Received: 22 January 2024 | Revised: 11 July 2024 | Accepted: 7 August 2024

DOI: 10.1111/ajr.13181

AJRH National Rural Health Alliance WILEY

ORIGINAL RESEARCH

Barriers and enablers to bowel cancer screening participation in remote Tasmania: A qualitative study using the theoretical domains framework

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Funding information
Cancer Council Tasmania; Centre for Rural Health at University of Tasmania.

Abstract

Objective: Identify barriers and enablers for remote Tasmanians participating in bowel cancer screening through the National Bowel Cancer Screening Program.

Setting: A small remote Tasmanian community.

Participants: Tasmanian remote community members aged 50 years and over.

Design: A qualitative study conducted 16 semi-structured interviews. Two researchers conducted in-person and telephone interviews. Questions were directed by an interview guide developed using the Theoretical Domains Framework for behaviour change and Behaviour Change Wheel. Two researchers analysed data using directed content analysis with a flexible inductive approach.

Results: Four themes related to barriers and enablers to completing the National Bowel Cancer Screening Program screening kit in remote Tasmania. Themes included the subject of screening, physical screening kit, the process and outcome of the kit. Several barrier and enabler sub-themes overlapped or were linked, as many enablers mitigated barriers. For example, social influences, awareness level, steps in completing screening, and planning and timing to screen. Social support and discussing screening with others were key enablers, whereas lack of these were barriers. For remote communities, taking the kit to the post office was a barrier from often knowing the post officer. A bowel bus providing screening and information support services may reduce the travel burden of follow-up diagnostic tests and support low-literacy individuals to screen.

Conclusion: Barriers and enablers exist within each stage of the screening process, from what influences an individual decision to screen, through to the outcome. To improve screening rates in rural/remote Tasmania, barriers and enablers to screening must be considered.

KEYWORDS

barriers, bowel cancer, enablers, screening participation

1 | INTRODUCTION

Bowel cancer is the second most common cause of cancer-related deaths in Tasmania.[1] Between 2021 and 2022, Tasmania had the highest mortality rate and second highest incidence rate of bowel cancer in Australia.[2] According to the Modified Monash Model (MMM), Tasmania comprises of rural, remote and regional areas, with no metropolitan locations.[3] People living in rural, remote and regional areas in Australia have been found to have lower survival rates compared to metropolitan areas.[4] One reason may be the stage in which bowel cancer was detected. Sun et al.[5] reported many individuals in rural/remote areas often detected bowel cancer at later stages compared to metropolitan areas of Australia. This is consistent with National Bowel Cancer Screening Program (NBCSP) participation rates, where rural areas had lower rates compared to metropolitan (39.8% major cities; 25.5% very remote, in 2021–2022).[2] While positive screening rates increased with remoteness (major cities: 6%; very remote: 8%), rates of following through to diagnostic tests (colonoscopy) reduced with remoteness (major cities: 85.8%; very remote: 81.6%).[2,6] Although rural areas often have lower screening rates, when considering Australian jurisdictions as a whole, Tasmania currently has the third highest screening rate (43.8%, 2021–2022) within NBCSP.[2] However, this rate is still relatively low and declined over recent years (48.9%, 2018–2019).[7] Lew et al.[8] identified if screening rates increased from the current 40.9% to 60% Australia-wide, an additional 24 800 deaths could be prevented. At 60%, the study projected 83 800 deaths could be prevented between 2015 and 2040.[8]

The NBCSP is a nationwide screening program developed to provide all eligible Australians (50–74 years) access to free bowel cancer screening kits.[6] The program allowed for early detection, through detecting the presence of microscopic blood in stools which can occur in the pre-cancerous stage before symptoms develop.[6] Symptoms often do not occur until later stages, and as the cancer develops and is left undetected, survival rates reduce.[6,9] Five-year survival rates at stages one to four reduce from 99%, 89%, 71% to 13% respectively.[6] Therefore, early detection through screening, as opposed to waiting for symptoms to develop, is key to increasing an individual's survival rate.

Previous literature identified some barriers and enablers to screening in Australia. A regional Victoria study[9] found barriers to screening interventions in the community included being hesitant, distrust for authorities delivering the health messages, or health messaging fatigue. For example, with large numbers of different health campaigns/messaging, individuals may choose to ignore bowel cancer messages.[9] Another rural Victorian study[10] and South Australian study[11] identified enablers as knowledge, awareness, attitudes and beliefs about screening and bowel cancer, screening cost and reminders.[10] These findings were consistent with a review of qualitative studies on screening barriers and enablers. The review found enablers included screening awareness and its purpose, positive attitudes towards screening, and motivation to screen.[12] Studies showed those who were aware of when to screen, and screening options were more likely to screen. Lack of awareness was a barrier observed in many studies: often for the purpose of screening and the view screening was only needed if symptoms were present.[12] Barriers were identified as the opposite: lack of awareness, negative opinions of cancer or attitudes towards screening and limited motivation.[12]

To understand how to increase bowel cancer screening rates in different community groups in Australia, we must understand the causes for low screening levels.[13]

What is already known on this subject

- There are generally lower bowel cancer screening rates in rural and remote areas of Australia compared to urban areas. There is a need to understand the reasons for low participation rates in these areas to help improve them. Reasons for this have been explored in other states of Australia but limited studies have been conducted in rural and remote Tasmania.

What this study adds

- This qualitative study suggests there are many complex barriers and enablers to bowel cancer screening in remote Tasmania. Many enablers can reduce or remove the barriers. To guide potential strategies to encourage screening uptake, these barriers and enablers were considered in the context of behavioural change models, Theoretical Domains Framework for behavioural change version two and the Behaviour Change Wheel.
- To encourage more Australians to screen, there is a need to normalise talking about bowel cancer and screening, to reduce the stigma with which it is associated.
- This study used a strength-based approach to identify the barriers remote Tasmanians experience when participating in the National Bowel Cancer Screening Program. The findings will assist in the future development of strategies to overcome these barriers and encourage the enablers.

Most Australian studies on bowel cancer screening barriers and enablers were conducted in metropolitan, regional or rural communities according to MMM classifications.[3] Remote and very remote communities are often underserved with more disadvantages often ignored in research studies. This study attempts to capture perspectives of the silent voices. Remote Tasmania is a key location for capturing such voices, with high rates of incidence and cancer-related deaths stated above.[1,14] To the authors' knowledge, no published studies had been conducted in remote Tasmania (or other parts of Tasmania) on bowel cancer screening barriers and enablers; therefore, research was needed. Additionally, this paper aimed to utilise a strength-based approach by working with a remote community with the highest screening rates in Tasmania,[15] to identify barriers and enablers for completing NBCSP screening.

2 | METHODS

This qualitative study was reported using the Consolidated Criteria for REporting Qualitative Studies (COREQ) checklist.[16] Ethical approval was received from the University of Tasmania Human Research Ethics Committee (approval number: H0027256). Informed consent was obtained at the beginning of interviews.

2.1 | Design

This qualitative study conducted semi-structured interviews to identify factors which influenced poor bowel cancer information-seeking behaviour, awareness, and screening participation among remote Tasmanians. The study design was guided by the Theoretical Domains Framework version 2 (TDF(v2)) for behavioural change and Behaviour Change Wheel (BCW).[17,18] TDF(v2) consisted of 14 domains and was chosen for this study as it provided a framework for researchers to see a variety of possible influencers on behaviour which could help facilitate behaviour change.[17] Researchers used TDF(v2) domains and the Capability, Opportunity, and Motivation to Behaviour System within BCW to develop the interview guide with open-ended, probing questions and additional relevant questions (Appendix S1).[17,18] Questions focused on participants' views and attitudes towards seeking bowel cancer information; difficulties experienced with, and barriers to seeking information and screening participation; whether participants had received support/advice regarding bowel cancer information; and what would have encouraged participants to seek more relevant information or participate in screening. To ensure questions were understood by participants, prior to interviews, the interview guide was tested and reviewed by three consumers with either lived experiences of bowel cancer or screening.

2.2 | Context

This study was conducted in a small remote town in Tasmania, Australia. Latest Census data showed the town population was 997 in 2021, median age of 62 years and ~70% of the population were aged 50 years or above.[19] In 2019–2020, this region recorded the highest population growth rate in Tasmania (3.2%).[20] The town's local government area had the highest rate of bowel cancer screening participation (54.8%, $n = 670$) in Tasmania between 2018 and 2019.[15] Within that 12-month period, 11.2% ($n = 75$) of individuals in the local government area tested positive, the fifth highest rate within Tasmania.[15] Due to the local government area having the highest screening rates, this setting allowed researchers to utilise a strength-based approach. This approach in health research allows researchers to identify methods related to personal skills, the individual, community, and their environment and social relations and practices of the community.[21] By focusing on an area with the highest screening rates, researchers can understand community strengths and leverage these to achieve health promotion goals.

2.3 | Participants

Participants included community members aged >50 years who had or had not engaged with NBCSP, general practice or pharmacy screening previously and/or undergone a colonoscopy. Participants were recruited through the communities' general practitioners (GPs) and pharmacists who identified and referred all eligible potential participants to the study. Snowball sampling occurred from participants asking other community members to participate. Participants were also recruited through advertisements in strategic community locations, for example, local businesses. Advertisement included researcher's contact details for interested individuals to contact, to assess their eligibility and provide further information.

Individuals with a cognitive impairment were excluded from the study. Community healthcare providers assisted with identifying such individuals during recruitment through the individual's medical history. Individuals recruited through advertising completed a short one-item cognitive impairment test 'Single-question test on

progressive forgetfulness (patient)'.[22] This stated, 'Has the person been more forgetful in the past 12 months, to the extent that it has significantly affected their daily life'? Recruitment occurred until data saturation was reached, where no new information arose in the last three interviews.

2.4 | Data collection

Participants were recruited during July to December 2022. Two researchers conducted semi-structured interviews between September and December 2022 at the participants' preferred location, in-person in a local health centre meeting room, via telephone or video conferencing. Interviews were conducted for 30–60 min and were recorded via audio recording and detailed written notes. Audio was transcribed verbatim. A short paper-based participant demographic and characteristics questionnaire was completed by participants at the beginning of their interview.

2.5 | Data analysis

Content analysis with a flexible inductive and deductive directed approach was conducted to identify interview participants' views and experiences of barriers and enablers of screening participation.[23,24] Data were coded, and themes and sub-themes were mapped using TDF(v2) domains.[25] For analytical rigour, the classification of belief statements of the TDF(v2) domains were discussed and agreed within the team to create a codebook. Interview text was cleaned by ensuring the text (data files) were in similar formats. After which, interviews were de-identified as participant 1, participant 2, etc. Next, two researchers read and familiarised themselves with preliminary data. Data were read again to code sections which were meaningful to the research objective (inductively) and related to TDF(v2) domains (deductively) (Appendix S2). Two researchers discussed the preliminary coded data and agreed upon the meaning of codes. Disagreements were resolved through further discussion between the two researchers until a consensus was reached. A third researcher was available if a consensus could not be reached. Codes were refined into meaningful themes which reflected the main concepts identified from the data. Sub-themes were linked with TDF(v2) domains for barriers and enablers of screening behaviour. The qualitative analysis was conducted using QSR International's NVivo Software (V.12, 2020).[26] Participants' demographic data were analysed using SPSS.[27]

2.6 | Techniques to enhance trustworthiness

To limit risk of bias in content analysis, two researchers initially coded the data to ensure consistency, discussed codes identified and adapted the coding system using TDF(v2) domains and new emerging codes.[17] Twelve TDF(v2) domains were used as initial codes and Table 1 in Atkins et al.[17] was used as the guide for coding (codebook) (Appendix S2). Two domains (social/professional role and identity and goals) were excluded as researchers identified them as less relevant for the study. Further codes were identified as they emerged from the data. Participants were asked by the researchers at the end of the interviews if they would like to check their responses, to provide error corrections or clarification where necessary.[25] Participants who accepted were provided their transcripts immediately following transcription via email.

3 | RESULTS

There were 16 participants in the study, with 81% of those females (Table 1). Also, 69% had a family history of bowel cancer. Three participants had not completed a stool test previously, of those, two had not completed a colonoscopy and one lived alone. Seven (44%) participants had previously undergone a colonoscopy. All participants were born in Australia and did not identify as Aboriginal or Torres Strait Islander.

3.1 | Bowel cancer screening behaviour

There were four major themes with sub-themes for screening barriers and enablers (Table 2). Themes included, the subject of bowel cancer screening, the physical kit, the process and outcome of the kit.

3.1.1 | Theme 1: The subject of bowel cancer screening

Theme 1 described what can lead to individuals deciding to screen or not. Prior experience, personal importance, relevance, or priority, social influence, and awareness level of screening and bowel cancer were both barriers and enablers. Another barrier was it is taboo to discuss poop. Social influences could impact screening behaviours from the level of social support an individual received. Participants who reported they had discussed or received support from others (friends, family or healthcare providers) also reported the likelihood to screen.

TABLE 1 Participant demographics and characteristics ($n = 16$).

Demographic/characteristic	*n* (%)
Age (years)	
50–54	4 (25)
55–59	2 (12.5)
60–64	2 (12.5)
65–69	3 (19)
70–74	4 (25)
75+	1 (6)
Sex	
Male	3 (19)
Female	13 (81)
Other	0
Highest level of education	
Primary school	0
High school	1 (6.3)
Year 12	1 (6.3)
TAFE/trade	9 (56)
University	5 (31)
Employment status	
Employed	10 (62.5)
Unemployed	0
Retired	6 (37.5)
Previously had a colonoscopy	
Yes	7 (44)
No	9 (56)
Number of stool tests completed previously	
0	1 (6.3)
1	4 (25)
2	4 (25)
3	1 (6.3)
4+	6 (37.5)
History of bowel cancer	
Yes	5 (31)
No	11 (69)
Family history of bowel cancer	
Yes	11 (69)
No	5 (31)
Number of people live with	
1	3 (19)
2	9 (56)
3	3 (19)
4+	1 (6.3)

One male participant reported their wife would remind him to screen and single males may forget without this. Knowing someone with experience of bowel cancer was another enabler. Whereas participants who reported limited social support to screen or believed it is taboo to discuss poop also reported they were less likely to screen.

> Male on their own.... just get it in the mail. And it just gets forgotten about... if you're married, you got someone there at you. You're going to do something with this? or are you just going to leave it sitting there?
>
> (Participant #1)

> I don't know what it's like in the city... but... there's not a lot of people that talk about it... Well, no-one's brought it up with me and I've been here 20 years.
>
> (Participant #3)

> The doctor told me the first time because of the high family [history], to go and have it done [screening] and I've been having it done every two years since.
>
> (Participant #11)

Awareness was an enabler when the individual understood one should screen if they had family history or that bowel cancer was easy to detect and treatable. Participants who were unaware of these, did not report knowing risk factors or had limited experience of bowel cancer and reported they were less likely to screen.

> Cancer through the family. That was my encouragement to... find out and participate.
>
> (Participant #13)

> Maybe if there was somebody in my family that had been screened and had showed positives or... it happened close to home... But I haven't had anything like that happen... You hear... and you talk about breast cancer and stuff like that but this screening kit, you just don't ever hear about it.
>
> (Participant #3)

3.1.2 | Theme 2: The physical kit

Theme 2 described physical components' individuals received in the kit. The letter encouraged participants to screen (enabler). Whereas barriers were the packaging and instructions, as the instructions were hard to follow.

> My son and my husband have got dyslexia, so I think it's quite wordy.... it is quite complex... for people with... literacy issues and because

TABLE 2 The themes and sub-themes of the barriers and enablers for remote Tasmanians participating in the National Bowel Cancer Screening Program.

	Barriers		Enablers	
Major themes	**Sub-themes and TDF(v2) domains**	**Sub-theme components**	**Sub-themes and TDF(v2) domains**	**Sub-theme components**
The subject of bowel cancer screening (What leads to an individual deciding to screen or not.)	Prior experiences (Environmental context or resources)	Limited or no contact with others with previous experience to educate about bowel cancer, screening and treatment	Prior experiences (Environmental context or resources)	Work in healthcare
	Social influences (Social influences; Environmental context and resources)	Limited support from others.	Social influences (Social influences)	Support from others, encouraging to screen
		Older males try to deter others not to screen		Know someone with bowel cancer (e.g. friend or family)
		Not visiting their general practitioner regularly		General practitioner encouragement
	Taboo to discuss your poop (Social influences)	Not spoken about with others		Discuss bowel cancer with others
	Lack of awareness (Knowledge)	Do not know risk factors	Awareness of screening and bowel cancer (Knowledge; Beliefs about consequences)	Should screen if they have a family history of bowel cancer
		Have not thought about bowel cancer		Easy to detect
		Lack of awareness of screening and bowel cancer		Awareness of screening and bowel cancer
				Early detection can have a simpler treatment
				Treatable
	Personal importance/relevance/ priority (Intentions; Knowledge; Memory and decision processes; Optimism)	Refuse to screen	Personal importance/relevance/ priority (Intentions; Knowledge; Memory and decision processes; Optimism)	Proactive attitude about health
		Do not think they need to screen		Personal beliefs or choices that screening is the right thing to do
		Age, a future problem		Symptoms present
		Denial about getting older		Previous health scare
		Do not want to know		Family history of bowel cancer
The physical kit (The physical components individuals receive with the screening kit.)	The packaging (Environmental context and resources)	Uninviting	The letter (Environmental context and resources)	Letter encouraging
		Not discreet		Thought it was from their general practitioner
	The instructions (Skills; Beliefs about capabilities)	Hard to follow		

TABLE 2 (Continued)

	Barriers		Enablers	
Major themes	**Sub-themes and TDF(v2) domains**	**Sub-theme components**	**Sub-themes and TDF(v2) domains**	**Sub-theme components**
The process of the kit (The process of completing the screening kit.)	The steps in completing the kit (Skills; Environmental context and resources)	Difficulty writing on sample tubes Uncomfortable giving test to post office Need gloves Lack of privacy being mailed to home Put the kit in the fridge	The steps in completing the kit (Environmental context or resources; Knowledge; Beliefs about consequences)	Toilet liner is more pleasant Kit is simple to complete Clean Non-invasive procedure
	The yuck factor (Emotion; Social influences; Environmental context and resources; Beliefs about consequences)	Think you touch your poop. Sending poop in the post Sounds uninviting Sample swab too short, and too close to poop	Self-efficacy (Skills; Memory, attention and decision processes; Beliefs about capabilities)	Think screening is easy Previous experience doing the kit
	Planning and timing (Goal; Reinforcement; Intentions; Memory, attention and decision processes)	Too busy Put others before self Forgot Not in the mood Bowels do not open daily No sense of urgency	Planning and timing (Goals; Memory, attention and decision processes)	Action planning, set aside time to complete the test
The outcome of the kit (What comes from doing the screening kit)	The results (Knowledge; Optimism; Beliefs about consequences)	False positive	The results (Knowledge; Optimism; Beliefs about consequences)	Previous positive test result
		False negative	Their own health (Behavioural regulation; Reinforcement; Beliefs about consequences; Knowledge)	For general health To prolong life Prevention is better than the cure
			For others (Goals; Memory, attention, and decision processes)	For their family To motivate others

it's such a personal thing they may not want someone to be there with them doing it [screening]. I don't know how you get around that... Cause if... there's a heap of words on the page and you're struggling with your literacy... you're just not gonna bother.

(Participant #10)

Maybe it needs... a simpler, like for someone that has... literacy issues, something far more pictorial with less words and in big print.

(Participant #11)

Packaging had mixed responses from participants, as a barrier, some participants found the packaging uninviting whereas others reported it should be discreet.

I'm glad it's in a... non-identifiable packet.

(Participant #10)

When the packaging turns up it's not something that's inviting... You read it and it says it's a bowel testing kit and you think, oh no, I'm not doing that.... I think I'm not the only one that says that. I think 90% of people are thinking, nah it's a bowel kit, I'm not doing it. I know on the packaging it says that it's a bowel screening kit... but it... doesn't grab you. You know, it's a white packaging, it's more like a bill.

(Participant #3)

3.1.3 | Theme 3: The process of the kit

Theme 3 described the process of completing screening. Planning and timing and steps in completing the kit were both barriers and enablers. Yuck factor was another barrier and self-efficacy an enabler. Planning and timing were identified as a barrier and enabler as female participants with busy lives reported forgetting, prioritising others over themselves or having no sense of urgency to screen. Participants reported males would also forget or had no sense of urgency although, did not discuss males prioritising others over themselves. Whereas others discussed planning ahead and setting a time to complete it as useful to ensure they completed the kit.

There is nothing... stopping me from doing it, it's just actually doing it... being a busy mum and housewife and working... you always worry about [partner], getting them to the doctor or a child, getting them to the doctor, then you do yourself... I'm more concerned about getting everybody else sorted. Don't worry about me.

(Participant #16)

They just come by mail. And if you don't want to do it, you don't do it. And, the day it arrives in the mail, you really need to be thinking about, well... you need to get it done, or you just put it into the corner, and it doesn't happen. I think that's the thing, you need to be in the mood.

(Participant #3)

The steps involved in completing the kit were barriers, for example, difficulty writing on test tubes and uncomfortable storing the kit in the fridge or taking it to the post office. Some participants had a misconception they had to touch their poop (yuck factor). In contrast, participants reported the steps as encouraging, for example, toilet liner was pleasant, kit seemed clean and the process was non-invasive.

I think it's the process that you go through to get the result. Like, to put it in the post. I don't think people like doin' it. People like to go to the toilet... then get out... I don't want to stand around there poking at it... Even now I'm talking about it I certainly even more, so I don't want to be standing around poking it... How long are them little test tubey things? They don't look very big to me. My hands are gonna get way too close for comfort... I'd want something more like the length of a straw.

(Participant #3)

Hope that your husband's mates don't turn up and go to the beer fridge before you get to post it... I didn't want to stick it in the fridge inside, so I stuck it in his beer fridge.

(Participant #11)

We all know each other by name here... They're gonna walk in there. They're gonna say... [post officers name], and they are gonna see... [another worker] and they're going to be saying Hello, Mrs. [name]. How are you today? And... you might have had a drink with him at the pub the night before.

(Participant #5)

Participants self-efficacy in their ability to complete the kit was encouraging. Participants with previous screening experience reported they were likely to screen again from knowing how to do it.

> You just take it out of the box, read the instructions, stick your thing in and put it in the fridge.
>
> (Participant #11)

> Follow all the instructions and put the right bit in the right. It's a bit like doing a COVID test.
>
> (Participant #10)

One suggested a bowel screening bus like BreastScreen.[28] The bus travelling to the community could encourage screening in a remote community, as they are more likely to take advantage of the service. It could be in the health precinct; a service to screen, raise awareness or answer questions. Remote people would not need to travel to screen (colonoscopy); a barrier for older people who often do not drive and must organise someone to take them. To get the uptake, it must be advertised.

> More likely to take advantage of those things if they come to you... certainly, with the older age group. They're you know, perhaps not driving, they've got to be reliant on someone else. They can easily get into... if the bus is, maybe you're even taking appointments for screening... for information and awareness.... run a little group where people can just come in and find out a bit more information... If they think they have any issues... you are bringing it here, right into the community. Advertise it through the newsletter, do all of that first to make sure. You know there are a number of websites, the council would advertise it.
>
> (Participant #5)

> To bring a bus up here... it needs to be advertised... Too often these campaigns are put together from the mainland. And it's city stuff. And those sorts of ways of doing things don't work in rural areas.
>
> (Participant #5)

3.1.4 | Theme 4: The outcome of the kit

Theme 4 described what comes from doing screening. The results, receiving a false positive/negative gave some participants mistrust in the test (barriers). Whereas receiving a previous positive test result was an enabler for others to support their health.

> Bowel cancer screening... if there's much of a rate of false positives or false negatives?... it could be... an influence for people engaging in screening.
>
> (Participant #14)

> I've... had two test(s) with polyps, which is a precursor [for bowel cancer]... It's a no brainer really, just keep testing and hopefully... if something does happen and changes, then early detection is the key.
>
> (Participant #5)

Other enablers included completing the kit for their own health and for others. Participants were encouraged for their own health by their general health, to prolong their life, and the belief that prevention is better than cure. Participants reported they would screen for others (family) or to motivate others to screen, by showing them the steps were simple.

> After having discussions that we've had today it is now my duty to go and find out more information, do the test, for myself and for the people around me.
>
> (Participant #16)

> My partner refused. And I... thought that was a silly thing to do, so I was determined that I was going to do it... so I could explain to him how easy it was and... there wasn't a major issue about it.
>
> (Participant #15)

4 | DISCUSSION

This study aimed to identify barriers and enablers of screening participation within a remote Tasmanian community using a strength-based approach. This approach allowed researchers to identify a broad range of barriers and enablers from remote Tasmanians who have and have not screened. Findings suggested four main themes: the subject of screening, physical kit, process of the kit and the outcome. Many sub-themes overlapped with enablers as positive behaviours that could reduce/manage barriers experienced, for example, social influences, awareness level, planning/timing and personal importance, relevance, or priorities were all both barriers and enablers. Findings were consistent with an unpublished study.[29] In the study, GPs[30] and community members were interviewed (unpublished findings)[29] from four rural Tasmanian communities with lower screening participation rates. There was a significant overlap of barriers and enablers to screening

participation between studies, for example, barriers of a busy life, bowel cancer is a taboo subject, lack of symptoms and enablers of health concerns, social influences and self-efficacy. This showed confidence in the findings; barriers and enablers could be similar across other rural and remote Tasmanian communities.

One barrier for the process was taking the kit to the post office. This was uncomfortable in the remote community, as locals knew one another, and screening can be private. This may not be a barrier in cities where people are less likely to know the post officers. The authors did not identify this barrier in previous literature. Another remote-specific barrier was travel for diagnostic tests, particularly those who did not drive. This supported lower diagnostic testing uptake in rural/remote areas compared to metropolitan.[2] A solution suggested by a participant was a 'bowel bus', travelling to communities to provide information and screening. This 'bowel bus' approach has been tested in the UK with promising results.[31] It provided on-bus screening (sigmoidoscopy, $n = 244$), referrals to GPs and discussions (screening, symptoms) with 772 community members.[31] This approach was novel in literature and should be further explored. The bus information service could assist those with low literacy levels, explaining how to use screening kits and answer questions. As one participant in the present paper reported, individuals may not screen if they cannot understand instructions. Consistently, Yalcin et al.[32] found screening uptake may be associated with health literacy levels. Although, the participant also reported these individuals may not seek help from discomfort of the subject thus, may not seek bus services. Alternative solutions for such individuals reported by another participant were pictorial instructions with less words. This is consistent with a review that simpler instructions are necessary to be inclusive of the whole population's literacy levels to encourage screening.[33] Therefore, literacy levels are likely a key factor in screening decisions.

Being too busy was a barrier. Participants discussed forgetting, putting others before their own health, not in the mood or had no sense of urgency to screen. Consistently, Honein-AbouHadidar et al.[12] discussed time limited individuals who saw screening as less important in their life. Another Australian study also found barriers of being too busy, having more important things to do and lacking planning.[34] TDF(v2) domains related to these barriers were intentions, goals and memory, which fitted into BCW as reflective motivation and psychological capability.[17,18] These also aligned with enablers identified, suggesting that to reduce or remove these barriers, reflective motivation should be shifted towards the behaviour of screening. Michie et al.[18] suggested reflective motivation involved evaluation and planning. To ensure individuals complete screening, the present study found a need for action planning. Those who were too busy to screen may benefit from planning, setting aside a time, and identifying how to screen and when to post it. This strategy could be useful for screening intenders, that is, those who reported lack of time and planning to screen.[35]

Personal importance, relevance or priorities were identified as barriers and enablers for screening. Some participants reported no need to screen as they felt healthy, did not have symptoms, family history, or were too young for it to be a problem. These all contributed to no sense of urgency, a barrier consistent with Kirkegaard et al.[36] A rural Victorian study, Azar et al.[10] reported participants believed they needed symptoms to worry about bowel cancer. A South Australian study, Javanparast et al.[11] also found lack of symptoms or family history as barriers. Goodwin et al.[34] found participants believed doing the kit would make them feel old and others felt nothing wrong with them. With the rise of Australians under 50 years being diagnosed with bowel cancer,[37] perceptions of one being too young or needing symptoms to screen should change. Public awareness of screening at 50 years in Tasmania has been identified as lower among those aged under 50 years and supported the need to increase awareness among this group.[38] One way could be through educating individuals about the need for screening and the rates of bowel cancer diagnosed under 50 years. Mass media campaigns using social media could be useful for younger audiences.[33]

Having a proactive attitude about one's health was an enabler for screening. Participants who completed screening discussed needing to take charge of their own health, to prolong their health, do it for their family, or that prevention is better than cure. Other studies similarly found participants' attitudes and opinions were barriers and enablers.[10–12,39] Javanparast et al.[11] and Honein-AbouHaidar et al.[12] both found positive attitudes towards bowel cancer screening and being proactive towards their health as enablers, for example, believe prevention is better than treatment. Whereas negative attitudes and opinions were barriers. Negative attitudes included the nature of the test being unpleasant, inconvenient, embarrassing and disgust of the process.[10–12,34,39] Negative opinions included fatalism, for example, 'it is God's decision' or fear of cancer diagnosis from screening.[12,39] This suggested that to encourage screening, personal importance, relevance or priorities should be emphasised. Like the above barriers and enablers, this is related to TDF(v2) domains: intentions, optimism, memory, and knowledge, and BCW domains: reflective motivation and psychological capability.[17,18] According to Michie et al.,[18] psychological capability could be improved by modelling, by providing an example situation to others. For those without a proactive attitude towards health, symptoms, or family history,

creating personal importance, relevance, or priorities could be through hearing stories from others in similar situations. For example, others in rural/remote communities or parents, to help consider the relevance to them.

Social influences could be a barrier and enabler for screening. This study identified having a social support network as key to screening. Participants who spoke with friends/family about bowel cancer or screening were likely to screen. Whereas some participants who did not, reported a perception that poop was a taboo subject to discuss. This is consistent with a review that social support could improve screening uptake and intentions.[33] Similarly, Gholampour et al.[40] found social support from family and healthcare providers helped encourage screening via iFOBT. The influence of GPs encouraging screening was also identified in the present study, as some participants reported they completed the kit because their GP suggested it. Davis et al.[41] found rural community members were more likely to do stool tests when their GP recommended it, or provided education or a test directly to them. These findings suggested having a social support network could be key to encouraging routine screening. Social influences sat within social opportunity in BCW, and suggested interventions included persuasion or education.[18] The need to normalise discussing with others about bowel cancer and screening could be done through education by raising awareness of bowel cancer, and persuasion by encouraging conversations with their healthcare providers or within communities.[18] Due to limited GPs in Australia, especially in rural and remote areas, and their time capacity during consultations,[42] other healthcare providers should be explored as alternative options for such conversations, for example, nurse or pharmacist.

4.1 | Strengths and limitations

A strength was capturing perspectives of a remote Tasmanian community. Secondly, the use of theoretical models including TDF(v2) and BCW, in the design and implementation.[17,18] The TDF(v2) informed the selection of participants, it reported optimal participants as those who performed the behaviour (i.e. community members screening).[17] Key stakeholders (i.e. community healthcare providers) were also identified as able to provide valuable input and were selected to assist participant recruitment.[17] Interview guide questions were reviewed by consumers with lived experiences of bowel cancer or screening. This ensured questions were easily understood by participants. Interviews and data analysis occurred concurrently, which allowed questions to be adapted based on findings. Finally, a strength-based approach was utilised to identify what the community was doing well to encourage screening. Limitations included: the study sample were majority Caucasian females and were representative of one remote community. Although researchers implemented multiple measures to recruit diverse participants, there was a low uptake from those who had not screened previously ($n = 3$). Although the authors excluded goals (TDF(v2) domain) from the analysis codebook, it was identified in the analysis through action planning, a construct of goals and behavioural regulation domains.

5 | CONCLUSION

The silent voices of a remote Tasmanian community were captured identifying barriers and enablers to completing bowel cancer screening. Barriers and enablers existed within each stage of the NBCSP screening process, from what influenced an individual to decide (or not) to screen, through to the outcome of screening. Many barriers and enablers overlapped, where several enablers could mitigate barriers. For remote communities, taking the kit to the post office was a barrier as some found it uncomfortable and lacked privacy, as they often knew post officers. Travel to undergo diagnostic tests following positive screening was another barrier for those living remotely. One solution suggested and worth exploring could be a bowel bus travelling to communities to provide screening and information. Future studies and practice should consider barriers and ways to overcome them from enablers identified, to encourage screening in rural/remote communities.

AUTHOR CONTRIBUTIONS

Nicola Gadd: Conceptualization; data curation; formal analysis; investigation; methodology; project administration; resources; visualization; writing – review and editing; writing – original draft. **Simone Lee:** Conceptualization; funding acquisition; formal analysis; methodology; supervision; writing – original draft; writing – review and editing. **Jessica Hughes:** Data curation; formal analysis; investigation; writing – original draft; writing – review and editing. **Matthew J. Sharman:** Conceptualization; formal analysis; methodology; supervision; writing – original draft; writing – review and editing. **Ha Hoang:** Methodology; supervision; writing – original draft; writing – review and editing. **Kehinde Obamiro:** Conceptualization; funding acquisition; formal analysis; methodology; supervision; writing – review and editing; writing – original draft.

ACKNOWLEDGEMENTS

Firstly, the authors would like to acknowledge and thank the funding body Cancer Council Tasmania and

the University Departments of Rural Health commonwealth funding. Secondly, thank you Kerry Turnbull, the Consumer and Community Involvement Coordinator at the Tasmanian Collaboration for Health Improvement, for assisting the consumer involvement and for the document review of the interview guide. The authors would like to thank the consumers with a lived experience of bowel cancer or screening who provided feedback on the interview guide. The authors also thank the local healthcare professionals and community members of the remote community for assisting the recruitment. Lastly, thank you to all the community members who participated in the study. Open access publishing facilitated by University of Tasmania, as part of the Wiley - University of Tasmania agreement via the Council of Australian University Librarians.

FUNDING INFORMATION

This study was funded by a Cancer Council Tasmania grant and supported by the University Departments of Rural Health commonwealth funding.

CONFLICT OF INTEREST STATEMENT

As the study was conducted in a small remote community, the authors declare that NG knew some of the participants. This was managed by another researcher (JH) who conducted the interviews and de-identified the data for those participants. The authors declare that the research has not been previously published in part or full elsewhere.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICAL APPROVAL

Ethical approval was received from the University of Tasmania Human Research Ethics Committee (approval number: H0027256).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Gadd N, Lee S, Hughes J, Sharman MJ, Hoang H, Obamiro K. Barriers and enablers to bowel cancer screening participation in remote Tasmania: A qualitative study using the theoretical domains framework. Aust J Rural Health. 2024;32:1041–1053. https://doi.org/10.1111/ajr.13181