Cost-effectiveness analysis of colorectal cancer screening methods in Iran
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The aim was to evaluate the cost-effectiveness of four methods of screening for colorectal cancer, for healthy people aged 45 to 65 years, in Iran. The authors concluded that flexible sigmoidoscopy was the most cost-effective method, for the public sector, and faecal occult blood testing was most cost-effective, for the private sector, in Iran. The methods and results were poorly reported. The authors’ conclusions are hard to assess and should be considered with caution.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to evaluate the cost-effectiveness of four methods of screening for colorectal cancer, for healthy people, between the ages of 45 and 65 years.

Interventions
The screening methods were colonoscopy, flexible sigmoidoscopy, computed tomography (CT) colonography, and faecal occult blood testing.

Location/setting
Iran/primary and secondary care.

Methods
Analytical approach:
The authors used a model to combine the estimates of sensitivity and specificity for the different methods of screening, to estimate their cost-effectiveness. The time horizon was 20 years. The authors did not state the study perspective.

Effectiveness data:
The clinical effectiveness estimates came from a systematic literature review, which searched PubMed, The Cochrane Library, and CRD databases. The main clinical estimates were the sensitivity and specificity of screening and the prevalence of colorectal cancer.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measure of benefit was the number of cancer cases detected.

Cost data:
The cost categories were the screening methods, physician visits, and the drugs. All costs were reported in Iranian rials (IRR).

Analysis of uncertainty:
No analysis of uncertainty was conducted.

Results
For a hypothetical cohort of 100,000 people aged 45 to 65 years, the number of true positive results was: 253 with colonoscopy, 275 with flexible sigmoidoscopy, 289 with CT colonography, and 201 with faecal occult blood testing.

Colonoscopy was expected to cost IRR 71.5 billion to the public sector or IRR 390.3 billion to the private sector. Flexible sigmoidoscopy was expected to cost IRR 62.0 billion to the public sector or IRR 461.3 billion to the private sector. CT colonography was not available for the public sector and was expected to cost IRR 746.2 billion to the private sector. Faecal occult blood testing was expected to cost IRR 85.6 billion to the public sector or IRR 322.6 billion to the private sector.

The cost per cancer detected, in the public sector, ranged from IRR 0.22 billion for flexible sigmoidoscopy to IRR 0.42 billion for faecal occult blood testing, and in the private sector, ranged from IRR 1.54 billion for colonoscopy to IRR 2.58 billion for CT colonography.

**Authors' conclusions**
The authors concluded that flexible sigmoidoscopy was the most cost-effective method of screening for colorectal cancer, in the public sector, and faecal occult blood testing was most cost-effective, in the private sector, in Iran.

**CRD commentary**

**Interventions:**
The interventions were poorly described. The authors listed the options, but gave no details of the procedure or the follow-up schedule, so it is unclear what each one entailed. The options appear to have been relevant to the study setting and generalisable to other settings.

**Effectiveness/benefits:**
The reporting of the effectiveness data was basic. The sources searched to identify relevant studies were reported, and the search was described as systematic, but the methods, search terms, and inclusion and exclusion criteria were not reported. The methods used to derive the clinical estimates were not given. The sources for the evidence of effectiveness were not referenced. The systematic review was in publication elsewhere, but no reference was given. It is not possible to assess whether the best available evidence was used. Some key outcomes, such as the potential for false positive results and their implications, the stage of cancer detected by screening, which will influence outcome, and the potential for injury from the tests, which varied considerably, were omitted from the effectiveness data.

**Costs:**
The reporting of the cost data was poor. The perspective was not stated, but appears to have been those of the public or private payers. Only the costs of the screening methods were considered. The resource items were listed, but their sources and prices were not reported nor referenced. The formula used to estimate the costs was given. The price year was not reported, and the time horizon was 20 years, but no discounting and no cost adjustments were reported. These factors reduce the study transparency. Some very important costs, such as for the treatment of incorrect diagnoses, the treatment for the stage of cancer detected, and the treatment for harms from screening, were omitted from the cost data.

**Analysis and results:**
It was appropriate to use modelling to synthesise the data from the published literature, but no incremental analysis of the screening options was conducted to consider the relative costs-effectiveness of each method. The analysis did not consider all the key costs and effectiveness for the different options. The reporting of methods and results was poor and there was no consideration of the uncertainty around the inputs for the model. The results are unlikely to be generalisable to other settings, and their validity for the study setting cannot be assessed. The authors did not discuss the limitations of their study.

**Concluding remarks:**
The methods and results were poorly reported. The authors’ conclusions are hard to assess and should be considered with caution.

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