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ORIGINAL ARTICLE

Preferences for Surveillance of Barrett's Oesophagus: a Discrete Choice Experiment

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Abstract

Purpose Endoscopic surveillance for Barrett's oesophagus is undertaken to detect dysplasia and early cancer, and to facilitate early intervention. Evidence supporting current practice is of low quality and often influenced by opinion. This study investigated the preferences of patients for surveillance of Barrett's oesophagus in an Australian cohort.

Methods Four Barrett's oesophagus surveillance characteristics/attributes were evaluated within a discrete choice experiment based on literature and expert opinion: (1) surveillance method (endoscopy vs a blood test vs a novel breath test), (2) risk of missing a cancer over a 10-year period, (3) screening interval, and (4) out-of-pocket cost. The data from the discrete choice experiment was analysed within the framework of random utility theory using a mixed logit regression model.

Results The study sample comprised patients ($n = 71$) undergoing endoscopic surveillance for Barrett's oesophagus of whom $n = 65$ completed the discrete choice experiment. The sample was predominantly male (77%) with average age of 65 years. All attributes except surveillance method significantly influenced respondents' preference for Barrett's oesophagus surveillance. Policy analyses suggested that compared to the reference case (i.e. endoscopy provided annually at no upfront cost and with a 4% risk of missing cancer), increasing test sensitivity to 0.5% risk of missing cancer would increase participation by up to 50%; surveillance every 5 years would lead to 26% reduction, while every 3 to 3.5 years would result in 7% increase in participation. Respondents were highly averse to paying A$500 for the test, resulting in 48% reduction in participation. None of the other surveillance methods was preferred to endoscopy, both resulting in 11% reduction in participation.

Conclusion Test sensitivity, test frequency and out-of-pocket cost were the key factors influencing surveillance uptake. Patients prefer a test with the highest sensitivity, offered frequently, that incurs no upfront costs.

Keywords Barrett's oesophagus · Surveillance · Discrete choice experiment

Introduction

Barrett's oesophagus (BE) is associated with an increased risk of developing oesophageal adenocarcinoma, and for this reason, patients are usually recommended to undergo regular endoscopy surveillance to detect cancer at an early curable stage.[1,2] Once symptoms of oesophageal cancer have developed, cancer is always advanced, and the prognosis is poor. The 5-year survival rate for all patients diagnosed with oesophageal cancer is 18%.[3]

Consensus guidelines from the UK, USA and Australia all recommend endoscopic surveillance for individuals with known BE to identify the development of dysplasia and early cancer, thereby facilitating early intervention.[4–6] However, upper gastrointestinal (GI) endoscopy is invasive, requires a hospital day-stay and sedation, and may be burdensome for

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patients due to associated discomfort, anxiety and time off work. In addition, endoscopy is expensive with significant costs to the healthcare system.

In their review of patient preferences for screening tests in cancer, Mansfield et al.[7] noted that screening test attributes, which include the process of the tests such as invasiveness, may impact significantly on patient preferences for a test. Non-invasive surveillance methods such as blood or breath tests have been trialled, but these are not yet available for routine clinical practice.[8–10] Furthermore, the number of patients developing cancer in BE is estimated to be no more than 0.5% per year,[11] so only a minority of patients with BE eventually develop cancer and most patients with BE will actually not benefit from endoscopic surveillance.

These data provide added emphasis for the importance of patient preferences in developing recommendations for endoscopic surveillance. The willingness of patients to adhere to regular endoscopic surveillance protocols given a specified expected health benefit is, however, currently unknown, along with their preparedness to make trade-offs between the burden of testing vs. possible health benefits. The effect on preferences if less invasive tests become available in the future is also unclear.

Acceptance and utilisation of a product or service depend on the extent to which its characteristics meet the needs and preferences of the target population. Discrete choice experiments (DCEs) offer a novel approach to measure consumer preferences for characteristics or attributes associated with 'goods' or 'services'.[12] Using the DCE methodology provides understanding of the trade-offs respondents are willing to make in choosing one 'product' or 'service' over another. DCEs encourage respondents to reflect upon the trade-offs they are willing to make between attributes, their respective levels and their relative importance. It is therefore assumed that individuals choose the alternative that maximises benefit or utility.[13,14]

In health care, DCEs have been widely applied to investigate preferences for the process of health service delivery to inform policy/decision making.[12,15–18] Several DCEs have also been undertaken in other forms of cancer to understand preferences for surveillance screening.[7,14] To date, only one DCE study has been published investigating preferences for BE surveillance among patients under regular surveillance for BE or with non-specific upper GI symptoms. In this study, undertaken in the Netherlands,[19] three attributes of a surveillance test were considered: invasiveness of the test (i.e. endoscopy, video capsule endoscopy and a saliva-swab), the test frequency or surveillance interval, and the health gain associated with each surveillance interval. Their results revealed that patients were willing to undergo more frequent testing provided that the potential for a greater health gain could be demonstrated.

Our study aimed to investigate the surveillance preferences of Australian patients with BE. Current clinical practice is based on low-quality evidence and heavily influenced by expert opinion. This study sought to obtain first-hand information about patient preferences in relation to existing practice and proposed variations, to guide the implementation of future clinical protocols, and also the direction of development of new tests for early detection of cancer.

Methods

Discrete Choice Experiment

Four BE surveillance characteristics were selected for inclusion within the DCE, based on a literature review of previous DCE studies related to cancer screening and surveillance,[20–23] and in consultation with five clinical experts in the field and two health economists. The four surveillance characteristics (attributes) included were (1) surveillance method (conventional endoscopy vs a blood test vs a novel breath test), (2) risk of missing a cancer over a 10-year period (range 0.5% to 4%), (3) surveillance interval (range yearly to 5 yearly), and (4) out-of-pocket cost (range A$0 to A$500); see Table 1 for details. Plausible levels were then assigned to each attribute to reflect a range of possible values for the generation of several multi-attribute hypothetical scenarios that were grouped into choice sets. The premise behind DCEs is that the value respondents attached to the service is defined by the service characteristics (attributes) and the levels at which they are provided.[12]

A D-efficient design with no prior parameters information (which minimises the Dz-error) was used to generate a manageable number of 24 choice sets for presentation using the Ngene version 1.1.1 DCE design software package (www.choice-metrics.com). Ngene was also employed to divide the resulting DCE design comprising 24 choice sets into 2 blocks, each containing 12 pair wise choice sets to reduce the size of the questionnaire presented to participants. A duplicate choice scenario was included in the DCE to serve as an internal consistency check for each respondent. For an example choice set, see Fig. 1.

Data Analysis

The data from the DCE was analysed within the framework of random utility theory, which assumes that respondents choose the alternative that maximises their utility.[24] A conditional logit regression model was firstly used assuming a homogeneous preference among all respondents. In order to investigate the potential existence of preference heterogeneity, a mixed logit regression model was further considered.[25] The Akaike information criterion (AIC) was used to facilitate the selection of preferred model between conditional and mixed logit models.

Table 1 Attributes and levels

Attribute	Level	Description
Surveillance method	Endoscopy Breath test Blood test	See details at appendix online
Risk of missing a cancer over a 10-year period	4% 2% 1% 0.5%	Based on the clinical evidence, we think that the risk of missing a cancer over a 10-year period if endoscopy is not performed at all is approximately 5%
Surveillance interval (the number of times patients would be tested within the next 10 years)	10 5 3 2	Every year Every 2 years Every 3 to 3.5 years Every 5 years
Out-of-pocket costs	Free $100 $300 $500	Currently, endoscopic surveillance is delivered free of charge to each patient in public hospital system in Australia, but gap payments can occur in the private health system. The costs associated with a blood or breath test or are hypothetical costs that might be charged for a new blood test or breath test delivered outside the hospital system

The empirical model to be estimated was specified as:

$$U_{itj} = x'_{itj}\beta_i + \varepsilon_{itj}$$

where U_{itj} is the utility individual i derives from choosing alternative j in choice scenario t, x_{itj} is a vector of observed attributes of alternative j, β_i is a vector of individual specific coefficients reflecting the desirability of the attributes and ε_{itj} is a random error term. All statistical analyses were performed in Stata version 14.1 (StataCorp LP, College Station, Texas, USA).

Study Sample

Calculation of optimal sample sizes for DCE studies is difficult as it requires the true values of unknown parameters. The DCE literature suggests that the minimum number of participants per block is 20,[26] i.e. a minimum sample size of 40 participants is required for a 2-block design.

Respondents were recruited from individuals who were undergoing endoscopic surveillance through a structured Barrett's oesophagus surveillance program at Flinders Medical Centre and other public and private hospitals in Southern Adelaide, in South Australia. This program coordinated endoscopy recall for all public and private adult patients diagnosed with Barrett's oesophagus at these hospitals. The surveillance program was initiated in 2003 (has been running for 15 years). All endoscopically diagnosed individuals with columnar-lined oesophagus (CLE) are entered into the program with repeat endoscopy undertaken after 1 year followed by two yearly endoscopies unless low-grade dysplasia is found when this interval is shortened to 6 months. The program has a 96% compliance with the surveillance interval target and 90% compliance with the biopsy protocol. Details of this program have been described in detail elsewhere.[27] The median length of time respondents had been followed by endoscopy was 4 years.

At the time of this study, individuals with non-dysplastic Barrett's oesophagus (NDBE) were scheduled for endoscopy every second year, and this was shortened to 6 months for individuals diagnosed with low-grade dysplasia (LGD). Individuals with high-grade dysplasia (HGD) or mucosal

	Option A	Option B	No surveillance
Surveillance method	Endoscopy	Blood test	N/A
Risk of missing a cancer over the next 10 years	0.5%	1%	5%
Screening interval (across a 10 year period)	Every 2 years (5 times)	Every 3 to 3 ½ years (3 times)	No endoscopies performed
Out-of-pocket costs	$0	$500	0
Your choice:	☑	☐	☐

Fig. 1 An example of the discrete choice experiment. Each participant was asked to complete 13 scenarios. Option A and Option B in each scenario postulated a choice from the parameters listed in Table 1. Participants were asked to choose one of the options, or 'no surveillance'. The 'no surveillance' option was the same for all choice sets

cancer were offered treatment, usually using an endoscopic approach. A total of 231 individuals were randomly selected from the BOSS program and invited to participate in this study.

Ethics

Informed consent was obtained from all study participants. Ethical approval was obtained from the Southern Adelaide Clinical Human Research Ethics Committee (Reference No. 451.15 - HREC/15/SAC/437).

Results

Respondent Characteristics

The study questionnaire was sent by mail to a potential respondent pool of 231 individuals, and 71 individuals returned the completed questionnaire. Among the 160 non-responders, 4 questionnaires were returned as the individuals had moved to a new address, and 3 individuals were deceased, resulting in a response rate of 32%. A further six respondents were excluded from the analysis, including two respondents who did not answer any of the choice experiments, one respondent who only finished one DCE task, and three respondents who finished less than half of the total DCE tasks. Table 2 summarises the demographic and clinical characteristics of the final 65 respondents. The final study sample was predominantly male (77%) with a mean age of 65 years old. The majority reported their health to be good, very good or excellent (68%), and they perceived a small overall risk of developing oesophageal adenocarcinoma (60%). Sixty-five percent of respondents reported an annual household income of less than A$60,000.

Table 2 Respondents' characteristics

Characteristics	*N* (%)
Age, mean years (SD)	65 (11.07)
≥ 65 years	37 (57)
Gender: male	50 (77)
Self-reported health	
Very good and excellent	12 (19)
Good	32 (49)
Fair and poor	20 (31)
Risk attitude towards health[a] (ranged from 0 (not at all prepared to take risk) to 10 (very much prepared to take risk))	
Mean (SD)	3.95 (2.7)
≥ 5	30 (48)
Self-estimated risk of developing oesophageal cancer in next 1 year[a]	
0.1%	30 (48)
0.2–0.4%	11 (17)
1%	10 (16)
2–10%	12 (19)
Perceived risk of developing oesophageal adenocarcinoma[b]	
Small (very small–quite small)	39 (60)
Neither small nor large	13 (20)
Large (quite large–very large)	9 (14)
Marital status	
Married	42 (65)
Others	23 (35)
Annual income, AU$	
< 20,000	9 (14)
20,000–39,999	20 (31)
40,000–59,999	13 (20)
60,000–79,999	8 (12)
> 80,000	8 (12)
Education[c]	
Primary school or below	11 (20)
High school	24 (42)
Undergraduate and above	22 (39)

SD standard deviation

[a] *N* = 63

[b] *N* = 61

[c] *N* = 57

Discrete Choice Experiment Results

The conditional logit estimates for the study sample are reported in Table 3. As described in the methods, a consistency test was built into the questionnaire. Fifteen respondents failed this consistency test. The results in Table 3 demonstrate that regardless of whether respondents who failed the consistency test are excluded or included, the DCE results are generally comparable. On average, respondents preferred surveillance over no surveillance. Further investigating respondents' own perceived risk of developing oesophageal adenocarcinoma, it was found that those respondents who perceived their own risk to be 'quite large', 'large' or 'very large' (accounted for 14% of total respondents) were significantly less likely to choose no surveillance. Except for one attribute (surveillance method), all other three surveillance characteristics considered in this study significantly influenced respondents' preferences for BE surveillance.

Table 4 reports mixed logit estimates investigating the potential for preference heterogeneity for those respondents who passed the consistency test. The cost attribute was included as a continuous variable in the mixed logit model since the linearity of different levels of the cost variable was generally supported through an initial investigation using an effects coded cost variable. Using mixed logit further improved how the model fits relative to the conditional logit estimates based on the AIC statistics (i.e., the lower the better). Stated preferences based on mixed logit regression were similar to the outcomes

Table 3 Conditional logit estimates on patients' preferences for surveillance of Barrett's oesophagus

	Main model (excluding respondents who failed consistent test)		Extended morel (including an interaction term between own perceived risk and 'No surveillance')		Sensitivity analysis (including respondents who failed consistent test)	
	Coefficients	SE	Coefficients	SE	Coefficients	SE
No surveillance	− 1.604	(0.403)***	− 1.507	(0.444)***	− 1.711	(0.390)***
Surveillance method						
Endoscopy (reference)						
Blood test	0.047	(0.187)	0.070	(0.197)	0.158	(0.165)
Breath test	0.002	(0.307)	− 0.016	(0.315)	0.026	(0.239)
Risk of missing a cancer over a 10-year period						
4% (reference)						
2%	0.636	(0.280)**	0.633	(0.279)**	0.436	(0.249)*
1%	1.525	(0.273)***	1.522	(0.278)***	1.184	(0.243)***
0.5%	1.825	(0.333)***	1.823	(0.340)***	1.461	(0.291)***
Screening interval (no. of tests patients would take tests within next 10 years)						
10 (reference)						
5 (every 2 years)	− 0.068	(0.243)	− 0.084	(0.251)	0.073	(0.235)
3 (every 3 to 3.5 years)	0.003	(0.257)	0.001	(0.256)	0.060	(0.237)
2 (every 5 years)	− 0.426	(0.245)*	− 0.471	(0.253)*	− 0.424	(0.231)*
Out-of-pocket (OOP) costs						
Free (reference)						
$100	− 0.517	(0.200)***	− 0.445	(0.200)**	− 0.469	(0.153)***
$300	− 0.768	(0.199)***	− 0.707	(0.203)***	− 0.646	(0.167)***
$500	− 0.956	(0.351)***	− 0.890	(0.372)**	− 0.833	(0.312)***
Interaction term						
No surveillance × large perceived risk			− 13.480	(0.618)***		
Log pseudo likelihood	− 450.35		− 416.55		− 649.65	
No. of respondents	50		47		65	
No. of observations	1770		1683		2481	

'Large perceived risk' is a dummy variable indicates that respondents' own perceived risk of developing oesophageal adenocarcinoma was 'quite large', 'large' or 'very large'. The significantly negative coefficient of the interaction term reveals that respondents with 'large perceived risk' were significantly less likely to choose 'no surveillance'. Robust standard errors (SE) in parentheses

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

of the conditional logit model. Respondents significantly ($p < 0.01$) preferred a surveillance program that had a lower chance of missing a cancer, and they were significantly ($p < 0.01$) averse to paying for their surveillance tests. It is also worth noting that respondents were significantly ($p < 0.05$) against having the longest surveillance interval presented in this study (i.e., having a test every 5 years).

Policy Analysis: Estimating Probability of Surveillance Participation

By using effects coding of the mean coefficient reported in Table 4, we estimated marginal changes in the predicted probability[28] of BE surveillance participation associated with each surveillance characteristic level in the DCE model relative to the base case (endoscopic surveillance every year with 4% risk of missing the cancer and no fees) (see Fig. 2 for more details). Respondents were completely averse to paying for surveillance, with out-of-pocket costs being associated with up to a 48% reduction in participation at the highest level of A$500. Surveillance every 5 years would lead to a 26% reduction in participation, while every 3 to 3.5 years would result in 7% increase in participation relative to surveillance every year. Increasing test sensitivity i.e. a lower risk of missing cancer would result in increased participation with a test with the lowest (0.5%) risk of missing cancer increasing participation by 50% relative to the base case (4% risk of missing cancer). Both breath tests and blood tests resulted in 11% reduction in participation compared to endoscopy—i.e. respondents preferred endoscopy.

Table 4 Mixed logit estimates on patients' preferences for surveillance of Barrett's oesophagus

	Mean		Standard deviations	
	Coefficients	SE	Coefficients	SE
No surveillance	− 6.982	(1.609)***	3.594	(0.689)***
Surveillance method				
Endoscopy (reference)				
Blood test	− 0.169	(0.272)	0.713	(0.318)**
Breath test	− 0.406	(0.380)	1.817	(0.418)***
Risk of missing a cancer over a 10-year period				
4% (reference)				
2%	1.235	(0.404)***	0.007	(0.343)
1%	2.896	(0.444)***	0.101	(0.333)
0.5%	3.443	(0.545)***	1.247	(0.345)***
Screening interval (no. of tests patients would take tests within next 10 years)				
10 (reference)				
5 (every 2 years)	− 0.299	(0.420)	1.593	(0.358)***
3 (every 3 to 3.5 years)	− 0.343	(0.430)	1.164	(0.382)***
2 (every 5 years)	− 0.837	(0.360)**	0.019	(0.466)
Out-of-pocket (OOP) costs				
Cost	− 0.004	(0.001)***	0.008	(0.002)***
Log pseudo likelihood	− 335.533			
No. of respondents	50			
No. of observations	1770			
Akaike information criterion	711.07			

Robust standard errors (SE) in parentheses. For all random coefficients, normal distribution was used. Cost attribute was included as a continuous variable; all other attributes were dummy coded. Estimated mean coefficients reflect the desirability of surveillance characteristics (a positive sign on a coefficient indicates that as the level of that attribute increases, so does the utility derived, and vice versa)

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

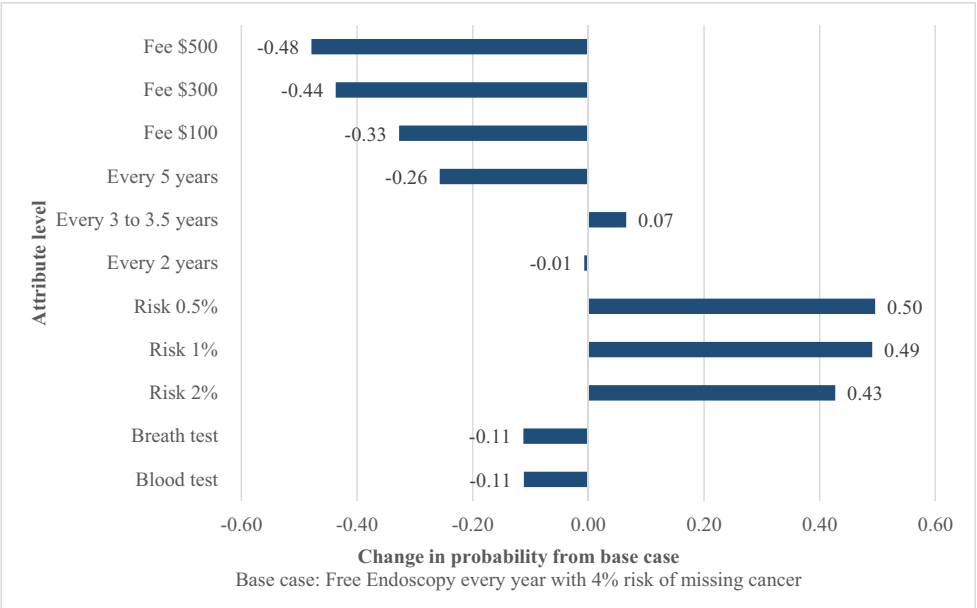

Fig. 2 Marginal probabilities in predicted probability of surveillance participation. Baseline surveillance scenario: endoscopy surveillance annually for free, with an estimated risk of missing a cancer over a 10-year period being 4%

Discussion

This study has considered the preferences for surveillance for patients undergoing routine surveillance screening for known BE. This is the first Australian DCE to study preferences for BE surveillance and should help inform clinical practice in this context. The results should be considered within the context of the Australian health system, which entails a hybrid funding model that sits between the USA predominantly privately funded fee-for-service system, and the publicly funded system (with no out of pocket expenses) in many European countries. In Australia, approximately half of the population's medical services are provided at no direct cost to the individual (public patients), and the other half are provided in a fee-for-service private sector with costs met by private health insurers and some out-of-pocket expenses incurred by the individuals. The cohort included in our study included a mix of public and private patients, managed via both sectors, although the median family income was A$60,000, consistent with a larger proportion being public patients, retired from work, and in lower income households.

A priori, we expected that patients would prefer a non-invasive test, offered every 3 to 3.5 years, with little or no out-of-pocket costs incurred, and that these patients would trade-off a higher risk of missing cancer to avoid the inconvenience of endoscopy. The results, however, indicated a strong aversion to paying for tests, and a strong aversion to a 5-year surveillance interval, with up to 48% and 26% reductions in participation respectively compared to a free test offered annually. Preference was demonstrated for a test with the lowest risk (0.5%) of missing cancer. To our surprise, the less invasive breath and blood tests were not preferred to endoscopy. This might reflect the cohort of respondents who are already undergoing regular endoscopy surveillance and therefore see less inconvenience with continuing with regular endoscopy than was hypothesised by the authors when setting up this study. This preference might also be attributed to a lack of personal experience with the proposed alternative tests and an implicit preference for the status quo also referred to as the 'veil of experience'.[22,29,30] The proposed alternatives of blood or breath tests are not currently available but do reflect research directions within our institution to develop cheaper and less invasive surveillance methods. Such novel tests might need to be reconsidered if patients are not convinced that they offer an advantage over established methods.

Compared to the DCE undertaken by Kruijshaar et al.[19] in the Netherlands, our study sample had similar demographics, and participants in both studies had prior experience with endoscopy. Respondents in the Netherlands study also preferred surveillance to no surveillance, higher health gains, and the lowest risk of missing cancer was preferred. Their patients were also willing to trade-off the inconvenience of regular tests for a reduced risk of missing cancer. For the same health gain and test frequency, patients in the Netherlands study preferred the comparatively more invasive video capsule endoscopy to a saliva swab, and regular endoscopy was the least preferred option. The respondents in our study also failed to express a preference for non-invasive breath or blood tests over endoscopy. As the Netherlands study evaluated a cohort within a system offering no out-of-pocket expenses, the cost parameter evaluated in our DCE was not considered.

Overall, our current study also supports the notion that cancer surveillance is preferred to no surveillance.[19,29,31,32] We have further highlighted that patients' own perceived risk is a significant factor. One systematic review investigating preferences for colorectal cancer screening tests demonstrated the importance of attributes relating to accuracy or clinical effectiveness, and a willingness to trade-off other attributes in favour of clinical effectiveness or health gain.[31] Another review of studies investigating preferences for general cancer screening (breast cancer, cervical cancer and colorectal cancer) highlighted the importance of efficacy/sensitivity, process and cost in determining the choice of screening test.[7] Test sensitivity was also highlighted as important by both patients and healthcare professionals in a DCE comparing different types of CT colonography for colorectal cancer screening with a willingness to pay for a test that had increased sensitivity for cancer.[29,33] However, colorectal cancer surveillance using colonoscopy cannot be directly translated to BE, as colonoscopy and CT colonography both require an inconvenient bowel preparation, whereas the preparation for upper gastrointestinal endoscopy is limited to a short period of fasting. Nevertheless, previous studies of other cancers generally support the findings from our current study that there is a progressively increased probability of uptake of a test if the risk of missing cancer is reduced.

Cost is an important attribute when considering preferences for screening tests with other forms of cancer, particularly in health systems in which patient payment or co-payment is required.[7] Marshall et al.[20] assessed preferences for CRC screening in Canada and demonstrated that cost was important in deciding the type of test, but a substantial increase in cost minimally affected uptake. However, cost was found to affect uptake of a test in predominantly un-insured and low-income populations in North Carolina where participants preferred a test with minimal cost for the test and for follow-up care.[23,34] Currently, endoscopic surveillance is delivered free of charge to patients in the public hospital system in Australia, although not to all privately insured patients. It is not surprising that respondents in our study who were generally not accustomed to payment at the point of service were averse to a test that might incur an upfront cost.

Limitations of this study include the relatively small sample size and the prior experience of our study sample with endoscopic procedures which may have biased their preferences against non-invasive tests for which they had no prior

experience.[30] The sample size of this DCE, however, was comparable with other published DCE studies in cancer care and health services research in general,[34,35] sufficiently large enough to produce reliable statistical coefficient estimates. The DCE User Guide suggests that the minimum number of participants per block is 20[26] which suggests that our study required a minimum sample size of 40 participants for a 2-block design, and this threshold was exceeded. Future research should investigate patient preferences in larger and more diverse samples (e.g. including endoscopy naïve participants) to improve the robustness and generalisability of the findings. However, our patient cohort is likely to have had a better understanding of BE and its implications than any potential endoscopy naïve cohort recruited to a future study.

Conclusion

This study has provided insights into patient preferences for BE surveillance in the Australian context, and some of these insights are likely to be informative internationally. Test sensitivity, test frequency and cost were the key factors influencing preferences and likely uptake. Patients prefer a test with the highest sensitivity offered frequently and that incurs no upfront costs, and they show no preference for a less invasive blood or breath tests. Future research will be required to determine the generalisability of these findings to other health systems internationally.

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Author Contribution N B B: substantially contributed to the acquisition of data, the analysis of the data, the interpretation of data for the work, drafting the manuscript, approved the version that is submitted for peer-review, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

G C: substantially contributed to the conception and design of the study, the acquisition of data, the analysis of the data, the interpretation of data for the work, drafting the manuscript, approved the version that is submitted for peer-review, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

T B: substantially contributed to the conception and design of the study, the acquisition of data, the interpretation of data for the work, critically revised the manuscript for important intellectual content, approved the version that is submitted for peer-review, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

J R: substantially contributed to the conception and design of the study, the interpretation of data for the work, critically revised the manuscript for important intellectual content, approved the version that is submitted for peer-review, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Compliance with Ethical Standards

Informed consent was obtained from all study participants. Ethical approval was obtained from the Southern Adelaide Clinical Human Research Ethics Committee (Reference No. 451.15 - HREC/15/SAC/437).

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