

# Knowledge of colorectal cancer risk factors and screening recommendations: a cross-sectional study of regional Australian general practice patients

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## Introduction

Higher levels of knowledge relating to colorectal cancer (CRC) are positively associated with CRC screening behaviour.<sup>1</sup> However, knowledge of CRC risk factors and screening recommendations is low.<sup>1,2</sup>

The aim of this study was to examine knowledge of CRC risk factors and CRC screening recommendations among general practice patients aged 18–85 years, and the sociodemographic characteristics associated with knowledge.

## Methods

This study was conducted in a convenience sample of five regional general practices in New South Wales (NSW), Australia, between December 2015 and March 2017. The practices had six to 18 practitioners and provided private and bulk-billing services. A consecutive sample of patients aged 18–85 years who spoke English and presented for a general practice appointment were invited to participate.

## Data collection

Consenting patients completed a touchscreen survey in the waiting room. Ethics approval was received from the University of Newcastle Human Research Ethics Committee (H-2014-0198).

## Measures

A 5-item survey, developed and piloted by the authors, assessed knowledge using a multiple-choice format. Participants were asked to identify which risk factors may increase a person's chance of developing CRC: smoking, being older than 50, being overweight, not eating enough fibre, and drinking alcohol regularly. Four questions assessed knowledge of CRC screening

recommendations for people at average risk of CRC (lay description provided). These included: 1) age to commence screening; 2) type of screening test recommended; 3) how often the faecal occult blood test (FOBT) should be done; and 4) what a positive FOBT result means. Participants could select one response for each of these questions. Correct responses aligned with Royal Australian College of General Practitioners guidelines for preventive activities in general practice.<sup>3</sup> Participants reported their age, gender, marital status, employment status and highest level of education.

## Data analysis

Scores for risk and screening were analysed separately using logistic regression (binary for risk [ $>1$  versus  $\leq 1$ ] and ordinal for screening) to model the odds of higher scores. All demographics were included in the model. The Brant test assessed the parallel regression assumption, the Pearson's goodness-of-fit test assessed the binary model, and each model fit adequately.

## Results

A total of 510 patients (70% of those assessed) were eligible to participate. Of these, 411 patients consented to participate (81% consent rate). Those with missing data were removed, leaving 363 participants in the final analyses. There was no significant difference in gender between consenters and nonconsenters ( $\chi^2(1) 1.29$ ,  $p = 0.254$ ).

### Participant characteristics

More than half the sample was aged 50–74 years ( $n = 208$ ; 57%), and similar proportions were aged 18–49 ( $n = 65$ ; 18%), or 75–85 ( $n = 90$ ; 25%). A total of 219 (60%) participants were female.

### Colorectal cancer risk factors

Eighty-six participants (24%) correctly identified all risk factors (32% aged  $<50$  versus 22% aged  $\geq 50$ ), and 35 (10%) identified none (15% aged  $<50$  versus 8% aged  $\geq 50$ ). Higher proportions of those aged  $<50$  identified smoking, alcohol consumption and being overweight as risk factors for CRC.

Those with a tertiary education had 2.1 times greater odds of identifying at least one risk factor (95% confidence interval [CI] 1.07, 4.3;  $p = 0.03$ ). Those who were retired were less likely to identify at least one risk factor than those who were not retired (odds ratio [OR] 0.38; 95% CI 0.18, 0.82;  $p = 0.01$ ).

### Colorectal cancer screening

Less than 10% of participants identified the correct responses for all screening questions (12% aged  $<50$  versus 9% aged  $\geq 50$ ); 11% selected no correct

responses (17% aged  $<50$  versus 9% aged  $\geq 50$ ). Just over half of the sample (53%) knew that FOBT was the recommended screening test (55% aged  $<50$  versus 53% aged  $\geq 50$ ). Only 41% knew the recommended frequency of FOBT (26% aged  $<50$  versus 44% aged  $\geq 50$ ). Less than one-third knew the recommended age to commence screening.

Those aged  $\geq 50$  years had 2.5 times greater odds of higher scores for screening knowledge ( $p < 0.003$ ; 95% CI 1.37, 4.67) compared with those aged  $<50$ . Those with a tertiary education were more likely to score highly than those without (OR 2.02;  $p < 0.002$ ; 95% CI 1.28, 3.17).

## Discussion

Our data identified gaps in knowledge for CRC risk factors and screening recommendations. Several risk factors were poorly identified by participants; however, our study found higher knowledge scores in some areas compared with previous Australian research.<sup>4</sup> Ten per cent of participants in our study did not identify any risk factors, which was lower than the 34.8% of Australian participants in a 2012 study.<sup>4</sup> This may reflect differences in the study methods or populations, or an increase in knowledge of risk factors since this study. As expected, screening knowledge scores were higher for people aged 50 years and older compared with people aged younger than 50 years.

**Table 1.** Proportions selecting correct responses for colorectal cancer risk factors and screening questions ( $N = 363$ )

Category	Knowledge questions	Selected correct option, $n$ (%)	
		$<50$ years ( $n = 65$ )	$\geq 50$ years ( $n = 298$ )
Risk factors	Smoking	44 (68)	167 (56)
	$>50$ years	38 (58)	176 (59)
	Overweight	42 (65)	156 (52)
	Low fibre	42 (65)	232 (78)
	Alcohol consumption	37 (57)	117 (39)
Screening	Age to commence screening	20 (31)	91 (31)
	Recommended screening test	36 (55)	159 (53)
	Frequency of FOBT	17 (26)	130 (44)
	Meaning of positive FOBT	42 (65)	225 (76)

FOBT = faecal occult blood test

Our data strongly suggest that there is a need to raise awareness of modifiable risk factors and CRC screening recommendations. Guidelines suggest that general practitioners routinely monitor patient body mass index; assess risky behaviour; promote healthy eating, drinking and physical activity; and recommend appropriate CRC screening.<sup>3</sup>

Given the complexity of opportunistic approaches, general practitioners should be better supported to perform preventive health activities. Strategies that could be implemented outside of the general practice setting could include population-based education interventions, as well as policies to reduce poor lifestyle decisions and incentives to foster positive lifestyle choices.<sup>5</sup>

### Limitations

This study took place in five regional general practices, which limits the generalisability of our results to the broader Australian population. Further, non-English speaking patients were excluded.

### Conclusion

Our results indicate gaps in the awareness of CRC risk factors and screening recommendations among a convenience sample of Australian general practice patients. Increasing patient knowledge may promote lifestyle changes and appropriate screening behaviour that could reduce individual risk of CRC.

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### Competing interests

None declared

### Author contributions

EM, MC and ND conceived the study. All authors contributed to the drafting of the manuscript or revising it critically for intellectual content.

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