles written in the English language. The keywords used were 'colorectal cancer', 'screening' and 'adherence'. The reference lists of the identified articles were also examined.

Study selection
Study designs of evaluations included in the review
The studies included empirical studies that addressed one or more of the objectives. All the study designs found were included.

Specific interventions included in the review
FOBT and sigmoidoscopy (also referred to as proctosigmoidoscopy and proctoscopy).

Reference standard test against which the new test was compared
The review did not include any diagnostic accuracy studies that compared the performance of the index test with a reference standard of diagnosis.

Participants included in the review
The specification of patients to be screened was left open to the inclusion criteria of each study. The patients in the studies included in the review ranged in age from at least 20 years to at least 50 years. Gender and family history status were not reported.

Outcomes assessed in the review
The outcomes assessed in this review were: percentage adherence to screening with FOBT and to sigmoidoscopy overall; and, in response to interventions to increase adherence, correlates of adherence (positive, negative or none), and reasons for nonadherence.

How were decisions on the relevance of primary studies made?
The author reviewed the abstracts of each study to determine its relevance to the review's objectives.

Assessment of study quality
The author did not state that they assessed validity.

Data extraction
The author did not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined using a narrative method. The study results were not weighted.
How were differences between studies investigated?
The author did not investigate any differences between the studies.

Results of the review
One hundred and thirty-two studies were included in the review. Over one hundred and thirty-two studies were included in the review. Overall, 101 studies reported adherence to screening; 11 studies (231,365 patients) examined adherence rates for FOBT re-screening; 22 studies (at least 75,790 patients) reported adherence rates for sigmoidoscopy; 3 studies (at least 8,672 patients) assessed adherence rates for sigmoidoscopy re-screening; and 18 studies (at least 74,677 patients) reported adherence rates following interventions to increase screening results. The numbers of patients in the remaining studies were not specified in the review.

Percentage adherence to screening with FOBT and to sigmoidoscopy.
The rates of adherence to FOBT ranged from 0 to 89% in the USA and Canada, from 10 to 92% in Europe, and from 2 to 95% in other countries. The rates of adherence to sigmoidoscopy ranged from 2 to 69%. The rates for adherence re-screening (sequential offers to screen) were reported as 'coverage' (completion of at least one test), 'compliance' (completion of all tests among all those offered repeat screens) and 'repeat' (completion of subsequent tests among the subset of those who completed a prior test). The rates for FOBT re-screening were 39 to 90% for coverage, 23 to 60% for compliance, and 56 to 94% for repeats. Adherence to re-screening by sigmoidoscopy ranged from 34 to 79% for coverage and from 16 to 64% for compliance.

Response to interventions to increase adherence.
The adherence rates for the control groups ranged from 17 to 68%. The adherence rates following interventions to increase screening ranged from 0 (physician talk on importance plus written material about screening) to 94% (mailed reminder card, plus 3- to 5-minute talk by the physician on importance).

Correlates of adherence (positive, negative or none).
'Health motivation' was the most consistent positive correlation to FOBT test completion (positive in 7 of the 9 studies). Knowledge of cancer and knowing someone with colorectal cancer also appeared positively correlated. Demographic and medical history variables have not been adequately tested to clearly show statistical differences; however, patients who were female, had a higher education level, or had a higher income, were more likely to complete the FOBT test. With sigmoidoscopy, there were very few studies examining correlates. There were some data to suggest that patients who were male, had a higher education level, or had a higher income, were more likely to have had sigmoidoscopy. The perceived susceptibility to colorectal cancer was also positively correlated with having had a sigmoidoscopy (all 3 studies were positive).

Reasons for nonadherence.
The reasons given for nonadherence to the FOBT included:
practical reasons;
no current health problems;
the test was embarrassing or unpleasant; and
the patient did not want to know of any health problems.

The reasons given for nonadherence to the sigmoidoscopy test were:
no current health problems;
practical reasons;
worry about pain or complications of the test; and
the patient did not want to know of any health problems.

Authors’ conclusions
The data on FOBT showed that the median adherence rate to programmatic offers of FOBT was between 40 and 50%, depending on the type of population offered the test, e.g. patients or employees. Approximately 50% of those initially offered testing in unsolicited populations will respond to minimal prompts or interventions. A salient issue for FOBT, however, is whether or not the behaviour can be sustained over time. Fewer studies examined adherence to sigmoidoscopy. Adherence was highest in relatives of colorectal cancer cases, and in employer-sponsored programmes offered to workers at increased risk of colorectal cancer. At present, we know very little about the determinants of colorectal cancer screening behaviours, particularly how they relate to re-screening.

CRD commentary
The search strategy was well defined and thorough, with the exception that unpublished literature was not sought. The research questions and the inclusion criteria were well defined and applied. The included studies were not tested for validity, which could reduce the confidence of the findings and the conclusions. Data from the primary studies, with the exception of the average patient age and the gender distribution, were tabulated. The data synthesis did not take study size or quality into account.

The author's conclusions appear valid, with the reservation that the lack of validity testing or weighting of the results may alter the findings. The review's relevance to this area is dependent on the effectiveness of colorectal cancer screening.

Implications of the review for practice and research
Research: The authors made the following suggestions.

1. Additional primary studies using high-quality designs and analyses are required.

2. A further systematic review, which takes study size and quality into account, is warranted.

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