

Comparison of participation rates between males and females in faecal immunochemical test colorectal cancer screening: A review

and meta-analysis

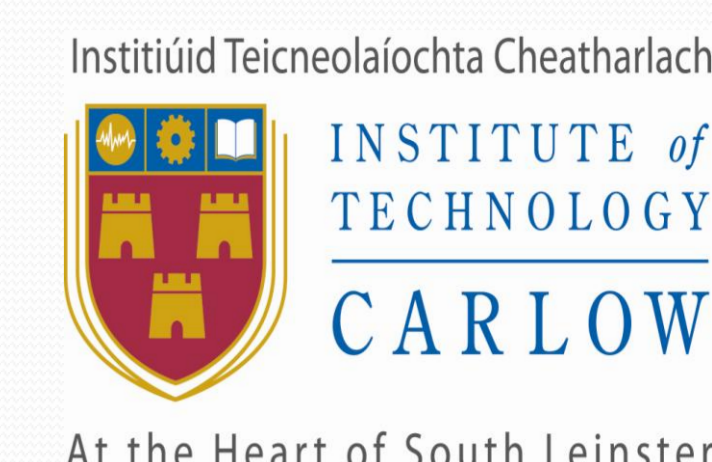
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Introduction:

Colorectal cancer is the third most common cancer in men and the second in women worldwide (Globocan, 2008). There is higher incidence (20.3 vs. 14.6 per 100,000) and mortality (9.6 vs. 7.0 per 100,000) in men than women worldwide. In Ireland, as in other developed countries, the number of new cases is expected to grow substantially in coming years (NCRI, 2008), in large part due to demographic changes. Colorectal cancer can be prevented through screening and treated effectively, or cured, if caught early. Screening options include invasive (e.g. colonoscopy) and non-invasive tests (e.g. faecal immunochemical test (FIT)). Internationally, FIT is increasingly being recommended as the preferred initial screening modality. Some studies and screening programmes have reported lower screening uptake among men, but it is unclear whether this holds for FIT.

Aims:

This systematic review and meta-analysis aimed to determine if uptake of FIT-based colorectal cancer screening is lower among men than women.

Results:

Eighteen studies met the eligibility criteria: 4 from Italy, 4 from Australia, 2 from the Netherlands, 2 from the USA, and one each from Spain, Scotland, Uruguay, Taiwan, Korea and Israel. Of these, 2 studies were RCTs, 9 were from population-based programmes, 5 were cohort studies and 2 were cross-sectional studies. Study characteristics and findings are summarised in Tables 1 and 2.

Methods:

We searched PubMed and Embase for peer-reviewed papers published in English during 2000-2012, from randomised controlled trials (RCTs), cohort studies, cross sectional studies or population-based screening programmes using FIT-based screening. For inclusion, studies had to report numbers invited and numbers screened by gender. 246 potentially eligible papers were identified. Two reviewers independently screened titles and abstracts, obtained and reviewed full-text articles, and performed data abstraction. A meta-analysis using a random effects model was performed, calculating odds ratios for male uptake of FIT.

Figure 1. Meta analysis comparing male and female compliance in FIT-based colorectal cancer screening

Table 1: Study characteristics

Study & Year	Study design	Age range	No. of samples	Test type	Invitation strategy	Reminder	No. invited to complete FIT	Overall uptake n (%)
Cole et al, 2002	Cohort study	50-74	3 samples	Flexsure OBT	Invitation letter (various recommendations)	6 week reminder	2400	857 (35.7%)
Cole et al, 2003	Cohort study	50-69	3/2 samples	FlexSure OBT / InSure	Letter of invitation (no recommendation)	6 week reminder	1212	425 (35%)
Crotta et al, 2004	Population based study	50-74	1 sample	OC Sensor, Japan	Letter of invitation (Mayor recommendation)	2 month reminder	2961	1631 (55.1%)
Bampton et al, 2005	Cohort study	No age range	1 sample	Inform OBT	Letter of invitation	No reminder	1641	785 (47.8%)
Fenochi et al, 2006	Cross sectional study	50+	1 sample	OC Hemodia	Volunteers recruited through Primary Care Centres and Cancer Centre	No reminder	11734	10537 (89.8%)
Chen et al, 2007	Population based study	50+	not stated	Not stated	Not stated	Not stated	56968	22672 (39.8%)
Fraser et al, 2007	Population based study	50-69	1 sample	Test tubes	None	None	1124	558 (49.6%)
van Rossum et al, 2008		50-75	1 sample	OC Sensor	Letter of invitation (no recommendation)	2 week reminder	10322	6157 (59.6%)
Parente et al, 2009	Population based study	50-69	1 sample	HM-Jack	invitation (no recommendation)	No reminders	78083	38693 (49.6%)
Levy et al, 2010	Population based study	50-64	1 sample	Cleanview ULTRA FOB	Advanced notification invitation	Not stated	297	235 (79.1%)
Birkenfeld et al, 2011	RCT	50-74	3 samples	OC-MICRO	Not stated	Not stated	5464	3883 (71.1%)
Gregory et al, 2011	Cross sectional study	50-74	1 sample	InSure	Advanced notification invitation	6 week reminder	375	192 (51.2%)
Park et al, 2011	Population based study	50+	not stated	Not stated	Not stated	Not stated	5739337	985677 (17.2%)
Ferrari et al, 2012	Population based study	50-69	not stated	Test tube	Invitation with test (GP recommendation)	Not stated	42,245	17441 (41.3%)
Senore et al, 2012	Cohort study	Turin 58-69 Verona 60-69	1 sample	OC Sensor	Invitation letter (GP recommendation)	No reminder	37619	7271 (19.3%)
Klushman et al, 2012	Cohort study	50+	1 sample	INSure	Invitation in Primary care practice	No reminder	200	145 (72.5%)
Hol L et al, 2012	Population based study	50-74	1 sample	OC Sensor	Advanced notification invitation	6 week reminder	4407	1092 (24.8%)
Quintero et al, 2012	RCT	50-69	1 sample	OC Sensor	Advanced notification invitation	3 and 6 month reminders	26599	9089 (34.2%)

Table 2: General findings

Sampling	12 studies used 1 sample FIT, while 3 studies used 3 samples. 3 studies did not state the number of samples required to complete the test
Invitation strategies	5 studies used a single letter of invitation, 4 studies used a GP or other recommended letter of invitation, 4 used advance notification letters of invitation. Two invited participants during routine primary care practice visits. Two studies did not indicate the method of invitation.
Compliance	Overall compliance ranged from 19.3% (cohort study) to 89.8% (large cross sectional study).
Male female compliance	Compliance in men ranged from 15.8% to 89.6%, while compliance in women ranged from 22.3% to 90.3%
Meta analysis	Of the 18 studies, 9 had significantly lower uptake among men; eight showed no significant difference; while one study had significantly lower uptake in women. When combined in a meta-analysis, uptake was significantly lower in men (OR 0.82, 95%CI 0.75-0.90, p<0.0001) (Figure 1)

Conclusions

While screening based on FIT has been shown to result in higher overall compliance than screening based on FOBT (Vart et al, 2012), this meta-analysis suggests that FIT uptake is significantly lower among men than women. Further investigation is required to better understand what influences screening uptake and test acceptability in men and women. In addition, national screening programmes should plan and design programmes with a greater focus on gender equity in uptake.

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