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Utilizing RE-AIM to scope potential for feasible immigrant cancer literacy education

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ABSTRACT

Disparities in cancer incidence and mortality exist between settled and newly-arrived immigrant communities in immigrant-nations, such as Australia, Canada and USA. This may be due to differences in the uptake of cancer prevention behaviours and services for early detection, and cultural, language or literacy barriers impacting understanding of mainstream health messages. Blending cancer-literacy with immigrant English language education presents a promising means to reach new immigrants attending language programs. Guided by the RE-AIM framework for translational research, this study explored the feasibility and translation potential of this approach within the Australian context. Focus groups and interviews ($N = 22$) were held with English-as-a-Second-Language (ESL) teachers and immigrant resource-centre personnel. Thematic Framework Analysis, driven by RE-AIM, identified potential barriers to *Reach* for immigrants, *Adoption* by teachers, *Implementation* into immigrant-language programs and long-term curriculum *Maintenance*. Responses further highlighted that an *Efficacious* ESL cancer-literacy resource could be facilitated by developing flexible, culturally-sensitive content to cater for multiple cultures. Interviewees also raised the importance of developing the resource according to national curricula-frameworks, different language levels, and incorporating varied communicative activities and media. This study therefore offers insight into potential barriers and facilitators to developing a resource feasible for inclusion in existing immigrant-language programs, and achieving reach to multiple communities.

1. Introduction

In many 'immigrant nations', cancer incidence and mortality disparities between communities are increasing (Singh and de Looper, 2002). One explanation for this includes sub-group differences in participation in early detection and prevention behaviours. Mainstream public health messaging designed to impact cancer incidence may be inaccessible for cultural, language, and literacy reasons (Tsai and Lee, 2016). Improving English literacy (reading, writing and numeracy skills) and health literacy (the ability to apply literacy skills to health situations (Nutbeam, 2000) focused on cancer prevention and early detection could enable new immigrants to acquire, understand and use health information and services to make informed cancer-related decisions for themselves and their families. Partnering with formal education service providers may be a means to develop both general and health literacy skills (Nutbeam, 2009).

Emerging evidence suggests that English-as-a-Second-Language (ESL) classes may feasibly deliver health information to immigrants soon after arrival. To date, four health-related ESL curricula have been evaluated (Chen et al., 2015). One found significant improvements in Hepatitis B knowledge after the course (Coronado et al., 2008; Taylor et al., 2009; Taylor et al., 2011). A second found significant improvements in cardiovascular functional health literacy (Soto Mas et al., 2015; Soto Mas et al., 2015). A third, focused on nutrition for cardiovascular health, found significant improvements in nutrition knowledge, self-reported fat avoidance behaviours and blood pressure and cholesterol readings (Elder et al., 1998; Elder et al., 2000). The fourth investigated healthy eating behaviour as well as knowledge and vocabulary outcomes (Duncan et al., 2013). The researchers found improvements in fruit and vegetable intake planning, consumption, and vocabulary skills.

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Although these results show promise, current health-related ESL curricula are limited in their utility because they are designed for a specific cultural group, therefore do not demonstrate *reach* across different populations. In Australia, freely available, government-sponsored adult literacy and ESL education is open to all who need. A recent Australian study (Morony et al., 20182018) fostered partnerships between teachers and community health providers to deliver a curriculum designed to improve health literacy and numeracy among adults attending a government-sponsored general literacy course. Students came from a variety of socio-economic and cultural backgrounds, and the curriculum was designed to be accessible to all. Following course attendance, students from different backgrounds demonstrated improvements in health behaviours and vocabulary, health system knowledge, literacy and numeracy skills as well as confidence to undertake new health-related activities such as filling in forms. The researchers concluded that although health was an engaging and appropriate topic, curriculum implementation challenges remained a significant barrier to adoption. These included the logistics of achieving health provider involvement, misalignment of the curriculum with existing teaching objectives and curricula, and time constraints that impacted teacher preparation and delivery of the course. In order for programs like this to be translational, overcoming implementation barriers is a key challenge.

Establishing the 'real-world' translation potential of any applied intervention is critical if uptake is the goal. Martinez and colleagues (Martinez et al., 2017) analysed their ESL intervention trial (see (Duncan et al., 2013) and then, using the RE-AIM translational research evaluation framework, retrospectively investigated the curriculum's translation potential. RE-AIM was developed by Glasgow et al. (1999) with the goal of helping researchers establish external validity (i.e., the generalizability of research findings to different populations and settings) in addition to the more common focus on internal validity (i.e., efficacy) when evaluating the impact of community-based and clinical interventions. Glasgow proposed that dealing with barriers to uptake and maintenance at project commencement would ensure efficacious interventions were adopted and sustained (Glasgow et al., 1999).

RE-AIM describes five requirements of translation effectiveness: (1) the intervention's *reach* to the broadest possible group of end-users; (2) the demonstration of *efficacy* (i.e., proven internal validity: sufficient evidence that the intervention can change the dependent variables of interest; such as health behaviour, intention, attitudes, cognitions); (3) its *adoption* in a broad range of settings and by a number of different program deliverers; (4) the extent to which the intervention achieves consistent *implementation* as intended in settings, thereby sustaining efficacy; and (5) the likely sustainability or longer-term *maintenance* of the intervention or program in the different settings (Glasgow et al., 2004). Over the past 20 years, RE-AIM has shown utility as an easily operational framework to help guide research evaluation across many countries and settings. It has recently been extended to incorporate a broader macro-level context (Glasgow et al., 2019).

Martinez and colleagues' (Martinez et al., 2017) retrospective evaluation using RE-AIM highlighted a range of translation barriers. These included time constraints, lack of resources, and misalignment between the language difficulty of the curriculum and students' capabilities. They reported that successful *adoption* by teachers and *implementation* into existing programs was contingent upon management support, accessible materials, and teacher enthusiasm and ability to use the curriculum flexibly to meet students' needs.

A systematic review of 25 non-ESL health literacy interventions (Allen et al., 2011) using RE-AIM highlighted gaps in the reporting of aspects of external validity including *adoption* by staff, *implementation* into existing programs, and *maintenance* over time. Limited reporting of these outcomes means that published guidance is sparse regarding translation of research findings into practice or their generalization to other settings.

Ideally, RE-AIM should be used to *plan* an intervention, to identify implementation challenges before they arise, and thus modify both the content and delivery requirements to minimise uptake barriers (Allen et al., 2011; Klesges et al., 2005). Utilizing RE-AIM at the development stage of an intervention requires a commitment to Community-Based-Participatory-Research (CBPR), an approach that is time consuming and resource-intensive. Nonetheless, involving relevant stakeholders in the research prospectively, rather than retrospectively, ensures the best chance of achieving research translation. To date, a US health intervention (physical activity in older adults) utilized CBPR (Belza et al., 2007). The researchers involved key stakeholders in the intervention's initial development and identified potential implementation barriers. Twelve months later, the researchers reported that the program had been successfully *implemented* and was still running as intended (achieving *maintenance*).

With these factors in mind, we undertook a scoping study using RE-AIM to investigate the translation potential of an ESL cancer literacy curriculum developed for recently-arrived immigrants attending Australian government-sponsored English language classes. A qualitative methodology was used to engage fully with participants as collaborators and to explore, in depth, factors that might hinder or assist implementation of a newly-designed curriculum.

2. Method

The study was conducted in metropolitan Adelaide, South Australia, from August-November 2016. Focus groups and individual interviews were conducted with teachers and immigrant community resource centre personnel. Teachers from the government-sponsored Adult Migrant English Program (AMEP) participated at two Technical and Further Education (TAFE) sites and at one adult-education College (offering the same courses). Input about the nature of curriculum challenges, class constraints and student population needs was sought from AMEP teachers in order to ensure that the proposed curriculum met the minimum requirements for uptake. Interviews with staff at immigrant community resource centres were also undertaken because these personnel deal with the immediate practical and social needs of new immigrants. All data were collected in meeting rooms at participants' workplaces.

Following Ethics approval, permissions were sought and received from organisation managers. A standard invitation email with information sheet and consent form was sent to all staff via the managers. Interested participants contacted the researchers directly to participate. Focus groups and interviews were led by DHB, a registered psychologist and ESL teacher with experience in curriculum preparation and conducting qualitative research. A project officer took notes and recorded observations. All focus groups and interviews were audio-recorded with participants' permission and were professionally transcribed verbatim.

The issues explored in the group and individual discussion sessions were based on the RE-AIM framework. Table 1 indicates the interview schedule with question prompts shown. Data saturation (Fusch and Ness, 2015) was reached after five focus groups and five interviews, when no new information arose.

3. Analysis

Data were analysed deductively utilizing thematic framework analysis (Srivastava and Thomson, 2009; Braun and Clarke, 2006). The anonymised transcripts were read and re-read, and items of interest were noted and mapped onto the elements of RE-AIM. A draft coding framework was then developed corresponding to these elements. A sample of 20% of the transcripts was randomly chosen and two coders (DHB and an independent project officer) used the analysis guide to separately code the transcripts in NVivo^{TM} (version 11) text analysis software program. The coders subsequently discussed any discrepancies, until a consensus was reached. The full dataset was then coded, with quotes mapped to each identified, agreed-upon theme. Quotes from

Table 1
Interview schedule: Key questions asked at focus groups/interviews, with sub-question topic probes (if needed) and RE-AIM elements.

Questions asked	Rationale and RE-AIM elements
Introductions: **Please state your name, your role here and the course/ program you are currently teaching/ coordinating**	To break the ice and learn about the courses (and language levels) and programs taught/coordinated by participants
Preliminary Question: **Who are the students here at the school? / Who are the clients who access the resource centre?**	To identify students/client characteristics (*Reach*)
Sub-question topics: • Demographics and access (ethnicity, gender, age, family role, religion, visa type, length of time in Australia, how school/centre accessed, reason for accessing school/centre) • Spread of information outside class/ program	
Transition Question 1: **What curricula are currently taught here / What resources and programs are available here?**	To find out what is currently used; the nature of any health curricula/ programs/resources; if and how health communication is taught; to determine gaps regarding health topics (*Adoption, Implementation, Maintenance*)
Sub-question topics: • Current health/health communication curricula, methods for teaching health topics • Opinion of what students/clients need/ want to know regarding health • Observation of students/clients in health courses/programs and how the information is used • Teaching preferences in existing courses (e.g., aspects utilised over and over/aspects modified or not used)	
Transition Question 2 (teachers only): **Can you describe what happens at this school when a new course is introduced?**	To find out how new curricula is integrated into current programming; how it is implemented (e.g., as a whole or flexibly) and evaluated (*Adoption, Efficacy*)
Sub-question topics: • Who decides curricula, how it is trialled/evaluated	
Key Question: [Focus group] **If a new curriculum regarding cancer prevention was developed to fit this school's existing programming and this school's migrant students, what would be most useful?** [Interview] **If a new resource was developed to help your clientele learn about cancer prevention in Australia, what would be most useful?**	To examine logistics, barriers and facilitators of curriculum development and implementation (*Implementation, Adoption, Reach*)
Sub-question topics: • Logistics: what topics, number of lessons/modules, length of lesson, how to best fit into current programming, when/where/who would teach it, extra resources required • Students/clients who would benefit the most/least and why, potential barriers (e.g., cultural health beliefs, taboos), strategies to overcome barriers • Preferred media and materials and curricula components, overall impression	
Closing Questions: **What other schools and organisations offer programs to new arrivals? Is there anything else you would like to add? Is there anyone else I should speak with?**	To give participants an opportunity to add additional comments/suggestions

participants were viewed as direct insights into their experiences.

4. Results

4.1. Participant characteristics

Twenty-two participants participated, comprising 18 female ESL teachers and four immigrant community resource centre personnel (three female). Seventeen ESL teachers participated in focus groups of three and four participants. An additional teacher was individually interviewed. The teachers' employers represented all migrant English programs (and language levels) taught in the AMEP. The community immigrant resource centre staff participated in individual interviews. The majority of participants were of Caucasian ethnicity ($n = 19$;86%), aged between 40 and 69 years with a mean of 13.6 years' experience (range 1–35 years) and worked with adults from many different cultural backgrounds.

4.2. Themes

Three broad overarching theme categories were identified through the lens of RE-AIM, two of which characterised barriers and facilitating factors associated with *reach* and *adoption*, and the third combined factors associated with *efficacy*, *implementation* and *maintenance*. These themes are summarised in Table 2.

4.3. Reach

The aim of the investigation of *reach* at this scoping phase was to identify any potential barriers to *reach*ing different immigrant groups that a cancer prevention curriculum may pose, as well as factors that could enhance the curriculum's *reach* to as many immigrant groups as possible. Questions focussed on the characteristics of students who attend the AMEP, and cultural taboos that might impact teaching particular aspects of cancer prevention.

4.3.1. Student characteristics and the importance of family

Teachers reported that enrolment in the AMEP was available to immigrants "…from all countries throughout the world" [FGp4,#017], every adult age group and type of visa group except for student visas. Consequently, a typical class includes both men and women of different ages and cultural backgrounds.

Teachers noted that health was an engaging topic for their students: "They like it; they always want to do health as one of the topics" [FGp4, #02]. Nonetheless, although supporting delivery of curriculum content to all immigrant groups, teachers noted that a cancer-related topic might be more challenging for students with very low language or literacy levels: "The lower levels they don't get much out of it because they're literally …matching pictures with words so you're not going to talk … about cancer with them" [FGp5,#018].

Both teachers and immigrant resource centre staff reported that the family unit was an important influence on individual motivations around health, therefore harnessing family networks may present an opportunity to *reach* immigrants not in the classroom. One teacher commented:"…a lot of them are also thinking about their families, as well, so they're not… thinking about 'I have this issue' – but they're also thinking from the point of view of my husband, my wife, my children, and their family members, as well" [FGp3,#012].

4.3.2. Cultural issues impacting attitude to health and cancer

There were mixed responses from all participants about the cultural acceptability of health topics related to cancer. Cultural diversity within classes suggested that responsiveness would be likely to vary, consistent with cultural variation in health beliefs and potential taboos around consideration of mortality and gender issues. For example, one teacher commented: "…if you mention the word cancer then you're going to get

Table 2
Themes identified deductively using Thematic Framework Analysis guided by the RE-AIM Framework.

Themes identified deductively (guided by RE-AIM)					
THEMES related to REACH		THEMES related to ADOPTION by teachers OR organizations		THEMES related to EFFICACY, IMPLEMENTATION, MAINTENANCE	
Barriers	Facilitating factors	Barriers	Facilitating factors	Barriers	Facilitating factors
• Prior literacy/education • Cultural taboos (influencing student engagement in topic)	• Social networks • Multiple ethnicities • Client interest in health topics • Sharing of information in class	• Multicultural groups • Mixed gender classes • Student life-history (influencing teacher choice of topic) • Teacher discomfort	• Teachers feel responsible • Rapport • Topic flexibility • Current activity types • Core skills framework	• Mis-alignment with core curricula frameworks	• Current curricula frameworks and competencies • Communicative Approach • Varied media and activity types

it or they think you can catch it" [FGp5,#018].

Conversely, teachers also suggested that some students might want to reflect on their personal experience of cancer. One indicated that lunch-time guest speakers from community cancer organisations were very well attended:

"…they're usually interested and they want to go [to the information sessions], they want to hear about it, it's not something they've had the opportunity of having before. They see it as an opportunity, from what I gather, my interpretation." [Iv6,#015].

Sharing of personal experience within ESL classes was reported as common. This reflected the widespread use of the 'communicative approach' to language teaching (CLT) whereby language learners, who are members of different socio-cultural groups, are encouraged to interact because such interaction is viewed as both the means and the ends of language instruction (Breen et al., 2008). As participants confirmed, a common activity within this approach is to encourage sharing of information within the classroom as a way to "compare and learn from each other and see similarities and differences" [FGp1, #003]. Teachers reported using CLT as a way to introduce sensitive topics. This involved turning the topic into a language exercise, and focussing on the language of comparison:

"…comparing is really interesting [for the students] … what do the Bhutanese do, and what do the Africans do, and what do the Afghanis do…" [FGp3,#011].

4.4. Adoption

The aim of investigating *adoption* at this scoping phase was to identify potential barriers to, and facilitators of, teacher utilization of a cancer literacy curriculum in the classroom. Research questions probed the perceived cancer health needs of new immigrants, current resources, and optimal teaching practices, and barriers or facilitators to *adoption* of the proposed curriculum.

4.4.1. A sense of responsibility

Immigrant resource centre staff reported that the majority of new immigrants they saw were likely unaware of health guidelines focused on cancer prevention and the resources available in Australia. Teachers stated that they felt a personal sense of responsibility to help students find out about available services, and reported that a combination of health information and appropriate language could empower their students:

"…you have to sort of make them comfortable and empower them so making an appointment or changing an appointment or asking for an interpreter and actually telling the doctor what they, what is wrong with them. And questioning the doctor, that's a lot of power in that" [FGp5, #018].

Although one teacher reported a reluctance to include health topics in her teaching program because "of the negativity behind them" [FGp5, #016], the majority indicated a supportive attitude to including cancer literacy education within the curriculum and indicated a preparedness to *adopt* the proposed program. Acceptance largely reflected a focus on practical concerns and that little cancer-specific information was currently available.

4.4.2. Topic autonomy

Interviewees highlighted the potential for a cancer literacy curriculum to fit the dual goals of improving English language and cancer-related health knowledge, and noted that flexibility in topic choices within the AMEP provided good opportunities for implementation:

'…[the curriculum] is fairly open-ended, because it might have things like being able to use computer skills or being able to read a paragraph, or being able to write, and so, thematically you can bung pretty much anything into that' [FGp3,#012].

This perspective suggested that even potentially culturally challenging topics like HPV vaccination and cervical cancer could be raised carefully, after initial trust between students and teachers had been established, and once teachers had had a chance to learn about the life histories of their students. In this way, teachers could judge the timing of teaching 'sensitive' topics.

"Before you know your students, you're careful…and then as their stories unfold and you get to know them better then you know what you can do and what you can't do" [Iv5,#015].

4.4.3. Mixed classes

Participants raised a number of concerns that could act as barriers to *adoption*. For example, immigrant resource centre staff commented that health information ideally should be tailored to the needs of specific cultural and gender groups, and delivered in ways that are acceptable to those groups. However, the structure of the AMEP does not enable this. Teachers reported that each AMEP class typically contained members of many different cultural groups and both men and women. Furthermore, the teachers said that each term, they may get a new class with a different cultural and gender mix.

Teachers commented that the mixed culture and gender groups in class required curricula flexible enough to deal with the heterogeneous classes, and readily acknowledged that communicating with mixed student classes could act as a potential barrier to *adoption*:

"Because our classes have got males and females and if we talk about a women's issue and the men are there, the women are not going to [speak]…" [FGp5,#018].

Despite mixed-gender classes, teachers identified the capacity to split classes by gender for periods of time, highlighting an opportunity for gender-specific health information instruction, and therefore an opportunity for increased *adoption* of the program:

"…and the men and the women are separate so they are feeling very safe" [FGp1,#002].

4.4.4. Teacher resources

A further potential impediment to *adoption* raised by the teachers was the strict requirement to address the different language skill competencies that the AMEP prescribe for each language level taught. These

were designed to cover specific proficiency goals in speaking, reading, listening and writing. Teachers reported favouring curriculum resources that conformed to the targeted competencies, arguing that resources designed in this way facilitated lesson planning time. Finally, some teachers mentioned that the most useful curriculum materials were those that provided additional background information, not included in the lesson, but which improved the instructor's background knowledge and confidence with the course content.

"…if we've got extra information particularly like health information that we may not know the details of, it would be good to have extra information that when the students then ask questions we can [answer], or [know] where to go for further information" [FGp2,#006].

4.5. Efficacy, implementation, maintenance

The RE-AIM goals of establishing *efficacy, implementation* and *maintenance* barriers were difficult to address in this preliminary scoping phase, before the participants had been exposed to the curriculum (the next phase, the intervention trial). Nonetheless, preliminary feedback was collected on likely barriers and facilitators that could impact successful integration and maintenance of a cancer literacy curriculum within each interviewee's employment setting. Given the largely hypothetical nature of these considerations, questions delved into education and assessment requirements.

4.5.1. Language approach and lesson structure

Teachers reported that the skill competencies they needed to conform to, when planning and assessing, were outlined in the Australian-Core-Skills-Framework (Australian, 2019) and Certificates-of-Spoken-and-Written-English (Navitas, 2017). In addition, as mentioned previously, teachers reported that all curricula taught at the language schools followed the CLT approach, promoting real or realistic communication between people. Activities include role-plays, classroom surveys, communicative jigsaw activities, pair-work, small group projects, and whole class discussions (Harmer, 2007).

"The thing is to make it communicative because that's what we advertise; that we're communicative, and that's what we're trying to get and a lot of the reasons why our students don't go and access information is because they feel they can't communicate" [FGp2,#005].

"Starting with their own experience and then using role plays, using authentic situations that they can relate to … then they do retain a lot more" [FGp1,#001].

Consistent with the above observations, a cancer literacy curriculum should be designed to integrate with CLT and the activity types already in use, as well as practise different language skills:

"… it's an integrated approach to language learning, you do speaking, listening, reading and writing every day, it's all integrated" [Iv5,#015].

Furthermore, teachers reported that creating lessons each day that incorporated a range of media (video, audio, paper resources) could facilitate successful *implementation*. Immigrant resource centre staff concurred, citing examples of their own community sessions that incorporated pictures, video, and discussion.

In addition, teachers identified factors likely to facilitate *maintenance* of a curriculum over time. Specifically, they highlighted how curricula repeatedly used within the school usually covered 'survival' topics including how to access government services. This suggests the need to ensure that a cancer literacy curriculum provide scope for continuous update, consistent with changing government-provided services and health guidelines.

5. Discussion and conclusions

The government-sponsored adult learning environment offered in Australia has previously been reported to be an ideal forum for English literacy and general health literacy education (Morony et al., 20182018). Participants in the current study suggested that a cancer literacy curriculum structured in accordance with the competency framework that guides ESL instruction in Australia would be highly suitable and acceptable to teachers working in the area. Encouragingly, participants confirmed the potential, within the AMEP, to support a cancer literacy curriculum. Moreover, based on past experience, the teachers anticipated a high level of student interest in the topic.

Using RE-AIM at this initial scoping phase enabled the identification of factors unique to the ESL context that could hinder or enable curriculum development and subsequent implementation of the curriculum into existing ESL programming. A main requirement for the delivery of a cancer literacy curriculum within the Australian ESL education setting was that any curriculum should be adaptable to students differing by literacy competence and cultural background. This requirement distinguishes the required curriculum from existing ESL health curricula developed elsewhere (Coronado et al., 2008; Taylor et al., 2011; Soto Mas et al., 2015; Elder et al., 1998; Coronado et al., 2005; Taylor et al., 2008) and contrasts with recommendations of staff from an immigrant resource centre interviewed in the current study. However, development of a multi-cultural curriculum was deemed paramount in order to achieve *reach* and *adoption* in the Australian context.

Probing further, teachers revealed strategies that they used in order to accommodate multicultural classes. They reported that the CLT approach, which encourages speaking practice and real communication between students in class, coupled with students' natural interest in their classmates, provides an environment in which cultural differences can be explored. Teachers reported exploiting this by planning regular speaking activities where students worked in multi-cultural groups. This suggests that a curriculum that is designed to be used in a multi-cultural context, but which is sensitively written to be applicable to the concerns of specific cultural groups participating, might achieve *adoption* in the widest possible range of ESL settings.

The results also identified ancillary benefits to immigrant health that might flow from targeting cancer literacy through ESL instruction. Comments from participants indicated that immigrants not in class for a variety of reasons may benefit indirectly through their connection with those that do attend class. This suggests that *reach* may be indirectly magnified through social network influence, especially when this is encouraged within the lessons.

There is some empirical support for this idea. Within the Australian TAFE system, Morony et al. (2017) (Morony et al., 20182018) found that students attending the school but not exposed to the health curriculum, indicated a desire for the same information. This confirms that students share content materials learned in class with others outside. In another study (Santos et al., 2011), it was reported that information from an ESL lesson on diabetes was shared with the social networks of approximately two-thirds (n = 105,64%) of students attending. Furthermore, results from social network analyses have demonstrated that participants report a strong dependence on their family and social networks for seeking, understanding and using health information (Edwards et al., 2015). Future studies should aim to investigate the nature and extent of health information sharing between ESL language students and their wider family, social and community networks in order to map, more accurately, the *reach* of interventions. In addition, this could be exploited in a curriculum by including communicative classroom and homework activities that encourage sharing of health information outside class.

In addition to ways to improve intervention *reach*, the use of RE-AIM at this scoping phase was helpful in determining factors that could support the *implementation* and *maintenance* of a new cancer prevention curriculum. A major implementation challenge reported in the literature has been to cover curriculum content goals while simultaneously building English literacy skills according to course requirements and student level (Morony et al., 20182018; Martinez et al., 2017). In the current study, results suggested that a health curriculum, with core skills requirements embedded, may be more likely to be *adopted* by teachers who are looking for materials to meet students' skills requirements. It is

also more likely to be *implemented* into existing curriculum planning, and therefore potentially more likely to be *maintained* over time compared to one that does not specifically reflect English literacy training goals.

In the current study, teachers reported a preference for curricula that incorporated a range of media, a variety of activity types, and was flexible to adaptation and modification to suit different class requirements. In the language classroom, using multiple methods, including exposure to print media, video, audio, realia (i.e., real world materials) and internet across different language skills (reading, writing, listening, speaking) can help with the 'noticing of' new language in multiple and different ways (Ellis and Ellis, 2002). In addition, ESL teachers are at the forefront of educating new arrivals about a vast array of topics (Morony et al., 20182018). Providing additional cancer literacy content that links to related resources can assist both teacher and student develop confidence in this domain.

The results of this study provide recommendations that suit the Australian immigrant language context. However, the approach and methodology, based on RE-AIM, can be adapted to enable the investigation of country-specific features that could hinder or promote implementation in other immigrant nations.

6. Ethics approval and consent to participate

Ethics approval was received from the Social and Behavioural Research Ethics Committee (SBREC: project number 7076). The principles of the declaration of Helsinki were observed. All participants gave their informed consent to participate in writing.

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8. Consent for publication

Not Applicable.

9. Availability of data and materials

The datasets generated during and/or analysed during the current study are not publicly available due to SBREC Ethics requirements but are available from the corresponding author on reasonable request.

10. Authors' contributions

DHB designed the study, collected and analysed data under supervision from JC, IF and CW. DHB drafted the paper, all authors read, contributed and approved the final manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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