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Evidence Check

Tobacco cessation and screening in CALD communities

An Evidence Check rapid review brokered by the Sax Institute
for Cancer Council NSW—June 2022

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This report was prepared by: Alice McEntee, Sonia Hines, Joshua Trigg, Kate Fairweather, Ashleigh Guillaumier, Jane Fischer, Billie Bonevski, James A. Smith, Carlene Wilson, and Jacqueline Bowden.

doi:10.57022/sneg4189
June 2022

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Suggested Citation:

McEntee A, Hines S, Trigg J, Fairweather K, Guillaumier A, Fischer J, Bonevski B, Smith JA, Wilson C, and Bowden J. Tobacco cessation and screening in culturally and linguistically diverse communities: an Evidence Check rapid review brokered by the Sax Institute (www.saxinstitute.org.au) for Cancer Council NSW, 2022. doi: 10.57022/sneg4189

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Executive summary

Background

Australia is a multi-cultural society with increasing rates of people from culturally and linguistically diverse (CALD) backgrounds. On average, CALD groups have higher rates of tobacco use, lower participation in cancer screening programs, and poorer health outcomes than the general Australian population. Lower cancer screening and smoking cessation rates are due to differing cultural norms, health-related attitudes, and beliefs, and language barriers. Interventions can help address these potential barriers and increase tobacco cessation and cancer screening rates among CALD groups.

Cancer Council NSW (CCNSW) aims to reduce the impact of cancer and improve cancer outcomes for priority populations including CALD communities. In line with this objective, CCNSW commissioned this rapid review of interventions implemented in Australia and comparable countries.

Review questions

This review aimed to address the following specific questions:

Question 1 (Q1): What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?

Question 2 (Q2): What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?

This review focused on Chinese-, Vietnamese- and Arabic-speaking people as they are the largest CALD groups in Australia and have high rates of tobacco use and poor screening adherence in NSW.

Summary of methods

An extensive search of peer-reviewed and grey literature published between January 2013-March 2022 identified 19 eligible studies for inclusion in the Q1 review and 49 studies for the Q2 review. The National Health and Medical Research Council (NHMRC) Levels of Evidence and Joanna Briggs Institute's (JBI) Critical Appraisal Tools were used to assess the robustness and quality of the included studies, respectively.

Key findings

Findings are reported by components of an intervention overall and for each CALD group. By understanding the effectiveness of individual components, results will demonstrate key building blocks of an effective intervention.

Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?

Thirteen of the 19 studies were Level IV (L4) evidence, four were Level III (L3), one was Level II (L2), none were L1 (highest level of evidence) and one study's evidence level was unable to be determined. The quality of included studies varied.

Fifteen tobacco cessation intervention components were included, with most interventions involving at least three components (range 2-6). Written information (14 studies), and education sessions (10 studies) were the most common components included in an intervention.

Eight of the 15 intervention components explored had promising evidence for use with Chinese-speaking participants (written information, education sessions, visual information, counselling, involving a family member or friend, nicotine replacement therapy, branded merchandise, and mobile messaging). Another two components (media campaign and telephone follow-up) had evidence aggregated across CALD groups (i.e., results for Chinese-speaking participants were combined with other CALD group(s)). No intervention component was deemed of sufficient evidence for use with Vietnamese-speaking participants and four intervention components had aggregated evidence (written information, education sessions, counselling, nicotine replacement therapy). Counselling was the only intervention component to have promising evidence for use with Arabic-speaking participants and one had mixed evidence (written information).

Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?

Two of the 49 studies were Level I (L1) evidence, 13 L2, seven L3, 25 L4 and two studies' level of evidence was unable to be determined. Eighteen intervention components were assessed with most interventions involving 3-4 components (range 1-6). Education sessions (32 studies), written information (23 studies) and patient navigation (10 studies) were the most common components.

Seven of the 18 cancer screening intervention components had promising evidence to support their use with Vietnamese-speaking participants (education sessions, written information, patient navigation, visual information, peer/community health worker, counselling, and peer experience). The component, opportunity to be screened (e.g. mailed or handed a bowel screening test), had aggregated evidence regarding its use with Vietnamese-speaking participants. Seven intervention components (education session, written information, visual information, peer/community health worker, opportunity to be screened, counselling, and branded merchandise) also had promising evidence to support their use with Chinese-speaking participants whilst two components had mixed

(patient navigation) or aggregated (media campaign) evidence. One intervention component for use with Arabic-speaking participants had promising evidence to support its use (opportunity to be screened) and eight intervention components had mixed or aggregated support (education sessions, written information, patient navigation, visual information, peer/community health worker, peer experience, media campaign, and anatomical models).

Gaps in the evidence

There were four noteworthy gaps in the evidence: 1. No systematic review was captured for Q1, and only two studies were randomised controlled trials. Much of the evidence is therefore based on lower level study designs, with risk of bias. 2. Many studies provided inadequate detail regarding their intervention design which impacts both the quality appraisal and how mixed finding results can be interpreted. 3. Several intervention components were found to have supportive evidence available only at the aggregate level. Further research is warranted to determine the interventions effectiveness with the individual CALD participant group only. 4. The evidence regarding the effectiveness of certain intervention components were either unknown (no studies) or insufficient (only one study) across CALD groups. This was the predominantly the case for Arabic-speaking participants for both Q1 and Q2, and for Vietnamese-speaking participants for Q1. Further research is therefore warranted.

Applicability

Most of the intervention components included in this review are applicable for use in the Australian context, and NSW specifically. However, intervention components assessed as having insufficient, mixed, or no evidence require further research. Cancer screening and tobacco cessation interventions targeting Chinese-speaking participants were more common and therefore showed more evidence of effectiveness for the intervention components explored. There was support for cancer screening intervention components targeting Vietnamese-speaking participants but not for tobacco cessation interventions. There were few interventions implemented for Arabic-speaking participants that addressed tobacco cessation and screening adherence. Much of the evidence for Vietnamese and Arabic-speaking participants was further limited by studies co-recruiting multiple CALD groups and reporting aggregate results.

Conclusion

There is sound evidence for use of a range of intervention components to address tobacco cessation and cancer screening adherence among Chinese-speaking populations, and cancer screening adherence among Vietnamese-speaking populations. Evidence is lacking regarding the effectiveness of tobacco cessation interventions with Vietnamese- and Arabic-speaking participants, and cancer screening interventions for Arabic-speaking participants. More research is required to determine whether components considered effective for use in one CALD group are applicable to other CALD populations.

Key messages

Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?

- The evidence base was promising regarding the use of eight of 15 tobacco cessation intervention components with Chinese-speaking participants (written information, education sessions, visual information, counselling, involving a family member or friend, nicotine replacement therapy, branded merchandise, and mobile messaging).
- Counselling was the only tobacco cessation intervention component that had promising evidence for use with Arabic-speaking participants.
- No component had promising evidence for use with Vietnamese-speaking participants.
- Much of the evidence base for Vietnamese- and Arabic-speaking participants was limited by studies co-recruiting multiple CALD groups and reporting aggregate results. Further research is warranted to determine the interventions effectiveness with the individual CALD group.
- Much of the evidence is based on lower level study designs, with risk of bias and thus further research is warranted.

Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?

- The evidence base was promising regarding the use of seven of 18 cancer screening intervention components for use with Vietnamese-speaking participants (education sessions, written information, patient navigation, visual information, peer/community health worker, counselling, and peer experience) and Chinese-speaking participants (education session, written information, visual information, peer/community health worker, opportunity to be screened, counselling, and branded merchandise).
- Evidence is lacking regarding the effectiveness of cancer screening interventions for Arabic-speaking participants (opportunity to be screened was the only component that had promising evidence).
- Much of the evidence for Arabic-speaking participants was limited by studies co-recruiting multiple CALD groups and reporting aggregate results. Further research providing findings specific to Arabic-speaking participants is therefore warranted.

Background

Australia is a multicultural society with increasing rates of immigration from culturally and linguistically diverse (CALD) countries.[1] The 2016 Census found that one-third (33%) of Australia's population was born overseas and one-fifth of households (22%) spoke a non-English language.[2] Compared to the general Australian population, people from CALD communities have poorer health outcomes[3-5] and engage in more unhealthy behaviours. In particular, CALD communities have higher prevalence of tobacco use[6-8] and lower participation in cancer screening programs than the national average.[3-5, 9, 10]

CALD communities face unique challenges that impact their health including:

- language barriers,[3, 5, 8]
- lack of access to or culturally safe and/or sensitive services or treatment options,[5]
- lack of familiarity with or limited access to Australia's health care system,[3]
- different health-related attitudes or beliefs,[5, 8]
- different cultural and religious norms/practices,[3, 8] and
- previous, current or anticipated experience of stigma.[3]

Consequently, CALD communities often require targeted and tailored interventions to address these unique challenges and thus improve their cancer screening,[3, 5] and tobacco cessation rates.[8, 11]

Cancer Council New South Wales (CCNSW) aims to reduce the impact of cancer by "Uniting the community, providing support, investing in research and saving lives" and improve cancer outcomes for priority populations including CALD communities.[12] In line with this objective, CCNSW commissioned a review of the evidence on the following questions:

- Question 1 (Q1): What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?
- Question 2 (Q2): What screening interventions have proven effective in increasing participation in population cancer screening programs among CALD populations?

The CALD communities included as a specific focus of the review were Chinese- (i.e., Mandarin, Cantonese and other Chinese dialects), Vietnamese- and Arabic-speaking communities. These three communities represent the largest CALD groups in Australia. After English, the top 4 languages spoken at home are Mandarin (2.5%), Arabic (1.4%), Cantonese (1.2%) and Vietnamese (1.2%).[2] These communities were also chosen due to their high prevalence of tobacco use and poor adherence to national screening guidelines in NSW.

The outcome of the review will be used by CCNSW to:

- Inform the development of targeted and tailored smoking cessation and screening interventions for CALD population groups in NSW;
- Identify opportunities to reach populations of highest need with tailored approaches; and
- Facilitate stakeholder consultation.

Methods

Search strategy

A structured search of the peer-reviewed and grey literature was undertaken to identify the most relevant literature to address the two questions. Electronic databases and grey literature were searched to identify research that tested the outcomes of an intervention (or similar) with Chinese-, Vietnamese- and/or Arabic-speaking minority populations to improve their knowledge or rates of:

- tobacco cessation, or
- breast, bowel and/or cervical cancer screening.

The process used to identify relevant peer-reviewed and grey literature is detailed below.

Peer review literature

In March 2022, five electronic scientific bibliographic databases were searched for applicable peer-reviewed literature (see Appendix 1 Table A1.1). Separate searches were undertaken for each question. Searches were limited to literature published in English from January 2013 to March 2022. Literature was limited from 2013 to complement a previously commissioned report that included literature from 1990-2012.[13] Studies to address Q1 excluded clinical interventions (including nicotine replacement therapy), whilst all other cancers except cervical, breast, and bowel cancer were excluded from the applicable list of studies to address Q2.

Grey literature

A desktop search was conducted for relevant grey literature (see Appendix 1 Table A1.2). Australian organisations were contacted via email up to three times (by AM) for relevant grey literature. Additional organisations with a research focus in NSW were also contacted to boost included Q1 studies (Appendix 1 Table A1.3). The reference lists of all in-scope literature were also examined for relevant references not captured by the above search strategies.

Screening of literature

Literature captured by the database and grey literature search were exported or manually entered into Endnote. The Endnote libraries were then imported into Covidence, on online software platform that streamlines the screening process for systematic reviews. The search process identified 571 documents for Q1 and 735 documents for Q2. Duplicates were automatically screened out by Covidence.

Screening of Q1 and Q2 literature involved two levels of review:

1. Review level 1: titles and abstracts were assessed for eligibility. Documents deemed eligible progressed to the next review level
2. Review level 2: the full texts of articles were assessed for eligibility. Documents deemed eligible were included in the rapid review (see Appendix 2 for the flowcharts (Q1: Figure A2.1; Q2: Figure A2.2)).

Two members of the review team independently reviewed all literature at both review levels (AM and SH, JT, KF or AG). Conflicts were resolved by a third team member (SH, JT, KF or JB). Nineteen studies were eligible for included in the Q1 review and 49 studies for Q2. Appendix 3 provides the list of included references.

Data extraction

One team member extracted key information from each eligible reference (AM, SH, JT, KF or AG). A second team member checked all data extracted to confirm completeness (AM, SH, JT, KF, AG or JB). Data extraction tables are summarised in Appendix 4 (Table A4.1 and Table **A4.2**).

Evidence grading

Primary study designs were categorised using the National Health and Medical Research Council's (NHRMC) Levels of Evidence (Table **1**, see also Appendix 4 Table A4.1 and Table **A4.2**). The Joanna Briggs Institute's (JBI) Critical Appraisal Tools were used to assess the quality of the studies included in the review (Appendix 5, see also Appendix 4 Table A4.1 and Table **A4.2**). Two review members (AM and JF) independently appraised the references with differences resolved via consensus. Due to the variety of study designs captured by the review, the following JBI Critical Appraisal Tools were used to assess the applicable study:

- Checklist for systematic reviews and research syntheses[14]
- Checklist for randomized controlled trials[15]
- Checklist for quasi-experimental studies (non-randomized experimental studies)[16]
- Checklist for qualitative research[17] (Appendix 5).

Each study was given an individual score. Due to each study design being scored out of a different value (e.g., 13 for systematic reviews/syntheses, 9 for quasi-experimental studies) scores were provided as a proportion of the maximum possible score (Appendix 5 Table A5.1 and Table A5.2).

Table 1 — Level of evidence summary for literature included in Question 1[1] and Question 2[2]

Level of Evidence		Description	Question 1 (smoking[1])	Question 2 (screening[2])
I		A systematic review of Level II studies	0	2[18, 19]
II		A randomized controlled trial	1[20]	13[10, 21-32]
III	**III-1**	A pseudo-randomized controlled trial (i.e., alternate allocation or some other method)	1[33]	0
	III-2	A comparative study with concurrent controls (i.e., non-randomized experimental trials, cohort studies, case-control studies, interrupted time series studies with a control group)	3[6, 34, 35]	3[36-38]
	III-3	A comparative study without concurrent controls (i.e., historical control study, two or more single arm studies, interrupted time series studies without a parallel control group)	0	4[9, 39-41]
IV		Case series with either post-test or pre-test/post-test outcomes	13[7, 8, 42-52]	25[3, 4, 53-75]
Unable to be determined (synthesis report)			1[11]	2[5, 11]
Total			19	49

[1] *Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?*

[2] *Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?*

Findings

Interventions captured by the review often included multiple components (up to six components) and there was generally a lack of replication of the same intervention across studies. To assist interpretation, findings are reported by intervention components (see also Appendix 6 Table A6.1 and Table A6.3) overall and for each CALD group. By understanding the effectiveness of individual components, results described here will demonstrate key building blocks of an effective intervention.

Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?

Most interventions targeted cigarette smoking. However, three studies addressed shisha waterpipe smoking. As waterpipe use, like cigarettes, results in tobacco products being inhaled, interventions that aimed to reduce shisha use in CALD contexts were relevant to the review.

In total, 19 papers or reports were included. Nine were sourced from the database search strategy and 10 from other strategies. One study was rated as L2[20] evidence, four at L3[6, 33-35] evidence, 13 at L4[7, 8, 42-52] evidence and one was unable to be determined.[11] One grey literature report, which synthesised initiatives, programs and services implemented in NSW between July 2018 and June 2020, was identified.[11] In this report, five interventions related to tobacco. The report did not provide detail about the nature of the interventions. Nonetheless, overall, the interventions increased awareness and knowledge about the impact of tobacco use. No systematic or other reviews were found.

Among the 18 primary studies, five were considered of low quality, eight of moderate quality and five of good quality, according to their JBI score. Most studies were undertaken in the United States (n=12),[6-8, 20, 33, 34, 43-46, 49, 51] whilst five were undertaken in Australia[42, 47, 48, 50, 52] and one in Canada.[35] Chinese-speaking participants were recruited in 13 studies,[6, 7, 20, 33, 35, 42-48, 51] Vietnamese-speaking participants in six studies[7, 34, 42-44, 51] and Arabic-speaking participants in five studies.[8, 42, 49, 50, 52]

Due to prevalence of smoking in each CALD group being higher among men, male smokers were exclusively recruited in eight studies.[8, 20, 33, 34, 43, 45, 46, 48, 49] Women formed the majority of the participant group sampled in four studies (57-75%).[42, 44, 50, 52] Males were the dominant group sampled in the remaining studies.

Many studies included multiple components in the intervention. Intervention components for all included studies are first discussed. This is followed by a discussion of individual components and effectiveness for each of the three targeted CALD groups.

Intervention components

In total 15 components of an intervention were found (Appendix 6 Table A6.1). From most to least commonly applied, the components were:

- Written information[8, 20, 33-35, 43-47, 49-52]
- Education sessions[6, 20, 34, 42-45, 48, 50, 52]
- Visual information[33-35, 46, 50, 52]
- Counselling[6-8, 35, 49, 51]
- Media campaign[34, 47, 48, 50, 52]
- Involving a family member or friend[20, 35, 43, 45]
- Nicotine replacement therapy[7, 48, 49, 51] (see **Note**)
- Telephone follow-up[8, 20, 43, 45]
- Branded merchandise[20, 45, 50]
- Mobile messaging[33, 46]
- Acupuncture[6]
- Quit support group[48]
- Peer experience[48]
- Competition[47]
- Audio information[34]

Interventions included in the eligible studies incorporated one to five components. Consequently, it is difficult to determine the independent effectiveness of a given component alone.

Note: CCNSW specified clinical trials of nicotine replacement therapy (NRT) as out of scope of the review. However, several studies included NRT as an intervention component. Where results of the other intervention components can be clearly differentiated from NRT, these are provided, and results related to NRT excluded. However, for interventions where the addition of NRT cannot be removed, caution is needed in interpreting the findings. Study inclusion of an NRT component is noted in Appendix 6 Table A6.1 and those where it has been excluded are included in the table's notes.

Written information

Written information was a common component in tobacco cessation interventions.[8, 20, 33-35, 43-47, 49-52] Written information included factsheets, newsletters, pamphlets, booklets, posters, postcards, self-help workbooks, texted quitting tips, a laboratory report and a flipchart. The information was written in the first language for the target audience and/or English. In most studies, the participants retained the written document for future use. The exception was the flipchart which was used as an aid during the education session only.[43]

Fourteen primary studies provided written information as an intervention component (L2 n=1, L3 n=3, L4 n=10). The quality appraisal scores ranged from low to good (Appendix 6 Table A6.2). Nine studies included Chinese-speaking participants[20, 33, 35, 43-47, 51] whilst four included Arabic-speaking participants[8, 49, 50, 52] and four included Vietnamese-speaking participants.[34, 43, 44, 51]

Most studies using written information included at least two other intervention components. One study that used only one other component (i.e., education session) found the two components improved knowledge of support options to help individuals quit smoking.[44] However, the study did not assess changes in tobacco use. Written information in combination with other components generally

improved knowledge, attitudes, the use of quitting resources, and abstinence rates; and reduced tobacco use. For example, one L4 study (JBI 8/9)[49] which used a self-help workbook (among other intervention components) found a 6-month self-report quit rate among male Arabic-speaking participants of 43%. Among those who continued to smoke, there was a reduction in the number of cigarettes smoked from an average of 20 cigarettes per day to three (p<.001).

Education sessions

Education sessions were included as an intervention component in 10 studies.[6, 20, 34, 42-45, 48, 50, 52] These sessions comprised cessation classes, online forums, information sessions, and workshops and were delivered individually and in group settings. Three interventions used the education sessions to improve the knowledge of community health workers to provide this information to others.[42, 50, 52] The length of the education session was not reported in seven studies. In three remaining studies, one used a 25-minute training module,[42] and two used 2x90-minute education sessions.[20, 43]

Seven of the 10 study designs were L4, two were L3 and one was L2 (Appendix 6 Table A6.2). The quality of the included studies ranged from poor to good. Most studies recruited Chinese-speaking participants (seven), followed by Vietnamese-speaking (four studies) and Arabic-speaking participants (three studies).

One study[42] assessed the effectiveness of their education session as the only intervention component. The education session involved community workers undertaking a training module and an online research-to-practice forum. Study findings (L4 evidence) showed the education session improved knowledge and confidence of community health workers to talk with clients about their shisha use and many (66%) applied their learnings in interactions with clients.

Among the other nine studies, there were mixed findings regarding whether the education session (in combination with other intervention components) improved knowledge of the harms of tobacco use, reduced use, and/or increased cessation rates. For instance, one study found an increase in awareness regarding the harms of shisha but no significant change in knowledge, attitudes or intentions to reduce use;[50] whilst another study found a 42% quit rate with a further 12% reducing their use of cigarettes.[48]

One explanation for the variation in findings is that there is no consistent education content available to include within an education session on tobacco. Education session duration was not reported in many studies, a factor that may have impacted upon success.

Visual information

Six studies included visual information as an intervention component (L3 n=3, L4 n=3).[33-35, 46, 50, 52] The most common mechanism was the use of a video, followed by graphic imagery. Chinese-, Arabic- and Vietnamese-speaking participants were included in 1-3 studies. Study quality ranged from low to good (Appendix 6 Table A6.2).

In all interventions where visual information was included, written information was also an intervention component. One study which used instant text messaging to deliver information found Chinese-speaking participants had a more positive quitting attitude when messages included both graphic and textual information than messages which were purely text-based.[33] However, the two intervention arms did not significantly differ regarding tobacco cessation (graphic intervention: 20%, text only

intervention 8%, p=.230) and reduction in use (graphic intervention: 50%, text only intervention 45%, p=.552) (combined, the two groups reduced their use, as validated by expired carbon monoxide: baseline 17.11 vs post-intervention 8.48, p=.028). Overall, interventions that included visual information as one of the components had mixed findings.

Counselling

Counselling was provided in six studies as part of their intervention (L3 n=2, L4 n=4 (Appendix 6 Table A6.2)).[6, 7, 33, 35, 49, 51] Counsellors generally provided advice and strategies for reducing and quitting use and how to set up a plan to quit. Two of the six studies specifically assessed the Asian Speaking Quitline (ASQ)[7, 51] where Chinese-speaking and Vietnamese-speaking callers were able to access phone counselling services. Four remaining studies offered in-person counselling,[6, 35] telephone counselling,[49] or six bi-monthly group counselling sessions.[8]

Overall, interventions that included a counselling component and assessed changes in smoking prevalence or quantity found reductions compared to baseline or a comparison group. For instance, one qualitative study found 91% of participants self-reported that they had quit or reduced their use since baseline;[35] others reported 6-month quit rates between 20-43%.[6, 7, 49] However, NRT was also provided in two of these studies (and offered in one intervention arm in the third) which makes interpretation of the effectiveness of counselling itself difficult. The quality of the evidence was modest (Appendix 6 Table A6.2).

Importantly, as all studies including counselling were undertaken in the United States, this intervention component has not been assessed in Australia for the targeted CALD groups.

Media campaign

A media campaign to target tobacco use in CALD communities was used as an intervention component in five studies (L4 n=4, L3 n=1 (Appendix 6 Table A6.2)). Media campaign aspects included television and radio segments, newspaper advertisements, and website and social media content. Media campaigns are designed to reach large, targeted audiences, and a small sample of this audience is used to estimate campaign reach, engagement, and effectiveness. For this reason, it is difficult to assess the effectiveness of interventions that included a media campaign. This was often estimated using proxy measures of audience engagement with campaign media (e.g., 350,000 views of a campaign video, 13,000 engagements with content, 3,300 website visits[50]).

Two of the five studies that included a media campaign related to the *Shisha No Thanks* intervention[50, 52]. Overall, the *Shisha No Thanks* intervention improved participants awareness of the harms of waterpipe smoking but did not significantly change intentions to reduce use. However, two other studies found their intervention increased smoking cessation rates.[34, 48] Overall, the quality of the evidence regarding the effectiveness of media campaigns is low. Therefore, further research regarding the effectiveness of media campaigns as an intervention component is required.

Involving family/friends

Four studies included family members or a friend in the intervention (L2 n=1, L3 n=1, L4 n=2 (Appendix 6 Table A6.2)).[20, 35, 43, 45] This involved the friend/family member attending the counselling or education session with the person who smoked. The family/friend therefore also received knowledge of the harms of smoking and second-hand smoke, and strategies for quitting and could therefore support the smoker with their quitting attempts.

All four studies recruited Chinese-speaking participants and one co-recruited Vietnamese-speaking participants. Two studies[20, 45] reporting on the same intervention recruited smoker and non-smoker household pairs. The non-smoker pair attended the education sessions and received a report detailing their level of tobacco exposure. The non-smoker pair were not included in the telephone support (for the moderate intensity intervention arm). These two interventions which included family in addition to other components were successful in reducing tobacco use and increasing knowledge and cessation rates. For instance, the quit rate at 12 months was 21-25% (dependent on intervention arm).[20] One study also reported that the involvement of a non-smoking household pair resulted in a reduction in second-hand exposure in the home environment (from 11-13% to 2-3%).[20] This was attributed to the family member being present during the education session and therefore gaining knowledge of the harms of second-hand exposure.

In the other two studies,[35, 43] a family member or friend was able to attend the education session or counselling session to support the participant. Again, interventions which included this component in addition to others showed improvements in tobacco cessation rates and knowledge, and a reduction in use. Studies that utilised family or friends in their intervention were considered of moderate to good quality, despite having less rigorous study designs (Appendix 6 Table A6.2).

It is important to note that none of the included studies tested the efficacy of involving family/friends with Arabic-speaking participants. Effectiveness of this intervention component with this specific CALD group is unknown.

Nicotine replacement therapy

The commissioning organisation (CCNSW) requested the exclusion of clinical interventions that predominately focussed on the effectiveness of NRT or other stop smoking medications. Though not in scope, NRT was offered as part of the intervention in five studies (all L4 (Appendix 6 Table A6.2)). It was possible to exclude results relating to NRT in one study[6] (participants could choose whether or not to use NRT and results were differentiated by this decision) but it was not able to be separated in the other four (offered at baseline to all participants).[7, 48, 49, 51] Overall, studies which included NRT showed increased reductions in use, increased cessation, and higher quit attempts (quality assessment varied from low to good (Appendix 6 Table A6.2)).

Telephone follow-up

Telephone follow-up was included in four studies (L2 n=1, L4 n=3) and the quality of included studies ranged from moderate to good (Appendix 6 Table A6.2).[8, 20, 43, 45] Telephone follow-up checked participant's progress and offered assistance or advice, if required. Contact appeared to only occur once in one study whilst three follow-up calls occurred in the other three studies. Telephone follow-up was found to increase knowledge and attitudes, increase abstinence rates, and/or reduce tobacco use when combined with other intervention components.

One study compared interventions which did and did not include telephone follow-up.[20] The arm that included telephone contact also included extra education sessions. The study found both intervention arms to be effective at improving knowledge, increasing cessation, and reducing tobacco use. Therefore, the inclusion of telephone contact (and education sessions) did not significantly improve knowledge, increase cessation or reduce tobacco use above the intervention arm that did not include these components. However, its inclusion was also not detrimental to the interventions' success.

Telephone follow-up has been evaluated more often with Chinese-speaking participants (three out of five studies) and less often with Vietnamese- (one study – in addition to Chinese-speaking participants) and Arabic-speaking (one study) participants.

Branded merchandise

Three studies used branded merchandise as an intervention component (L2 n=1, L3 n=1, L4 n=1 (Appendix 6 Table A6.2)).[20, 45, 50] One study included banners, cubes, phone holders, reusable coffee cups, tote bags and t-shirts. The merchandise was distributed during community events or to community organisations to pass on to members.[50] The other two used a magnet with scheduling information which was provided to all participants.[20, 45] Although both studies related to the same intervention, one specifically said the magnet was shaped like a house and included a no-smoking graphic.[45]

One of the three studies[45] used qualitative analyses to understand whether the magnet helped provide cues to action. This study followed up participants via focus groups after they had completed the intervention. Results showed that the magnet, when retained even after the intervention had ceased, reminded participants to refrain from smoking when in the home. In the two studies that used the magnet, the combined intervention components increased knowledge, reduced tobacco use and increased cessation rates (quality ratings ranged from moderate to good). The intervention which included branded merchandise (that reached some participants) as one component, was less effective however the study's quality was low (Appendix 6 Table A6.2).

Mobile messaging

Mobile text messages were used to provide information to participants in two moderate quality studies (L3 n=1, L4 n=1 (Appendix 6 Table A6.2)). The information included health impacts of tobacco use and where to seek help to quit smoking. A total of 24 text messages were sent in one study[46] and 30 in the other[33] (sent in 15 pairs (one health-related text followed two minutes later by a quit information text), over a four week period). Mobile messaging support was found to be effective at reducing tobacco use[33] and improving intentions to stop smoking.[46] However, caution is needed regarding the applicability of this component to other CALD groups and countries another than the United States as both US based studies recruited Chinese-speaking participants.

Acupuncture

One study[6] (L3, moderate quality (Appendix 6 Table A6.2)) assessed the use of acupuncture in conjunction with a counselling and education session. Acupuncture involved the use of ≤6 needles for at least 15 minutes. The intervention, used predominately with Chinese-American participants (76%), produced a six-month quit rate of 29% (which was not statistically different from the intervention arm that included NRT + acupuncture (six-month quit rate of 38%)). Acupuncture was not considered as effective for reducing tobacco use by ≥50% from baseline. Both the NRT only and NRT + acupuncture intervention arms resulted in significantly higher reductions at one month than the acupuncture only arm. No study addressing applicability or effectiveness of this intervention component to Vietnamese- or Arabic-speaking smokers was found.

Quit support group

One Australian study investigated the effectiveness of a quit support group for Chinese-speaking participants[48]. The intervention, which included additional components, resulted in a high 3-month quit rate (self-reported: 42%) with an additional 12% reporting a reduction in use. Although the findings were supportive, the quality of this study was low due to the report being an internal document, not a scientific paper (L4) (Appendix 6 Table A6.2).

Peer experience

The same study reported above (under quit support group) also included a peer experience component[48]. This involved an ex-smoker from their peer group being a spokesperson and sharing their quit journey. As previously reported, this Australian-based study found a high quit rate (42%) however the quality of the study was low (L4) (Appendix 6 Table A6.2).

Competition

The use of a competition to encourage Chinese-speaking participants to quit was applied in one Australian study.[47] The prize was a 3-night spa holiday ($500 value) to a selected winner who could demonstrate they had successfully quit. Findings were not supportive regarding the inclusion of this component. However, the quality of the study was low (L4) (Appendix 6 Table A6.2). Further research is needed to ascertain if this component is effective.

Audio information

One study included audio information in the form of CDs and audiotapes. The L3 study overall showed significant reductions in smoking prevalence among Vietnamese-speaking participants (from 30% to 24%) compared to no change among the general Vietnamese population. Furthermore, the quit ratio increased from 27% to 36% in the intervention group compared to no change amongst the Vietnamese general population.

Studies comprising Chinese-speaking participants

Chinese-speaking participants were recruited in 13 studies.[6, 7, 20, 33, 35, 42-48, 51] Nine studies were based in the United States,[6, 7, 20, 33, 42-46, 51] two in Australia[47, 48] and one in Canada.[35] Chinese-speaking participants were the only CALD community recruited in six studies.[20, 35, 45-48] The other studies co-recruited Vietnamese-speaking,[7, 42-44, 51] Korean-speaking,[7, 33, 44, 51] Arabic-speaking[42] and non-Chinese[6] participants.

Among the 13 studies, one was L2 evidence, three were L3 evidence and nine were L4 evidence. Based on JBI scores, three studies were considered low quality, six of moderate quality and four of good quality.

Intervention components

Studies that applied an intervention to target tobacco cessation among Chinese-speaking participants included 14 of the 15 intervention components previously discussed:

- Written information[20, 33, 35, 43-47, 51]
- Education sessions[6, 20, 42-45, 48]

- Visual information[33, 35, 46]
- Counselling[6, 7, 35, 51]
- Media campaign[47, 48]
- Involving a family member or friend[20, 35, 43, 45]
- Nicotine replacement therapy[7, 48, 51]
- Telephone follow-up[20, 43, 45]
- Branded merchandise[20, 45]
- Mobile messaging[33, 46]
- Acupuncture[6]
- Quit support group[48]
- Peer experience[48]
- Competition[47]

The intervention component not included in these studies was audio information and thus further exploration of its applicability for use with Chinese immigrants in Australia is warranted.

No evidence (audio information).

Written information

Promising evidence for increased knowledge and quit rates, outside Australia.

Nine studies that recruited Chinese-speaking participants included a written information component (L2 n=1, L3 n=2, L4 n=6). Among Chinese-speaking participants, the inclusion of written information was found to be successful in improving knowledge,[43-45] improving intention to quit,[43, 46] reducing use,[20, 33, 35, 45] and increasing quit rates.[20, 35, 43, 45] The quality of these eight studies which showed promising evidence was generally moderate. A nineth study however, that found no change in quit rates,[47] was considered of poor quality which may explain the different result. As this study was the only one undertaken in Australia, further research regarding the effectiveness of written information with Chinese immigrants in Australia may be required.

Education sessions

Promising evidence for increased knowledge and quit rates.

Seven studies included education sessions and targeted Chinese-speaking participants (L2 n=1, L3 n=1, L4 n=5). Education sessions targeting Chinese-speaking participants was predominately found to be successful at improving knowledge,[42-45] reducing use,[20, 45, 48] and increasing quit rates.[6, 20, 43, 45, 48] As two studies assessed education sessions in Australia, there is some promising evidence of the effectiveness of education sessions in interventions targeting tobacco use among Chinese immigrants in Australia.

Visual information

Promising evidence for increased quit rates, outside Australia.

Chinese-speaking participants were included in three studies (one Canadian, two in the United States) that incorporated visual information as an intervention component.[33, 35, 46] Chinese-speaking (and Korean-speaking) participants responded more favourability to quitting when messaged both graphic and textual information than just textual information.[33] Interventions using visual information

as one component were found to increase intentions to quit,[46] increase reductions in use[33, 35] and increase cessation.[35] The level of evidence were L3 (n=2) and L4 (n=1) and the quality of the studies was moderate to high, however the component has not been assessed in Australia.

Counselling

Promising evidence for increased quit rates, outside Australia.

Counselling (in-person and telephone) has shown promising effect as an intervention component to increase quit rates among Chinese-speaking participants (L3 n=2, L4 n=2)[6, 7, 35, 51] Two of these studies co-recruited Vietnamese- and Korean-speaking participants and provided aggregated results.[7, 51] The quality of the evidence was modest. The studies were undertaken in the United States[6, 7, 51] or Canada[35] thus this component has not been assessed in Australia.

Media campaign

Mixed evidence for quit rates.

The evidence of including a media campaign component in interventions targeting Chinese-speaking participants is mixed. Two low quality L4 Australian studies[47, 48] reported mixed success: one showed no increase[47] in cessation whilst the other showed improved cessation and reductions in use.[48] Further research regarding the effectiveness of media campaigns as an intervention component with Chinese-speaking participants is required.

Involving a family member or friend

Promising evidence for increased knowledge and quit rates, outside Australia.

Interventions applied to Chinese-speaking populations benefited from the inclusion of family/friends. This component was found to increase knowledge[43, 45] and resulted in one-month quit rates of 24%[43]-27%,[45] 12-month quit rates of 21-25%,[20] and a 69-84% reduction in second-hand exposure in the home environment.[20] All three studies were undertaken in the United States and thus the applicability of this intervention component in Australia is unknown.

Nicotine replacement therapy

Promising evidence for increased quit rates, outside Australia.

Chinese-speaking participants were provided with NRT as one component in three studies.[7, 48, 51] The use of NRT was effective at increasing quit rates for this participant group in both the United States (results combined with Vietnamese- and Korean-speaking participants)[7, 51] and Australia (Chinese-speaking participants only).[48]

Telephone follow-up

Mixed evidence for increased knowledge and quit rates.

Interventions that included telephone follow-up with Chinese-speaking participants (L2 n=1, L4 n=2) found increased knowledge,[43, 45] abstinence rates, and/or reduced tobacco use.[20, 45] However, in one of these studies the inclusion of telephone contact (and education sessions) did not significantly improve knowledge, increase cessation or reduce tobacco use above the intervention arm that did not include this component.[20] Therefore, further research (including in Australia) is needed to determine

whether the use of telephone follow-up with Chinese-speaking participants is effective at changing knowledge and behaviour regarding tobacco use.

Branded merchandise

Promising evidence for increased quit rates, outside Australia.

Branded merchandise in the form of a magnet was provided to Chinese-speaking participants.[20, 45] The magnet provided reminders to participants to refrain from smoking, but it's effectiveness was limited to the house (where the magnet was viewed).[45] Overall, interventions using this component had reduced tobacco use and increase cessation rates (L2 n=1, L4 n=1). Applicability of this component to Chinese-speaking immigrants in Australia has not been tested.

Mobile messaging

Promising evidence for increased quit rates, outside Australia.

The use of mobile text messaging to provide information regarding the health effects and support services for Chinese-speaking participants in the United States was found to be effective (L3 n=2). Interventions which included this component increased participant's intention to stop smoking,[46] improved attitudes towards quitting[33] and reduced use (as measured by expired carbon monoxide levels).[33] However, one of these studies co-recruited Korean-speaking participants and provided aggregated results (and all CALD participants recruited were male). The quality of the evidence was modest however caution is needed regarding the applicability of this component to Chinese-speaking people in Australia.

Acupuncture

Insufficient evidence (single study: aggregated increased quit rate, outside Australia).

The use of acupuncture, in conjunction with counselling and education resulted in a six-month quit rate of 29%.[6] Findings from this study were combined for both Chinese American (76%) and non-Chinese clients (L3, moderate JBI score). Use of acupuncture as an intervention component in Australia has not been assessed.

Quit support group and Peer experience

Insufficient evidence (single study: increased quit rate, outside Australia).

One intervention applied to Chinese-speaking participants in Australia included both a quit support group and peer experience components (L4).[48] This intervention design resulted in a high 12-week quit rate (42%) with an additional 12% reporting reductions in use. Although the findings were supportive, the study's quality was low, and the impact of individual components could not be determined.

Competition

Insufficient evidence (single study: no evidence to support).

The use of a competition to encourage participants to quit was not supported in one L4 study.[47] As the quality of this Australian study was rated low, further research to determine its effectiveness is required.

Studies comprising Vietnamese-speaking participants

Vietnamese participants were recruited in six studies.[7, 34, 42-44, 51] Five of these studies were based in the United States[7, 34, 43, 44, 51] and one in Australia[42]. All six studies co-recruited other CALD groups (Chinese-speaking,[7, 42-44, 51] Korean-speaking, [7, 44, 51] Arabic-speaking,[42] Cambodian[34] and other (unspecified)[34]). Five of the six studies were rated as L4 evidence, and one as L3 evidence. The quality of the evidence, based on JBI scores, was low for one study, moderate for four studies and good for one study.

Intervention components

Of the 15 components found in interventions in the present review, nine were used in interventions targeting Vietnamese-speaking participants:

- Written information[34, 43, 44, 51]
- Education sessions[34, 42-44]
- Visual information[34]
- Counselling[7, 51]
- Media campaign[34]
- Involving a family member or friend[43]
- Nicotine replacement therapy[7, 51]
- Telephone follow-up[43]
- Audio information[34]

The six components not assessed among Vietnamese-speaking participants were branded merchandise, mobile messaging, acupuncture, quit support group, peer experience and competition. Research for use of these components in Australia with Vietnamese-speaking participants is required.

No evidence (branded merchandise, mobile messaging, acupuncture, quit support group, peer experience, competition).

Written information

Aggregated evidence for increased knowledge and quit rates, outside Australia.

Written information was found to be successful in improving knowledge,[43, 44] improving intention to quit,[43] reducing use,[34] and increasing quit rates[43, 51] among participant groups that included Vietnamese-speaking people (L4 n=3, L3 n=1). As no research has been undertaken in Australia, and only one study disaggregated findings for Vietnamese-speaking participants,[34] further research regarding the effectiveness of written information with Vietnamese-speaking people in Australia may be required.

Education sessions

Aggregated evidence for increased knowledge and quit rates, outside Australia.

Education sessions targeting Vietnamese-speaking people as one participant group in addition to others was found to be successful at improving knowledge,[42-44] and increasing quit rates.[43] As none of these L4 studies disaggregated results for Vietnamese-speaking participants, further research is required in Australia.

Visual information

Insufficient evidence (single study: increased quit rate, outside Australia).

Visual education material for television (exact nature of this aspect was not reported) targeting Vietnamese-speaking participants was found to result in a reduction in smoking prevalence, when combined with other intervention components in one L3 study.[34] As this research was undertaken in the United States, replication in Australia is required for component support.

Counselling

Aggregated evidence for increased quit rates, outside Australia.

Telephone counselling, as part of a larger intervention, was found to be effective at improving quit rates among Vietnamese-, Chinese-, and Korean-speaking participants in two L4 studies.[7, 51] However, as no study has been undertaken in Australia nor explored the applicability of face-to-face counselling with only Vietnamese-speaking participants, further research is warranted.

Media campaign

Insufficient evidence (single study: increased quit rate, outside Australia).

There is some evidence (L3) regarding the effectiveness of media campaigns at reducing smoking prevalence among Vietnamese-speaking participants.[34] However, further research regarding the effectiveness of media campaigns as an intervention component with Vietnamese-speaking people in Australia is required.

Involving a family member

Insufficient evidence (single study: increased (aggregated) quit rate, outside Australia).

One intervention included a family member to support Vietnamese- and Chinese- speaking participants (Vietnamese: 75% of participant group). This component was found to increase knowledge, intention to quit, and resulted in a one-month quit rate of 24%.[43] As this L4 study was based in the United States, and provided aggregated results, further Australian-based research may be required.

Nicotine replacement therapy

Aggregated evidence for increased quit rates, outside Australia.

NRT was provided to Vietnamese-speaking participants in two United States-based studies (L4) that provided aggregated results with Chinese- and Korean-speaking participants[7, 51] Although NRT was effective for these CALD groups, its effectiveness in the Australian context, and with Vietnamese-speaking participants only, has not been assessed.

Telephone follow-up

Insufficient evidence (single study: increased (aggregated) knowledge and quit rate, outside Australia).

One intervention applied to Vietnamese-speaking and other CALD participants in the United States found increased knowledge, intention to quit, and abstinence rates.[43] Further research is needed to

determine whether the use of telephone follow-up with Vietnamese participants alone is effective, in addition to its applicability in Australia.

Audio information

Insufficient evidence (single study: increased quit rate, outside Australia).

The use of audio information (CDs and audiotapes), combined with other intervention components, was effective at reducing smoking prevalence and increasing the quit ratio among Vietnamese-speaking participants in the United States in one L3 study.[34] This component has not been assessed in Australia.

Studies comprising Arabic-speaking participants

Arabic-speaking participants were recruited in five studies.[8, 42, 49, 50, 52] Three were based in Australia[42, 50, 52] whilst two were undertaken in the United States[8, 49] Four studies recruited only Arabic-speaking participants[8, 49, 50, 52] whilst the fifth included other CALD groups such as Chinese- and Vietnamese-speaking participants.[42] Three of the five studies examined waterpipe smoking.[42, 50, 52] All five studies were L4 evidence. Quality of the studies varied (low n=2, moderate n=2, good n=1).

Intervention components

The following eight intervention components were included in interventions aimed at Arabic-speaking participants:

- Written information[8, 49, 50, 52]
- Education sessions[42, 50, 52]
- Visual information[50, 52]
- Counselling[8, 49]
- Media campaign[50, 52]
- Nicotine replacement therapy[49]
- Telephone follow-up[8]
- Branded merchandise[50]

Research on the use of the other seven intervention components (involving a family member or friend, mobile messaging, acupuncture, quit support group, peer experience, competition, audio information) with Arabic-speaking participants in Australia is required.

No evidence (involving a family member or friend, mobile messaging, acupuncture, quit support group, peer experience, competition, audio information).

Written information

Mixed evidence for increased knowledge and quit rates.

The evidence of whether written information as an intervention component is effective at improving knowledge and cessation among Arabic-speaking participants is mixed (L4 n=4).[8, 49, 50, 52] Evidence from the United States is favourable regarding reduced use and increase cessation[8, 49] whilst Australian research has found increased awareness of the harms of shisha use but no changes in knowledge or intentions to reduce use.[50, 52] Therefore, further research is warranted.

Education sessions

No evidence.

No studies specifically recruited Arabic-speaking participants to test the effectiveness of education sessions to improve tobacco cessation. All three studies which applied an education session used this as a mechanism to train community health workers to help them communicate the harms of shisha to Arabic-speaking clients.[42, 50, 52] Therefore, further research is warranted as to whether education sessions for Arabic-speaking participants is an effective approach to increase tobacco cessation rates.

Visual information

Evidence does not support.

Australian research has found increased awareness of the harms of shisha use among Arabic-speaking participants provided with visual information (e.g., videos, memes, graphics).[50, 52] However, there were no changes in knowledge or intentions to reduce use.[50, 52] As the quality of evidence was low, further research is warranted.

Counselling

Promising evidence for increased quit rates, outside Australia.

Counselling delivered in-person (L4)[8] and via telephone (L4)[49] was effective at reducing tobacco use and increasing cessation[8, 49] when included with other intervention components. This intervention component however has not been assessed in Australia with Arabic-speaking participants.

Media campaign

Evidence does not support.

Two studies included a media campaign related to the *Shisha No Thanks* intervention[50, 52]. Overall, the *Shisha No Thanks* intervention improved participants awareness of the harms of waterpipe smoking but did not significantly change intentions to reduce use. As the quality of the evidence regarding these two studies is low, further research regarding the effectiveness of media campaigns as an intervention component is required.

Nicotine replacement therapy

Insufficient evidence (single study: increased quit rate, outside Australia).

The use of NRT was found to be effective, in combination with other intervention components with Arabic-speaking participants, at reducing use and increasing cessation.[49] This approach however was not tested for use in Australia.

Telephone follow-up

Insufficient evidence (single study: increased quit rate, outside Australia).

Arabic-speaking participants were found to reduce their tobacco use and increase cessation when the intervention included a telephone follow-up.[8] Replication of this study for applicability in Australia may be required.

Branded merchandise

Evidence does not support.

One intervention that included branded merchandise (banners, cubes, phone holders, reusable coffee cups, t-shirts, tote bags) was found to improve awareness of the harms of shisha.[50] However, the intervention did not result in significant changes to knowledge or intentions to change their shisha use.[50] Further research regarding the effectiveness of branded merchandise is required.

Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?

Four of the 49 studies included were systematic reviews. Three included studies exclusively from the United States (L1 n=1[18], L3 n=2[40, 41]) and one from Canada and the United States (L1 evidence[19]). These four studies included interventions from CALD groups including Chinese-, Vietnamese- and Arabic-speaking immigrants. Arabic-speaking participants however were less likely to be included in these studies than the other two CALD groups. The interventions discussed focused exclusively on bowel cancer in one systematic review,[18] breast cancer in a second,[40] breast and cervical cancer in the third,[19] and all three cancers in the fourth.[41]

Two grey literature documents synthesised interventions, campaigns and programs that had been implemented in Australia regarding CALD groups.[5, 11] The level of evidence for these two documents were unable to be assessed. Interventions relating to all three cancers were included, and overall, they were considered effective.

Of the 43 primary studies (L2 n=13, L2=5, L4=25), nine were considered of low quality, 22 of moderate quality and 12 of good quality, according to their JBI score. Most studies were undertaken in the United States (n=31) whilst eight were undertaken in Australia, two in Canada and two in New Zealand. Chinese participants were included in 22 studies,[4, 21-24, 28, 29, 31, 39, 54-56, 61, 62, 64-67, 70, 73-75] Vietnamese participants in 21 studies[3, 25-27, 29, 30, 32, 36, 38, 53, 54, 57, 60-63, 71-75] and Arabic-speaking participants in 11 studies.[3, 4, 9, 10, 37, 58, 59, 68, 69, 73, 74] Interventions that focused on breast, bowel and cervical cancers were included in 26, 25 and 16 studies, respectively.

A discussion of components included in interventions for all CALD groups are first discussed and then by each of the three targeted CALD groups.

Intervention components

Components included in the interventions from the primary studies were, from most to least commonly used (Appendix 6 Table A6.3):

- Education sessions[3, 4, 9, 22, 24-29, 31, 32, 37-39, 53, 55, 56, 58-60, 63-69, 71-73, 75]
- Written information[10, 21-24, 26-30, 32, 36-39, 55, 60, 62, 63, 67, 70-72, 74, 75]
- Patient navigation[27-29, 37, 56, 58, 60, 64, 68, 71, 73]
- Visual information[3, 27, 30, 36, 54, 58, 60, 67, 72]
- Peer/community health worker[24, 25, 27, 57-59, 69, 73, 75]
- Opportunity to be screened[4, 39, 58, 62-64, 68]
- Counselling[21, 28, 29, 60, 64, 65]
- Peer experience[30, 59, 60, 68, 75]
- Media campaigns[4, 9, 74]
- Telephone reminders[10, 62]
- Anatomical models[58, 68]
- Branded merchandise[4, 67]

- Family group chat[72]
- Forum theatre[57]
- Kin keeper[69]
- Patient contact[36]
- Racal/ethnicity and language concordance[39]
- Traditional medicine providers.[55]

Please note that the intervention components included in one study were unable to be assessed due to no information being included in the document.[61]

Education sessions

The inclusion of an education session was common in interventions aiming to change CALD participants' cancer screening knowledge, attitudes, beliefs and screening behaviours (32 studies) (L2 n=9, L3 n=4, L4 n=19 (Appendix 6 Table A6.4)). Education sessions included online community sessions, in person workshops, and simulated training. Sessions were delivered individually and/or in group settings. Some were aimed at improving knowledge of the patient navigator[37], community health workers,[58] family health advocate,[72] traditional Chinese medicine providers[55] and physicians[22] so that they could then provide education to their patient/client (train the trainer approach). Among studies which reported the timeframe, most education sessions lasted 1-2 hours, and ranged from one 35–40-minute session, and six 2-hour sessions, to 2 half-day sessions.

Three studies used education sessions as their only intervention component.[31, 53, 66] Two studies measured intervention effects in Chinese-speaking participants[31, 66] and one with Vietnamese-speaking participants that also included Indian and Filipino participants.[53] Breast cancer was the sole cancer of interest in two studies, whilst the third covered all three targeted cancers in additional to other cancer types. The education session ranged from one 1-hour session (2 studies) to four 2-hour sessions (1 study). The study which included education on all three cancers was a randomised controlled trial (L2 evidence) which compared their 1-hour cancer screening and prevention education seminar to a 1-hour cancer research in the community seminar.[31] The effectiveness of the intervention was low with only slight improvements in cancer knowledge and no significant difference in screening rates. The other two studies showed improvements in breast cancer screening knowledge,[53, 66] attitudes[66] and/or screening intention.[30] (L4 studies). This difference may be accounted for by more time being spent focussing on instilling education on one cancer type.

In the other 29 studies, there were mixed findings regarding whether the education session combined with other intervention components improved knowledge of the targeted cancer topics, and associated screening rates. The reason for this is that there is no consistent education content available to include within an educational session that targets each of the three cancers. Given the target group, topics of interest would also need to address navigation of the Australian health care system to increase screening behaviour.

Written information

Written information was provided in 25 studies (L2=11, L3=4, L4=10 (Appendix 6 Table A6.4)) and included presentation slides, handouts, brochures, flyers, posters, letters, booklets, and flipcharts. Information was written in the target audience's first language and/or English. Except for the presentation slides and flipcharts, participants retained written documents for future use.

Two of the 25 studies included written information as their only intervention component.[23, 70] Of these, one study (L2 evidence) found their two page brochure about breast cancer screening improved mammogram screening among Chinese-speaking participants (33% had a mammogram in the past 2 months).[23] They additionally found the message framing of the brochure increased screening rates when participants were receptive to the message framing approach used (e.g. a gain framed message increased screening among those with a positive decisional balance). Another study[70] that solely investigated written information found the provision of a human papillomavirus vaccine education flyer improved Chinese-speaking immigrants' knowledge of cervical cancer (L4 study, good JBI score (Appendix 6 Table A6.4)).

A third study (L2, moderate JBI score) compared written information (control) to counselling (intervention) study arms.[21] Written information included a pamphlet on breast health that explained the importance of early detection and the mammography procedure. The counselling arm involved tailored individual telephone support. Mammography screening rate increased in both arms (control: 33%, intervention: 40%) without significant intergroup differences. However, when age was considered, those aged over 65 years and received counselling reported significantly higher screening adherence (control 25%, intervention 51%).

Written information was included with at least one other intervention components in the other 22 studies. Written information in combination with other components generally improved knowledge, screening intention and screening behaviour. The quality of evidence ranged from low to good.

Of the 23 studies that included written information as an intervention component, Arabic-speaking participants were included in only four.[10, 37, 74, 75]

Patient navigation

Patient navigation involves assisting CALD participants to overcome barriers in dealing with the healthcare system. In relation to screening, this involves booking appointments, arranging transportation, providing appointment reminders, attending appointments, and being an interpreter (or arranging for one to be in attendance). Patient navigation was identified as an intervention component in 11 studies (L2 n=3, L3 n=1, L4 n=7 (Appendix 6 Table A6.4)). Chinese- and Vietnamese-speaking participants were each included in five studies, and Arabic-speaking participants in three.

Patient navigation was combined with education sessions in all interventions, with additional written information in six studies. In some studies, patient navigation was provided only to non-adherent women or if needed. In one of these studies[71] Vietnamese-speaking women who chose to use patient navigation had significantly higher pap test screening adherence (83%) than those who chose not to receive patient navigation (50%). However, the same effect was not seen for mammography (accepted patient navigation: mammogram completed: 77%, did not accept patient navigation: mammogram completed: 71%) (L4, moderate quality (JBI)).[71]

Visual information

Nine studies were identified which included visual information as an intervention component (L2 n=2, L3 n=1, L4 n=6 (Appendix 6 Table A6.4)). Visual information included pictorial and graphic images to support the education sessions, infographics, videos, DVDs, and comics. Most studies included Vietnamese-speaking participants (seven studies; Chinese-speaking: two studies; Arabic-speaking: two studies). The quality of included studies ranged from low to good (Appendix 6 Table A6.4).

One of the nine studies exclusively used visual information by testing the efficacy of using comics to increase bowel cancer screening.[54] The comics showed some support towards increasing motivation to complete a faecal immunochemical test and the humour component helped generate discussions. Another study compared the use of written information only (brochure) against the provision of an educational DVD.[30] The 20-minute educational DVD included information on bowel screening (risks, screening options, guidelines, importance of early detection, etc), demonstration of a colonoscopy, and stories from peers regarding their screening experiences and stories of survival. The study found Vietnamese participants in both groups increased their colorectal cancer (CRC) screening behaviour, knowledge and attitudes with neither method superior to the other (L2 evidence).

In the other eight studies that included visual information, this component was often used to support other components of the intervention. For instance, infographics, videos and pictorial images/graphics were used within the education session to provide an alternate way to present information and to engage participants.

It should be noted that using DVDs to deliver video content is outmoded, and thus this modality is not recommended for future intervention.

Peer/community health worker

Peer or community health worker involvement was included in nine intervention studies (L2 n=3, L4 n=6 (Appendix Table A6.4)). In all but one study, this component was combined with an education session and the remaining study combined it with community forum theatre[57]. Peer or community health worker involvement in the intervention resulted in improved knowledge,[24, 25, 57, 59, 73, 75] increased screening intention[27, 57, 69] and increased screening rates.[24, 25, 59, 73] The one exception was a non-significant increase in colon cancer screening[58]. The same study however found significant increases in cervical (37%) and breast (54%) cancer screening rates.

Vietnamese-speaking participants were included in five studies, Arabic-speaking participants in four studies and Chinese-speaking participants in three studies. Overall, the quality of evidence for peer/community health worker/educator varied (Appendix 6 Table A6.4).

Opportunity to be screened

Seven studies included, as part of their intervention, the opportunity to be screened (L3 n=1, L4 n=6 (Appendix 6 Table A6.4)). In most cases (five out of seven studies), this included the provision of the bowel screening kit (to take home or was delivered via mail). A sixth study also included the opportunity to be screened for bowel cancer via either colonoscopy and/or faecal immunochemical test, as well as screening opportunities for cervical and breast cancer. The seven study provided the option to receive a breast mammogram via a mobile mammography van.

Interventions that included the opportunity to be screened and measured screening behaviour, showed significant increases in screening rates (e.g., 6-73%).[4, 39, 58, 62, 68] The exception was the study which included all three cancers and the increase in screening rates for colon cancer (27%) was non-signficant.[58] In studies measuring it, new screening among unscreened people, ranged from 33%[68] to 79%[58] for mammograms, 74% for pap tests,[58] and 100% for bowel screening.[58] One study noted that despite the significant increase in bowel cancer screening rate among Asian participants, it was still significantly lower than other population groups (e.g. European/other).[62]

According to the critical appraisal, the quality of the included studies varied from low to good (Appendix 6 Table A6.4). Chinese-speaking participants were recruited in four studies, Arabic-speaking in three and Vietnamese-speaking in two.

Counselling

Counselling, as an intervention component was included in six studies (L2=3, L4=3 (Appendix 6 Table A6.4))[21, 28, 29, 60, 64, 65]. No study included Arabic-speaking participants, whilst five included Chinese-speaking participants and two included Vietnamese-speaking participants. In all six studies, counselling was provided over the phone. One study also provided the opportunity for the counselling session to be face-to-face.[60] Five of the six studies included an education session and the counselling session occurred 10 days[28, 29, 34, 60, 65] or 2 months[64] after this session. These five studies (which may also have included other intervention components) showed improvements in breast screening rates, knowledge, and beliefs, but non-significant improvements for colorectal cancer screening.

The sixth study compared counselling (individual phone counselling with tailored support provided) to written information (mammography brochure).[21] As discussed above (under Written Information), both groups increased screening rates with neither approach statistically significantly different overall. However, participants aged 65+ years reported higher screening in the counselling than written information group, demonstrating that this group may benefit from a more individualised approach.

Overall, the quality of the evidence ranged from low to good (Appendix 6 Table A6.4). Although the component showed improvements in screening rates, this component has not been tested in interventions involving Arabic-speaking participants and thus warrants additional research.

Peer experience

Five studies reported the use of peer experience in their intervention (L2 n=1, L4 =4 (Appendix 6 Table A6.4)).[30, 59, 60, 68, 75] Peer experience predominately involved members of the target group telling their personal stories regarding cancer survivorship. Peer experience was used in four of the five studies during an education session; whilst the fifth included peer experience within a video (visual information).[30] Peer experience was used in four studies employing interventions regarding breast cancer and bowel cancer in the fifth.

All studies using peer experience included other intervention components making assessing the efficacy of peer experience alone challenging. Overall, interventions that included this component showed improvements in knowledge, attitudes, beliefs and screening rates. The quality of the included studies was predominately moderate (Appendix 6 Table A6.4).

Media campaigns

Three studies included media advertisements as part of their intervention (L3=1, L4=2 (Appendix 6 Table A6.4))[4, 9, 74]. This component was included in conjunction with education sessions in two instances, and with written information in the third. Findings regarding this intervention component were mixed or inconclusive due to 1. small sample sizes; and 2. the intervention being implemented during the outbreak of COVID which impacted both recruitment strategies, administration processes and screening uptake. Therefore, further research is needed to determine the effect of media campaigns on increasing screening participation.

Telephone reminders

Two studies (rated of good quality) included telephone reminders in their intervention (L2 n=1, L4 n=1 (Appendix 6 Table A6.4)).[10, 62] One of these studies specifically assessed whether the use of a telephone reminder (in the participants preferred language) would increase breast cancer screening rates compared to usual care (which is no telephone reminder).[10] The L2 evidence study found the telephone reminder intervention arm significantly increased booked screening appointments (intervention: 64%, control: 6%).[10] However, a limitation of this study is that it did not measure actual screening rates.

The other study[62] which included telephone reminders contacted participants (via phone or in-person) if they had not returned their completed iFOBT within 4 weeks of having been sent a reminder letter. This study did not report data on how this component alone improved screening rates. However, overall, the study found bowel cancer screening among Asian participants to increase (49-54%).

Anatomical models

Anatomical models were included in two interventions as part of the education session (L4 n=2 (Appendix 6 Table A6.4)).[58, 68] One study used the models in a training session about cervical, breast and colon cancer;[58] whilst the second used an interactive breast model in an education session.[68] The latter model enabled participants to feel the difference between a breast that was healthy compared to one that had a benign/malignant tumour. Both studies included at least four other intervention components making an assessment of the effectiveness of this component alone difficult. Interventions which used anatomical models also provided education sessions, patient navigation, and opportunities to be screened. The two studies found their interventions increased screening rates for breast[58, 68], cervical[58] and bowel cancer,[58] albeit not significantly for bowel cancer. The intervention that used the interactive breast model also found improvements in participant's knowledge of breast cancer and breast screening.[68]

Both studies which included anatomical models recruited Arabic-speaking participants and were deemed of moderate quality (Appendix 6 Table A6.4). Further research with the other two CALD populations is required.

Branded merchandise

The use of branded merchandise (e.g., magnets, coffee mugs, playing cards, tote bags etc) was included in two L4 evidence studies (Appendix 6 Table A6.4).[4, 67] The intervention increased Chinese-speaking participants knowledge, beliefs and awareness of breast and cervical cancer and associated screening in one study.[67] However, actual screening rates was not assessed. In the second, bowel cancer screening crude rates increased as did understanding and awareness of bowel cancer among Arabic- and Chinese-speaking participants.[4]

Family group chat

One L4 evidence study investigated family group chat as a mechanism to educate members about cervical and bowel cancer.[72] The qualitative study was considered of moderate quality (Appendix 6 Table A6.4) and the intervention overall showed an increase in Vietnamese-speaking participants' knowledge of screening and increased intention to screen. As applicability of this intervention component to other CALD populations is unknown, further research is warranted.

Kin Keeper

Kin Keeper as an intervention component was assessed in one L4 study (Appendix 6 Table A6.4).[69] Kin Keeper includes all adult female family members in the same intervention. Overall, the intervention reduced Arabic-speaking participants' perceptions of the pap test being painful (from 24% to 4%) and resulted in a high proportion of participants having the goal to receive yearly pap tests (95%). The quality of the study was considered moderate. The applicability of this component with Chinese- and Vietnamese-speaking participants is unknown.

Racial/ethnic and language concordance

One L3 study compared the racial/ethnic and language concordance of the presenter (Appendix 6 Table A6.4).[39] Three comparison groups were considered: Chinese/Chinese, Chinese/English and White/English. All groups showed improvements in beliefs regarding colorectal cancer screening. However, participants who attended presentations delivered by a Chinese person in English (Chinese/English) were significantly more likely to complete a FOBT (73% vs Chinese/Chinese 48%, White/English: 61%). The applicability of this component with Vietnamese- and Arabic-speaking participants is unknown.

Forum theatre

Forum theatre was an intervention component assessed in one L4 evidence study (Appendix 6 Table A6.4). Forum theatre is a performance where actors engage audience members and present a social conflict. For instance, a person has a conflict with someone who wants them to get screened for colon or cervical cancer. Members of the audience can intervene and propose solutions. The intervention showed improvements in Vietnamese-speaking participants' knowledge and increased their likelihood of seeking colon and cervical cancer screening. This intervention component has not been assessed in the other two CALD groups.

Patient contact

One study assessed the point of contact as an intervention component among Vietnamese-speaking patients.[36] They compared medical assistants to usual care. The L3 study resulted in a small, albeit non-significant increase in colorectal cancer screening overall but a significant increase among previously non-compliant patients. The applicability of this component with Chinese- and Arabic-speaking participants is unknown.

Traditional medicine providers

One L4 study assessed the use of traditional Chinese medicine providers as an intervention component.[55] The traditional Chinese medicine providers were required to recruit Chinese-speaking participants and provide education to them regarding colorectal cancer and CRC screening. The intervention significantly improved knowledge of colorectal cancer and significantly increase screening rates (up to date: baseline 70% vs post intervention 79%). This component may be less effective in other CALD populations that are more in favour of western medicine.

Studies comprising Chinese-speaking participants

Chinese-speaking participants were recruited in 22 studies[4, 21-24, 28, 29, 31, 39, 54-56, 64-67, 70, 73-75] (including two which recruited 'Asian' participants)[61, 62] and the only participant group in 14 studies.[21-24, 28, 31, 39, 55, 56, 64-67, 70] Fifteen studies were based in the United States,[21-24, 28, 29, 31, 39, 54-56, 64, 65, 70, 75] three in Australia,[4, 67, 74] two in New Zealand[61, 62] and two in Canada[66, 73] Screening behaviour related to breast cancer was included in 11 studies,[21, 23, 28, 29, 31, 65-67, 73-75] bowel cancer in 11 studies[4, 22, 24, 31, 39, 54-56, 61, 62, 64] and cervical cancer in three studies.[31, 67, 70]

Among the 22 studies, seven were L2 evidence, one was L3 evidence and 14 were L4 evidence. Three studies received low JBI scores, nine received moderate scores and 10 received good scores.

Intervention components

Studies that applied an intervention to target cancer screening adherence among Chinese-speaking participants included 13 of the 18 intervention components previously discussed:

- Education sessions[4, 22, 24, 28, 29, 31, 39, 55, 56, 64-67, 73, 75]
- Written information[21-24, 28, 29, 39, 55, 62, 67, 70, 74, 75]
- Patient navigation[28, 29, 56, 64, 73]
- Visual information[54, 67]
- Peer or community health worker[24, 73, 75]
- Opportunity to be screened[4, 39, 62, 64]
- Counselling[21, 28, 29, 64, 65]
- Peer experience[75]
- Media campaigns[4, 74]
- Telephone reminders[62]
- Branded merchandise[4, 67]
- Racal/ethnicity and language concordance [39]
- Traditional medicine providers.[55]

Five components have not been assessed with Chinese-speaking participants: anatomical models, forum theatre, family group chat, kin keeper, and patient contact.

No evidence (anatomical models, forum theatre, family group chat, kin keeper, and patient contact).

Education sessions

Promising evidence for increased knowledge and screening rates.

Fifteen studies included education sessions as an intervention component (L4 n=9, L3 n=1, L2 n=5). The majority of interventions aimed at improving cancer screening among Chinese-speaking participants and that included an education session found improvements in knowledge,[4, 22, 24, 28, 31, 55, 65-67, 73] screening rates[4, 24, 29, 39, 55, 56, 73] and intention to screen.[67] Two studies only found significant changes in subgroups: i.e., increased knowledge in those whose knowledge was low at baseline;[75] increased screening in those non-compliant previously.[65] Other studies found no significant change in intention to screen,[64] or CRC screening rates.[22] And a third showed the increase in pap test and colon cancer screening to not significantly differ from the control group.[31]

Overall, findings showed education sessions to be effective at improving knowledge and screening rates among Chinese-speaking participants, both in the United States, Canada and Australia.

Written information

Promising evidence for increased knowledge and screening rates.

Thirteen studies that recruited Chinese participants included written information (L2 n=6, L3 n=1, L4 n=6). Two studies included written information as their only intervention component.[23, 70] These studies found written information to improve mammogram screening[23] and cervical cancer knowledge.[70] Other interventions aimed at targeting cancer screening among Chinese participants[21, 22, 24, 28, 29, 39, 55, 62, 67, 74, 75] generally found the inclusion of written information in combination with other components to improve knowledge, screening intention and screening behaviour.

Patient navigation

Mixed evidence for increased knowledge and screening rates, outside Australia.

Patient navigation effectively improved bowel cancer screening rates among Chinese-speaking participants in one L4 study,[56] and improved breast cancer knowledge and screening rates in combined CALD groups in a second L4 evidence study.[73] Three other studies (L2 n=2, L4 n=1) which only applied patient navigation if needed had mixed findings regarding its success in changing knowledge and screening behaviour among Chinese-speaking participants.[28, 29, 64] No study has investigated the effectiveness of patient navigation with Chinese participants in Australia.

Visual information

Promising evidence for increased knowledge and screening rates.

Visual information as an intervention component for targeting screening behaviour among Chinese-speaking participants was included in two L4 studies. One of these studies exclusively used visual information in the form of comics.[54] The comics increased participants' (Chinese-speaking participants were combined with other CALD groups) motivation to complete a faecal immunochemical test. The other study found their intervention overall to increase Chinese-speaking participants' knowledge and intentions to screen for breast and cervical cancer.[67]

Peer or community health worker

Promising evidence for increased knowledge and screening rates, outside Australia.

The use of a peer or community health worker was generally found to increase breast/bowel cancer screening knowledge,[24, 73, 75] and breast/bowel screening rates[24, 73] among Chinese-speaking participants[24] or select CALD groups, including Chinese.[73, 75] This intervention has not been tested for use in Australia or to target cervical cancer screening. Further research is required.

Opportunity to be screened

Promising evidence for increased knowledge and screening rates.

Four studies (L3 n=1, L4 n=3) provided Chinese-speaking participants with the opportunity to be screened for bowel cancer.[4, 39, 62, 64] One study did not find an increase in screening intention, however the sample size was small which may have impacted results.[64] The other three studies found

increased screening completion among Chinese[4, 39] and Asian participants.[62] Although there is evidence of the effectiveness of bowel cancer intervention component in Australia, further research is required to investigate opportunities to be screened for breast and cervical cancer screening rates among Chinese-speaking participants.

Counselling

Promising evidence for increased knowledge and screening rates, outside Australia.

Individual telephone counselling, as an intervention component was applied to Chinese-speaking participants in five studies (L2 n=3, L4 n=2).[21, 28, 29, 64, 65] Vietnamese-speaking participants were co-recruited in one of these studies.[29] Studies which investigated breast cancer screening found counselling to improve knowledge[28], and screening adherence overall [29] or among those previously non-compliant[65] or aged 65 years or older.[53] The fifth study found no significant impact of counselling on bowel cancer attitudes or intention to screen.[64] Replication of studies for use in Australia may be required.

Peer experience

Insufficient evidence (single study: increased knowledge (aggregated), outside Australia).

One intervention included peer experience as one component to improve knowledge of breast cancer.[75] The L4 study recruited other CALD groups in addition to Chinese-speaking participants and overall showed improvements in knowledge only among those whose knowledge was low at baseline. Further research is required to determine whether Chinese-speaking participants specifically responded to this component, and whether findings can be generalised to other cancer types in Australia.

Media campaigns

Aggregated evidence for increased knowledge and screening rates.

Although media campaigns in Australia have been found to improve awareness of screening,[4, 74] improve knowledge[74] and increase bowel cancer screening rates[74] among CALD participants in two L4 evidence studies, findings have not been reported specifically for Chinese-speaking participants. Thus, further research is warranted.

Telephone reminders

Insufficient evidence (single study: increased screening rates (aggregated), outside Australia).

One New Zealand-based study (L4) used telephone (or face-to-face) reminders to follow-up with Asian people who had not returned a completed FOBT four weeks after receiving a mailed reminder letter.[62] This component helped improve screening rates. However, individual results for Chinese-speaking participants were not provided and thus further research is required (including with other cancer screening types and within Australia).

Branded merchandise

Promising evidence for increased knowledge and screening rates.

Branded merchandise as part of a larger intervention was assessed with Chinese-speaking participants in two Australian studies.[4, 67] The studies found increased bowel screening rates and awareness[4] and increased knowledge, beliefs and awareness of breast and cervical cancer and associated screening.[67]

Racial/ethnic and language concordance

Insufficient evidence (single study: increased screening rates, outside Australia).

Chinese-speaking participants were more likely to return completed FOBT when an education session was presented by a person of Chinese ethnicity in English language (73% vs Chinese/Chinese 48%, White/English: 61%).[39] This research (L3 evidence) however was undertaken in the United States and may require replication in Australia, and with other cancer screening types.

Traditional medicine providers

Insufficient evidence (single study: increased knowledge and screening rates, outside Australia).

The inclusion of traditional medicine practitioners as an intervention component was found to be effective at increasing Chinese-speaking patients' knowledge of colorectal cancer and CRC screening adherence in the United States (L4).[55] This component has not been tested for use in Australia.

Studies comprising Vietnamese-speaking participants

Twenty-one studies recruited Vietnamese-speaking participants[3, 25-27, 29, 30, 32, 36, 38, 53, 54, 57, 60, 63, 71-75] (including two which recruited 'Asian' participants).[61, 62] Vietnamese-speaking participants were the sole participant group in 9 studies. Most studies were undertaken in the United States (14 studies),[25-27, 29, 30, 32, 36, 53, 54, 57, 60, 71, 72, 75] followed by Australia,[3, 38, 63, 74] New Zealand[61, 62] and Canada.[73]

Bowel cancer screening was most commonly targeted by interventions with Vietnamese-speaking participants (11 studies[3, 25, 30, 36, 38, 54, 57, 61-63, 72]) followed by breast cancer screening (nine studies[3, 26, 29, 53, 60, 71, 73-75]). Cervical cancer screening was targeted in seven studies.[3, 26, 27, 32, 57, 71, 72]

Six of the 21 studies were L2 evidence, two were L3 evidence and 13 were L4 evidence. Six studies were rated of low quality, 10 of moderate quality and five of good quality, based on their JBI score.

Intervention components

Studies that applied an intervention to target cancer screening adherence among Vietnamese-speaking participants included 13 of the 18 intervention components previously discussed:

- Education sessions[3, 25-27, 29, 32, 38, 53, 60, 63, 71-73, 75]
- Written information[26, 27, 29, 30, 32, 36, 38, 60, 62, 63, 71, 72, 74, 75]
- Patient navigation[27, 29, 60, 71, 73]
- Visual information[3, 27, 30, 36, 54, 60, 72]
- Peer or community health worker[25, 27, 57, 73, 75]
- Opportunity to be screened[62, 63]
- Counselling[29, 60]
- Peer experience[30, 60, 75]
- Media campaigns[74]

- Telephone reminders[62]
- Family group chat [72]
- Forum theatre[57]
- Patient contact[36]

The following five components have not been assessed with Vietnamese-speaking participants: anatomical models, kin keeper, Branded merchandise, Racal/ethnicity and language concordance and Traditional Chinese medicine providers.

No evidence (anatomical models, kin keeper, branded merchandise, racial/ethnicity and language concordance, and traditional Chinese medicine providers).

Education sessions

Promising evidence for increased knowledge and screening rates.

One study that recruited Vietnamese, Philippine and Indian participants showed education sessions (as the sole intervention component) improved breast cancer screening knowledge and intention.[53] The majority of studies that recruited Vietnamese-speaking participants and included an education session,[3, 25-27, 29, 32, 38, 60, 63, 71-73, 75] found an improvement in knowledge or screening behaviour. Of the included studies, eight were L4 evidence, one L3 evidence and five L2 evidence.

Written information

Promising evidence for increased knowledge and screening rates.

Written information was provided as part of an intervention targeting screening behaviour in 14 studies which included Vietnames-speaking participants (L2 n=5, L3 n=2, L4 n=7).[26, 27, 29, 30, 32, 36, 38, 60, 62, 63, 71, 72, 74, 75] Written information in combination with other components generally improved knowledge, screening intention and screening behaviour.

Patient navigation

Promising evidence for increased knowledge and screening rates, outside Australia

Patient navigation effectively improved breast and cervical cancer screening rates among Vietnamese-speaking participants in two studies (L2 n=1, L4 n=1),[27, 60] and improved breast cancer knowledge and screening rates in another L4 study that combined CALD groups.[73] Two other studies only applied patient navigation if needed. One found an increase in pap test screening among non-adherent Vietnamese-speaking women who chose to use patient navigation compared to those who did not (L4 evidence).[71] However, the same effect was not seen for mammography. The second study included patient navigation in the intervention arm only if needed (Chinese- and Vietnamese-speaking participants) and found this group had significantly higher breast cancer screening rates compared to the control group (L2 evidence).[29] However, other intervention components also differed between the two groups. Patient navigation as an intervention component has not been assessed with Vietnamese-speaking immigrants in Australia.

Visual information

Promising evidence for increased knowledge and screening rates, outside Australia.

Visual information as an intervention component for targeting screening behaviour among Vietnamese participants was included in seven studies (L2 n=2, L3 n=1, L4 n=4).[3, 27, 30, 36, 54, 60, 72] One of these studies exclusively used visual information in the form of comics.[54] The comics increased participants' (Vietnamese combined with other CALD groups) motivation to complete a faecal immunochemical test. Another study found Vietnamese participants exposed to visual information (DVD) compared to a brochure each had improved colorectal cancer screening knowledge and behaviour, with neither method superior to the other. Therefore, visual information is effective for use in increasing cancer screening knowledge and behaviour among Vietnamese participants, however evidence regarding its effectiveness for use in Australia is less clear.[3]

Peer or community health worker

Promising evidence for increased knowledge and screening rates, outside Australia.

The use of a peer or community health worker was found to increase breast, bowel and cervical cancer screening knowledge,[25, 57, 73, 75] and breast, bowel and cervical screening rates.[25, 27, 73] Three studies exclusively recruited Vietnamese-speaking participants (L2 n=2, L4 n=1).[25, 27, 57] This intervention has not been tested for use in Australia thus further research is required.

Opportunity to be screened

Aggregated evidence for increased screening rates.

Two interventions (L4 evidence) that included Vietnamese-speaking participants (as well as other groups) offered bowel screening kits to participants.[62, 63] Intentions to complete[63] and actual completion rates[62] were found to have increased. Further research is required to investigated whether this finding remains when solely recruiting Vietnamese-speaking participants and as a component used to increase breast and cervical cancer screening rates.

Counselling

Promising evidence for increased screening rates, outside Australia.

Interventions that provided counselling to Vietnamese-speaking participants[29, 60] significantly improved mammogram screening adherence. One study however co-recruited Chinese-speaking participants.[29] As both studies (L2 n=1, L4 n=1) were undertaken in the United States, replication may be required in Australia and with other cancer screening types.

Peer experience

Promising evidence for increased knowledge and screening rates, outside Australia.

Peer experience in combination with other intervention components was found to improve breast and bowel cancer knowledge[30, 60, 75]and increase breast and bowel screening rates.[30, 60] This evidence (L2 n=1, L4 n=2) however is based on research undertaken in the United States and may not translate to Australia or be appliable to cervical cancer screening initiatives.

Media campaigns

Insufficient evidence (single study: increased knowledge (aggregated)).

Although media campaigns in Australia have been found to improve awareness of breast screening[74] among CALD participants, findings have not been reported specifically for Vietnamese-speaking participants. Thus, further research is warranted.

Telephone reminders

Insufficient evidence (single study: increased screening rates (aggregated), outside Australia).

Telephone (or face-to-face) reminders to follow-up with Asian people in New Zealand who were non-adherent to bowel cancer screening 4-weeks after receiving a reminder letter was effective at increasing screening rates (L4 evidence).[62] Further research is required to determine its effectiveness with Vietnamese-speaking participants specifically, for applicability across other cancer screening programs, and in Australia.

Family group chat

Insufficient evidence (single study: increased knowledge, outside Australia).

Vietnamese-speaking participants' knowledge of cervical and bowel cancer and intention to screen increased using family group chat (L4).[72] The applicability of this intervention component to address breast cancer and for use in Australia is currently unknown and thus further research is warranted.

Forum theatre

Insufficient evidence (single study: increased knowledge, outside Australia).

Forum theatre, as an intervention component, improved Vietnamese-speaking participants' knowledge and increased their likelihood of seeking colon and cervical cancer screening.[57] This component has only been assessed for use outside of Australia.

Patient contact

Insufficient evidence (single study: no increase in quit rate).

The use of medical assistants as a point of contact for patients was found to increase participation in colorectal cancer among Vietnamese-speaking patients who were previously non-compliant.[36] There was no significant increase in screening rates among Vietnamese-speaking patients overall.

Studies comprising Arabic-speaking participants

Arabic-speaking participants were recruited in 11 intervention studies[3, 4, 9, 10, 37, 58, 59, 68, 69, 73, 74] targeting breast (8 studies[3, 10, 37, 59, 68, 69, 73, 74]), bowel (4 studies[3, 4, 9, 58]) and/or cervical cancer (4 studies[3, 58, 69]). No study solely recruited Arabic-speaking participants.

Five studies were undertaken in Australia[3, 4, 9, 10, 74], five in the United States[37, 58, 59, 68, 69] and one in Canada.[3] Among the 11 studies, most (eight studies) were L4 evidence, two were L3 evidence and one was L2 evidence. The quality of the studies varied (low n=2, moderate n=6, good n=3)

Intervention components

Twelve intervention components were included in studies that applied an intervention to target cancer screening adherence among Arabic-speaking participants. These were:

- Education sessions[3, 4, 9, 37, 58, 59, 68, 69, 73]
- Written information[10, 37, 74]
- Patient navigation[37, 58, 68, 73]
- Visual information[3, 58]
- Peer or community health worker[58, 59, 69, 73]
- Opportunity to be screened[4, 58, 68]
- Peer experience[59, 68]
- Media campaigns[4, 9, 74]
- Telephone reminders[10]
- Anatomical models[58, 68]
- Branded merchandise[4]
- Kin keeper[68]

The six intervention components that have not been assessed in Arabic-speaking participants are: counselling, forum theatre, family group chat, point of contact: medical assistant, racial/ethnicity and language concordance, and traditional Chinese medicine providers.

No evidence (counselling, forum theatre, family group chat, point of contact: medical assistant, racial/ethnicity and language concordance, and traditional Chinese medicine providers).

Education sessions

Mixed, aggregated evidence for increased knowledge and screening rates.

Education sessions were included as an intervention component in nine studies that co-recruited Arabic-speaking participants (L3 n=2, L4 n=7).[3, 4, 9, 37, 58, 59, 68, 69, 73] The effectiveness of this component is currently inconclusive as findings about whether the intervention improved knowledge and screening were mixed. Furthermore, results were predominately combined for the CALD groups recruited. Therefore, further research is required.

Written information

Mixed, aggregated evidence for increased knowledge and screening rates.

The evidence regarding the effectiveness of written information is inconclusive (L2 n=1, L3 n=1, L4 n=1)[10, 37, 74]. One L2 study found no change in screening behaviour when a reminder letter was translated into Arabic compared to usual care (English-language reminder letter).[10] Mammogram screening was found to increase in one study[37] and awareness of breast screening programs increased in another, but was still below awareness among non-CALD women.[74] Although two of these studies were undertaken in Australia, more research is required to determine the effectiveness of this component with Arabic-speaking participants.

Patient navigation

Aggregated evidence for increased knowledge and screening rates.

Three studies (L3 n=1, L4 n=2) included patient navigation for all participants (including Arabic-speaking)[37, 58, 73] whilst a fourth (L4) used this component for non-compliant women only.[68] In all but one study, the intervention improved knowledge and screening rates: in the fourth[58] screening increases occurred for two of the three cancer types.

Visual information

Mixed, aggregated evidence for increased knowledge and screening rates.

Two L4 evidence studies, which included visual information as part of their intervention with Arabic-speaking participants, yielded mixed findings.[3, 58] One study, which also recruited Vietnamese-speaking participants, showed improvements in breast and colon cancer knowledge (but not cervical cancer knowledge) and an increase in intentions to screen for bowel cancer.[3] The second study (which co-recruited six other CALD groups) found increases in screening for all cancers, but the increases for colon cancer was not significant. Further research is therefore required.

Peer or community health worker

Aggregated evidence for increased knowledge and screening rates, outside Australia.

Studies which included peer or community health workers and recruited Arabic-speaking participants generally showed improvements in knowledge and screening behaviour (L4).[58, 59, 69, 73] However, few studies provided results specific to Arabic-speaking participants and no study was undertaken in Australia. Thus, further research is required.

Opportunity to be screened

Promising evidence for increased knowledge and screening rates.

Arabic-speaking participants were provided with bowel-screening kits in one Australian study[4] where improvements were found in screening and knowledge. Arabic-speaking participants (in additional to other participant groups) were given the opportunity to be screened via mammography[68] or for bowel, breast and cervical cancer[58] in two other studies (both L4 evidence). Screening rates significantly increased for mammography[58, 68] and cervical cancer, [58] but not for bowel cancer.[58] Replication for other cancer types is required.

Peer experience

Aggregated evidence for increased knowledge and screening rates, outside Australia.

Peer experience was found to improve breast cancer screening knowledge and mammogram screening among participant groups that included Arabic speaking participants in two L4 studies.[59, 68] As these studies were both undertaken in the United States, replication in Australia, across cancer types, and with results reported individually for Arabic-speaking participants is required.

Media campaigns

Mixed, aggregated evidence for increased knowledge and screening rates.

Two L4 evidence studies found the inclusion of a media campaign component in Australia to improve awareness of breast and bowel screening[4, 74], improve knowledge[74] and increase bowel cancer screening rates[74] among CALD participants, including Arabic-speaking participants. However, another

study found Arabic-speaking participants did not increase their bowel cancer screening participation following an intervention that included a media campaign component.[9] However, the paper noted that COVID-19 may have impacted upon the success of the intervention and thus further research is warranted.

Telephone reminders

Insufficient evidence (single study: increased screening bookings)

Telephone reminders were found to significantly increase breast cancer screening appointment bookings among Arabic-speaking participants (54%) compared to a control group (no phone call reminder: 5%) in one L2 study.[10] Whether these booked appointments translated to screening compliance is unknown. Further research is warranted as to whether similar success is found for bowel and cervical cancer screening.

Anatomical models

Aggregated evidence for increased knowledge and screening rates, outside Australia.

Anatomical models, when included with other intervention components, were found to increase screening rates among Arabic-speaking participants for breast[58, 68], cervical[58] and bowel[58] cancer, albeit not significantly for bowel cancer. Arabic-speaking participants' knowledge of breast cancer and breast screening also increased.[68] Both studies (L4 evidence) were undertaken in the United States and thus replication may be required in Australia.

Branded merchandise

Insufficient evidence (single study: increased knowledge and screening rates).

Branded merchandise as part of a larger intervention was assessed with Arabic-speaking participants in one Australian study.[4] The L4 study found increased awareness and uptake of bowel screening. Further research is warranted as to whether similar success is found for breast and cervical cancer screening.

Kin Keeper

Insufficient evidence (single study)

One L4 study undertaken in the United States included all adult female family members as part of the intervention. Arabic-speaking participants' perceptions of the pap test being painful significantly reduced, and nearly all (95%) reported the goal of continuing yearly pap test screening.[69] This component has not been tested for use in Australia.

Gaps in the evidence

The following gaps in the evidence were noted:

- No systematic review was captured by the inclusion criteria for Q1 (tobacco cessation interventions) and only two studies in Q1's review were RCTs. As RCTs are a more rigorous research methodology and systematic reviews of RCTs are considered the gold standard, much of the evidence regarding Q1 is based on lower level study designs with limitations and increased risk of bias.
- Studies captured by the Q1 and Q2 review often provided inadequate detail about their intervention design, a common gap[76]. For instance, few studies reported how long the tobacco cessation education session lasted. Details such as length of time would have been useful to assist in the quality appraisal and to consider if a dose-response relationships was present.
- Given the limitations outlined in the two points above, most of the studies reporting positive results can only be defined as promising, and not conclusive, and further investigation may be warranted.
- Several intervention components were found to have supportive evidence available only at the aggregate level. For Q1, data regarding four intervention components (written information, education sessions, counselling, and nicotine replacement therapy) for Vietnamese-speaking participants were combined with other CALD groups (Table 2). Whilst for Q2, eight intervention components (education sessions, written information, patient navigation, visual information, peer/community health worker, peer experience, media campaigns, and anatomical models) only had aggregated data reported for Arabic-speaking participants (Tables 3). Consequently, further research is warranted to determine the intervention components effectiveness with the individual CALD participant group only.
- The evidence regarding the effectiveness of certain intervention components were insufficient in 4-5 intervention components per CALD group for Q1 (Table 2) and 3-5 intervention components for Q2 (Table 3). This was due to only one study having included the individual component. Further research is therefore warranted.
- For Q1, no studies reported on the effectiveness of eight individual components for Arabic-speaking participants (education sessions, branded merchandise, mobile messaging, acupuncture, quit support group, peer experience, competition, and audio information), six individual components for Vietnamese-speaking participants (branded merchandise, mobile messaging, acupuncture, quit support group, peer experience, and competition), and one individual component for Chinese-speaking participants (audio information) (Table 2).
- For Q2, no studies reported on the effectiveness of six individual components for Arabic-speaking participants (counselling, family group chat, forum theatre, patient contact, racial/ethnicity and language concordance, and traditional medicine providers), five individual components for Vietnamese-speaking participants (anatomical models, branded merchandise, kin keeper, racial/ethnicity and language concordance, and traditional medicine providers), and five individual components for Chinese-speaking participants (anatomical models, family group chat, forum theatre, patient contact, and kin keeper) (Table 2).

Table 2— Summary of the evidence by CALD group and intervention component included in tobacco cessation interventions

Intervention component	Chinese-speaking participants	Vietnamese-speaking participants	Arabic-speaking participants
Written information	✓	~	~
Education sessions	✓	~	−
Visual information	✓	?	?
Counselling	✓	~	✓
Media campaign	~	?	?
Involving a family member or friend	✓	?	?
Nicotine replacement therapy (NRT)	✓	~	?
Telephone follow-up	~	?	?
Branded merchandise	✓	−	−
Mobile messaging	✓	−	−
Acupuncture	?	−	−
Quit support group	?	−	−
Peer experience	?	−	−
Competition	?	−	−
Audio information	−	?	−

✓ promising evidence

~ mixed evidence or based on aggregated data for multiple CALD groups

? insufficient evidence

− no evidence

Table 3 — Summary of the evidence by CALD group and intervention component included in cancer screening interventions

Intervention component	Chinese-speaking participants	Vietnamese-speaking participants	Arabic-speaking participants
Education sessions	✓	✓	~
Written information	✓	✓	~
Patient navigation	~	✓	~
Visual information	✓	✓	~
Peer or community health worker	✓	✓	~
Opportunity to be screened	✓	~	✓
Counselling	✓	✓	−
Peer experience	?	✓	~
Media campaigns	~	?	~
Telephone reminders	?	?	?
Anatomical models	−	−	~

Branded merchandise	✓	−	?
Family group chat	−	?	−
Forum theatre	−	?	−
Patient contact	−	?	−
Kin keeper	−	−	?
Racal/ethnicity and language concordance	?	−	−
Traditional medicine providers	?	−	−

✓ promising evidence

~ mixed evidence or based on aggregated data for multiple CALD groups

? insufficient evidence

− no evidence

Discussion

The purpose of this review was to provide an overview of intervention components that have been implemented to target tobacco cessation or cancer screening adherence for Chinese-, Vietnamese- and Arabic-speaking communities. Nineteen studies met the inclusion criteria and applied an intervention to target tobacco cessation whilst 49 studies targeted breast, bowel or cervical cancer screening participation/uptake among the targeted CALD groups. The results indicate the success of interventions has varied with the outcome targeted. Most have shown promising evidence of effectiveness for improving knowledge and quit rates but there is little evidence focussing on whether this improved knowledge translated into increased screening.

What was clear from the review is that there is no one component that is critical to intervention success. The individual components included in any one intervention varied. Most comprise more than one component with the addition of one component not always having an additive effect, nor its exclusion having a detrimental effect. However, a common ingredient to most effective interventions was education.

Many studies reported a lack of knowledge as the main reason for high tobacco use and screening non-adherence. In order to take the necessary steps to change, education appears the touchstone for determining why change is required. This approach is consistent with the Stages of Change Models of intervention development whereby a critical antecedent to any possible behaviour change is contemplation of the importance of change.77 Findings from the included studies generally showed the greatest success in changing screening behaviour and tobacco cessation occurred when baseline knowledge was low. Conversely, when participants were more knowledgeable, the effectiveness of interventions diminished.

Interventions targeting populations possessing greater knowledge, a lack of knowledge pertaining to the harms of tobacco use or benefits of screening was not a barrier to change. Instead, these groups may lack knowledge about where to seek support or advice regarding quitting (once they made that decision) or where and how to access screening services, and navigate the healthcare system. In addressing this knowledge area, other intervention components were typically more effective.

When a constituent population has the foundational knowledge, the education component does not determine the successfulness of an intervention. In this circumstance, efforts can be redirected towards other barriers and enables, to improve cessation and screening rates. The most common barrier to cessation and screening was related to language. Language barriers were targeted successfully by interventions that included a native-language counsellor and a patient navigation service, respectively.

Studies included in the review had methodological limitations. Better designed trials are needed. Furthermore, interventions were multi-component and were often not well described limiting the quality interpretability. Notwithstanding these limitations, a number of intervention components show promise:

- for Chinese-speaking participants
    - tobacco cessation interventions that included the components of written information (in the appropriate language), education sessions, visual information, counselling, involving a family member or friend, nicotine replacement therapy, branded merchandise, and mobile messaging demonstrated effectiveness in improving knowledge and cessation.
    - cancer screening interventions that included the components of education sessions, written information, visual information, peer/community health worker, opportunity to be screening, counselling, and branded merchandise demonstrated effectiveness in improving knowledge and screening rates.
- for Vietnamese-speaking participants
    - cancer screening interventions that included the components of education sessions, written information, patient navigation, visual information, peer/community health worker, counselling, and peer experience demonstrated effectiveness in improving knowledge and screening rates.
- for Arabic-speaking participants
    - tobacco cessation interventions with counselling demonstrated effectiveness in improving quit rates.
    - cancer screening interventions that included the component of opportunity to be screening demonstrated effectiveness in improving knowledge and screening rates.

Further research is need regarding the effectiveness of tobacco cessation intervention components with Vietnamese-speaking participants; and the effectiveness of tobacco cessation and cancer screening intervention components with Arabic-speaking participants.

Cultural considerations

Intervention design and resource development

Co-design is widely acknowledged as a critical approach in the development of health interventions.[78] The evidence found in this review highlighted that co-design of interventions with CALD communities is important to ensure the intervention is culturally appropriate, written in participants native language and/or at a level that will be understood, and meets the needs of the targeted group. Co-designed interventions were generally more successful in achieving desired outcomes. Co-design was specifically mentioned in five Q1 studies (Appendix 7 Table A7.1) and five Q2 studies (Appendix 7 Table A7.2).

Community partnership was more commonly used as evident by its inclusion in 12 Q1 studies and 31 Q2 studies. Working in partnerships with community organisations helps ensure interventions meet the needs of the targeted group and is culturally appropriate. Community organisations are generally trusted by the targeted CALD groups and coupled with their endorsement of the intervention, facilitates legitimacy and acceptance by the target group members. Community-based participatory action research (or similar) was mentioned in three Q1 studies (Appendix 7 Table A7.1) and eight Q2 studies (Appendix 7 Table A7.2).

Community engagement was utilised in 12 Q1 studies and 21 Q2 studies. Community engagement refers to collaboration with key group influencers, including community leaders, community members, cultural and linguist experts and translators in the design of the intervention and resource development. Community engagement was detailed as important to ensuring cultural norms, values and beliefs were respected and taken into consideration in the intervention design. This process also ensured written material was translated correctly and at a suitable level of literacy for the targeted group, and the content was accurate, clear, and culturally sensitive and appropriate (Appendix 7 Table A7.1 and Table A7.2).

Recruitment

This evidence review highlighted that CALD community members are considered difficult to reach via mainstream methods. For this reason, careful considerations should be given to the recruitment method for CALD communities. Strategies covered by the Q1 and Q2 studies included flyer/poster distribution or in-person engagement with potential participants at community centres, community organisations (such as refugee relocation services), ethnic grocery stores, beauty salons, English as a second language classes, and religious venues. Recruitment efforts also occurred during ethnic celebration events such as the Chinese/Vietnamese New Year and Autumn mid-Winter festival when CALD attendance would be high. In-language radio, television, newspaper, newsletter etc were also used as recruitment methods, as were social media platforms frequented or more commonly utilised by CALD groups (e.g. WeChat). Use of existing social networks, word of mouth, and existing caseload/patient records were also strategies used to recruit CALD members (Appendix 7 Table A7.1 and Table A7.2).

Applied interventions

The most common cultural consideration addressed in both Q1 and Q2 studies related to language (Appendix 7 Table A7.1 and Table A7.2). Not being able to read or speak English in an English-speaking country is a common barrier experienced by foreign-born people which undermines screening and cessation activities. Studies addressed this by providing printed and verbal information in the participants native language. Where this was not possible (or in addition to this), information was provided using simplified text, sometimes supported by imagery.

The use of culturally appropriate graphics was considered by some studies to enhance cultural acceptance. This included images of the target population, and other imagery considered cultural salient to participants (e.g. Asian landscapes, women being screened by a female practitioner, etc) (Appendix 7 Table A7.1 and Table A7.2).

Other cultural considerations focussed on navigation, access and geographical barriers, literacy levels (including health literacy), preventative health not being a common practice in their native country, collectivist cultural (putting others needs above their own), and use of non-Western medicine practices. Cultural barriers to screening and/or cessation addressed encompassed fatalistic beliefs, fate (God's/Allah's will), shame, fear, and stigma (e.g. regarding cervical cancer screening/diagnosis, smoking among women, seeking counselling to quit smoking) (Appendix 7 Table A7.1 and Table A7.2). Some interventions implemented were also culturally cognisant of gender, modesty, cultural taboos (e.g. faecal collection, strangers touching women's bodies), timing of their intervention (e.g. Ramadan (harder to cease tobacco use), Chinese/Vietnamese New Year, and religious beliefs.

At times, intervention designs utilised differing strategies to address the same cultural consideration. For instance, males and females are treated differently in some cultures. This may relate to collectivist cultures in which females are the family caretaker while males are providers and head of the family. Some studies addressing female-relevant screening (breast/cervical cancer) chose to limit their intervention to female participants. The purpose of this was to encourage open discussion among attendees. However, another study[3] allowed men to attend breast and cervical cancer screening information sessions, a strategy adopted to increase attendance among women. This strategy supported screening behaviour by eliminating stigma, cultural misconceptions (e.g. cervical cancer caused by promiscuity and cancer diagnosis is a sign of infidelity) and partners denying screening (e.g., not required if well/faithful, forbid screening by male physician). Opening the session to both genders, enabled couples to hear the same information and thus reduced common barriers to screening.

Community health workers, lay health workers, family health advocates and patient navigators were involved in some Q2 studies to address cultural beliefs and barriers inadequately addressed by mainstream methods (Appendix 6 Table A6.3). Being from the same cultural background, they spoke the same language, shared similar cultural beliefs (or at least were cognisant of them), and understood the unique needs, norms and experiences of the targeted CALD group. Consequently, these personnel were able to establish trust, provide support and help overcome fears, barriers, and misconceptions to encourage action.

Summary

When designing and implementing an intervention aimed at CALD groups, it is vital that the targeted groups' cultural norms, values, beliefs, and barriers are considered. Which strategies are most effective at addressing these considerations and leading to intervention success however was not the focus of this study and requires further research. Nevertheless, the foregoing discussion provides a guide to the types of cultural considerations made and the approaches applied.

Applicability to Australia

Most studies captured by the review were undertaken in the US, followed by Australia. The review purposefully restricted the study's country to those which were most similar socially and culturally to Australia: United States, United Kingdom, Canada, and New Zealand. Therefore, research applied in these countries should be applicable for use in Australia. Furthermore, the experiences of the selected CALD groups are also expected to be similar in these countries as to Australia; for instances, stigma associated with smoking, screening guidelines, experience navigating the healthcare system, etc. Most of the intervention components included in this review are therefore also applicable for use in the Australian context, and NSW specifically. However, intervention components where there was insufficient, mixed, or no evidence require further research.

Regarding the three CALD groups, cancer screening and tobacco cessation interventions more commonly targeting Chinese-speaking participants and therefore showed more support for the intervention components explored. There was support for cancer screening interventions targeting Vietnamese-speaking participants but a lack of evidence regarding cancer screening interventions. There were few interventions implemented for Arabic-speaking participants that addressed tobacco cessation and screening adherence. Consequently, further research is warranted.

Conclusion

There is encouraging evidence that a range of interventions can address tobacco cessation and cancer screening adherence among Chinese-speaking populations; and cancer screening adherence among Vietnamese-speaking populations. By contrast, evidence about the effectiveness of tobacco cessation interventions with Vietnamese- and Arabic-speaking participants is sparse, as is evidence of effective cancer screening interventions for Arabic-speaking participants. More research is required to determine whether specific components of interventions that demonstrate efficacy for use in one CALD group are applicable for use with another CALD group.

In order to implement an effective intervention, the following questions need to be considered in relation to the targeted CALD group:

1. What is the population groups current level of knowledge regarding tobacco-related harm, screening guidelines and the purpose of screening?
2. Does the population group know where to seek help with tobacco cessation, where to undertake screening, and how to navigate the Australian healthcare system?
3. What are the barriers and enables to tobacco cessation or cancer screening adherence for the population group (cultural, religious, language, etc).

Once these questions can be answered, a more targeted intervention approach can be applied.

Appendices

Appendix 1—Search strategy

Table A1.1—Search terms used for each database by review question

Database	Search terms: Q1[1]	Search terms: Q2[2]
Cochrane	#1 – (tobacco OR smoking OR nicotine OR cigarette OR cigar):ti,ab,kw AND (quit OR stop OR cease OR give OR abstain OR abstinent OR prevent OR cessation OR deter OR impede OR reduce OR lower OR change OR decrease OR delay OR less OR fewer OR knowledge OR belief OR intent OR awareness OR attitude):ti,ab,kw AND (Chinese OR Vietnamese OR Arab AND ethnic OR minority OR migrant OR immigrant OR refugee OR speak):ti,ab,kw AND (Australia OR England OR UK OR "United Kingdom" OR Canada OR "New Zealand" OR "United States" OR USA OR America):ti,ab,kw" with Cochrane Library publication date Between Jan 2013 and Apr 2022	#7 – ((Chinese OR Vietnamese OR Arab*) AND (ethnic OR minorit* OR migrant OR immigrant OR refugee OR speak*)):ti,ab,kw AND (Australia OR England OR UK OR "United Kingdom" OR Canada OR "New Zealand" OR "United States" OR USA OR America):ti,ab,kw AND (screen OR scan OR assess OR test OR diagnosis OR detect OR measure OR mammogram OR pap smear):ti,ab,kw AND ("health promotion" OR awareness OR program OR campaign OR public health OR knowledge OR belief OR attitude):ti,ab,kw AND (breast OR bowel OR cervical OR cervix OR colon OR colorectal):ti,ab,kw" (word variations have been searched)
PsychInfo	1 – exp Tobacco Smoking/ or exp Smoking Cessation/ or tobacco cessation.mp. 2 – (tobacco or smok* or nicotine or cigar* or cigar).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] 3 – 1 or 2 4 – (quit or stop or cease or give or abstain* or abstinen* or prevent or cessation or deter or impede or reduce* or lower or change or decrease or delay or less or fewer or knowledge or belief or intent* or awareness or attitude).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]	1 – ((Chinese or Vietnamese or Arab*) and (ethnic or minorit* or migrant or immigrant or refugee or speak*)).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] 2 – (Australia or England or UK or "United Kingdom" or Canada or "New Zealand" or "United States" or USA or America).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] 3 – (screen or scan or assess or test or diagnose or detect or measure or mammogram or "pap smear").mp. [mp=title, abstract, heading word, table of contents, key concepts,

	5 – ((Chinese or Vietnamese or Arab*) and (ethnic or minorit* or migrant or immigrant or refugee or speak*)).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] 6 – (Australia or England or UK or "United Kingdom" or Canada or "New Zealand" or "United States" or USA or America).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] 7 – 3 and 4 and 5 and 6 8 – Limit 2013-2022	original title, tests & measures, mesh word] 4 – "health promotion".mp. or exp Health Promotion/ 5 – (aware or program or campaign or public health or knowledge or belief or attitude).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] 6 – 4 or 5 7 – exp Cancer Screening/ or cancer screening.mp. 8 – 6 or 7 9 – exp Breast Neoplasms/ or breast cancer.mp. 10 – exp Colon Disorders/ or bowel cancer.mp. 11 – exp Cervix/ or cervical cancer.mp. 12 – 9 or 10 or 11 13 – 3 or 7 14 – 1 and 2 and 6 and 12 and 13 15 – Limit 2013-2022
Scopus	(TITLE-ABS-KEY (tobacco OR smoking OR nicotine OR cigarette OR cigar) AND TITLE-ABS-KEY (cessation OR quit OR stop OR cease OR give OR abstain OR abstinent OR prevent OR cessation OR deter OR impede OR reduce OR lower OR change OR decrease OR delay OR less OR fewer OR knowledge OR belief OR intent* OR awareness OR attitude) AND TITLE-ABS-KEY ((chinese OR vietnamese OR arab) AND (ethnic OR minorit* OR migrant OR immigrant OR refugee OR speak)) AND TITLE-ABS-KEY (australia OR england OR uk OR "United Kingdom" OR canada OR "New Zealand" OR "United States" OR usa OR america)) AND (LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013))	(TITLE-ABS-KEY (Australia OR England OR UK OR "United Kingdom" OR Canada OR "New Zealand" OR "United States" OR USA OR America) AND TITLE-ABS-KEY (breast OR bowel OR cervical OR cervix OR colon OR colorectal) AND TITLE-ABS-KEY ("health promotion" OR awareness OR program OR campaign OR "public health" OR knowledge OR belief OR attitude) AND TITLE-ABS-KEY ((Chinese OR Vietnamese OR Arab) AND (ethnic OR minority OR migrant OR immigrant OR refugee OR speak))) AND (LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013))

CINAHL	S1 – (MH "Smoking") OR "smoking" OR (MH "Smoking Cessation Programs") OR (MH "Smoking Cessation") OR (MH "Substance Abstinence") S2 – (MH "Tobacco") OR "tobacco" OR (MH "Tobacco Control") OR (MH "Substance Abstinence") S3 – "cigarettes" S4 – "cigar" S5 – S1 OR S2 OR S3 OR S4 S6 – TX quit OR stop OR cease OR give OR abstain* OR abstinen* OR prevent OR cessation OR deter OR impede OR reduc* OR lower OR change OR decrease OR delay OR less OR fewer OR knowledge OR belief OR intent* OR awareness OR attitude S7 – (Chinese OR Vietnamese OR Arab*) AND (ethnic OR minorit* OR migrant OR immigrant OR refugee OR speak*) S8 – (MH "Australia") OR "Australia" S9 – "England" OR (MH "Great Britain") OR (MH "United Kingdom") S10 – (MH "Canada") OR "Canada" S11 – (MH "New Zealand") OR "New Zealand" S12 – "United States of America" S13 – "USA" S14 – (MH "United States") OR "united states" S15 – S12 OR S13 OR S14 S16 – S8 OR S9 OR S10 OR S11 OR S15 S17 – S5 AND S6 AND S7 AND S16 S18 – S5 AND S6 AND S7 AND S16 Limiters – Published Date: 20130101-20221231 Expanders – Apply equivalent subjects Search modes - Boolean/Phrase	S1 – (MH "ColonicNeoplasms") OR "Colonic Neoplasms" S2 – (MH "Carcinoma, Ductal, Breast") OR (MH "Breast Neoplasms") OR (MH "Breast Neoplasms, Male") S3 – (MH "Colorectal Neoplasms") S4 – breast OR bowel OR cervical OR cervix OR colon OR colorectal S5 – S1 OR S2 OR S3 OR S4 S6 – (MH "Health Promotion")OR "health promotion" S7 – TX aware OR program OR campaign OR public health OR knowledge OR belief OR attitude S8 – AB screen* OR scan OR assess* OR test OR diagnos* OR detect OR measure S9 – TX mammogram OR "pap smear" S10 – (Chinese OR Vietnamese OR Arab*)AND (ethnic OR minorit*OR migrant OR immigrant OR refugee OR speak*) S11 – (MH "Australia") OR" Australia" S12 – (MH "England") OR" England" OR (MH" Great Britain") OR (MH" United Kingdom") S13 – (MH "Canada") OR" Canada" S14 – (MH "New Zealand") OR" New Zealand" S15 – (MH "United States") OR" United States" S16 – S11 OR S12 OR S13 ORS14 OR S15 S17 – S6 OR S7 OR S8 OR S9 S18 – S5 AND S17 S19 – S10 AND S16 AND S17AND S18 S20 – S10 AND S16 AND S17AND S18 Limiters – Published Date: 20130101-20221231 Expanders – Apply equivalent subjects Search modes - Boolean/Phrase

PubMed	1 – ((cessation, tobacco [MeSH Terms]) OR (cessation, tobacco use [MeSH Terms])) OR (cessation, smoking [MeSH Terms]) 2 – ((((tobacco [Text Word]) OR (smok*[Text Word])) OR (nicotine [Text Word])) OR (cigar*[Text Word])) OR (cigar [Text Word]) 3 – quit OR stop OR cease OR give OR abstain* OR abstinen* OR prevent OR cessation OR deter OR impede OR reduc* OR lower OR change OR decrease OR delay OR less OR fewer OR knowledge OR belief OR intent* OR awareness OR attitude 4 – (Chinese OR Vietnamese OR Arab*) AND (ethnic OR minorit* OR migrant OR immigrant OR refugee OR speak*) 5 – Australia [Text Word] OR England [Text Word] OR UK [Text Word] OR (United [Text Word] AND Kingdom [Text Word]) OR Canada [Text Word] OR (New [Text Word] AND Zealand [Text Word]) OR (United [Text Word] AND States [Text Word]) OR USA [Text Word] OR America [Text Word] 6 – #1 OR #2 7 – #3 AND #6 8 – #7 AND #4 AND #5 9 – #7 AND #4 AND #5, filter from 2013 - 2022	1 – (Colonic Neoplasms / diagnosis*[MeSH Terms]) OR ("breast/diagnosis"[MeSH Terms]) OR (cancer, colorectal[MeSH Terms]) OR (carcinoma, colorectal[MeSH Terms]) OR (breast[Text Word]) OR (bowel[Text Word]) OR (cervical[Text Word]) OR (cervix[Text Word]) OR (colon[Text Word]) OR (colorectal[Text Word]) 2 – ("health promotion"[MeSH Terms]) OR (aware*[Text Word] OR program [Text Word] OR campaign [Text Word] OR public health [Text Word] OR knowledge [Text Word] OR belief [Text Word] OR attitude [Text Word]) 3 – screen*[Title/Abstract] OR scan [Title/Abstract] OR assess*[Title/Abstract] OR test [Title/Abstract] OR diagnos*[Title/Abstract] OR detect [Title/Abstract] OR measure [Title/Abstract] OR mammogram [Text Word] OR (pap [Text Word] AND smear [Text Word]) 4 – (Chinese OR Vietnamese OR Arab*) AND (ethnic OR minorit* OR migrant OR immigrant OR refugee OR speak*) 5 – #1 AND #2 AND #3 AND #4 6 – #1 AND #2 AND #3 AND #4, filter from 2013 - 2022

[1] *Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?*

[2] *Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?*

Table A1.2—Websites searched for relevant grey literature

Organisation	Website
ACT Government: Health	https://health.act.gov.au/
Australian Government Department of Health	https://www.health.gov.au/
Canadian Cancer Society	https://cancer.ca/en/
Cancer Research UK	https://www.cancerresearchuk.org/
Google Scholar	https://scholar.google.com.au/
Government of South Australia: SA Health	https://www.sahealth.sa.gov.au/
Government of Western Australia: Department of Health	https://ww2.health.wa.gov.au/
Health Canada	https://www.canada.ca/en/health-canada.html
Ministry of Health New Zealand	https://www.health.govt.nz/
National Health Services UK	https://www.nhs.uk/
NSW Government: Health	https://www.health.nsw.gov.au/
Queensland Government: Queensland Health	https://www.health.qld.gov.au/
Tasmanian Government: Department of Health	https://www.health.tas.gov.au/
Victoria State Government: Department of Health	https://www.health.vic.gov.au/

Table A1.3—Organisations emailed for relevant grey literature

Organisation	Email address	Question[1]
Cancer Institute NSW	information@cancer.nsw.gov.au	Q1 & Q2
Cancer Council Australia	info@cancer.org.au	Q1 & Q2
Cancer Council Victoria	enquiries@cancervic.org.au	Q1 & Q2
Cancer Council ACT	reception@actcancer.org	Q1 & Q2
Cancer Council NT	admin@cancernt.org.au	Q1 & Q2
Cancer Council QLD	info@cancerqld.org.au	Q1 & Q2
Cancer Council Tasmania	infotas@cancertas.org.au	Q1 & Q2
Cancer Council WA	questions@cancerwa.asn.au	Q1 & Q2
Cancer Council SA	cc@cancersa.org.au	Q1 & Q2
Lebanese Muslim Association	info@lma.org.au (and via contact form: https://lma.org.au/the-lma/about-us/	Q1
South Western Sydney Local Health District (SWSLHD)	SWSLHD-ESU@health.nsw.gov.au	Q1
Fairfield City Council	mail@fairfieldcity.nsw.gov.au	Q1
South Western Sydney Primary Health Network	enquiries@swsphn.com.au	Q1
Vietnamese Community in Australia	admin@sa.vnca.org.au	Q1
SydWest Multicultural Services	info@sydwestms.org.au	Q1
Chinese Australian Services Society	cass@cass.org.au	Q1
Community Migrant Resource Centre	https://cmrc.com.au/general-inquiries/ (contact us form)	Q1

NSW Health: Centre for Population Health	https://www.health.nsw.gov.au/pages/feedback.aspx?mode=page&url=https%3A%2F%2Fwww.health.nsw.gov.au%2Ftobacco%2FPages%2Fdefault.aspx&owner=TU9ILVRvYmFjY29AaGVhbHRoLm5zdy5nb3YuYXU%3D	Q1
NSW Government: Multicultural Health Communication Service:	seslhd-mhcs@health.nsw.gov.au	Q1
NSW Government: Health: SWSLHD: NSW Refugee Health Service:	SWSLHD-RefugeeHealth@health.nsw.gov.au	Q1
NSW Government: Sydney Local Health District: Population Health	https://www.slhd.nsw.gov.au/PopulationHealth/feedback.html (contact us form)	Q1
Northern Sydney Local Health District	NSLHD-Chatback@health.nsw.gov.au	Q1

[1] *Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities? Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations? Additional organisations were contacted specifically regarding Q1 after few eligible records were identified from the database search.*

Appendix 2—PRISMA flowcharts for Q1 and Q2

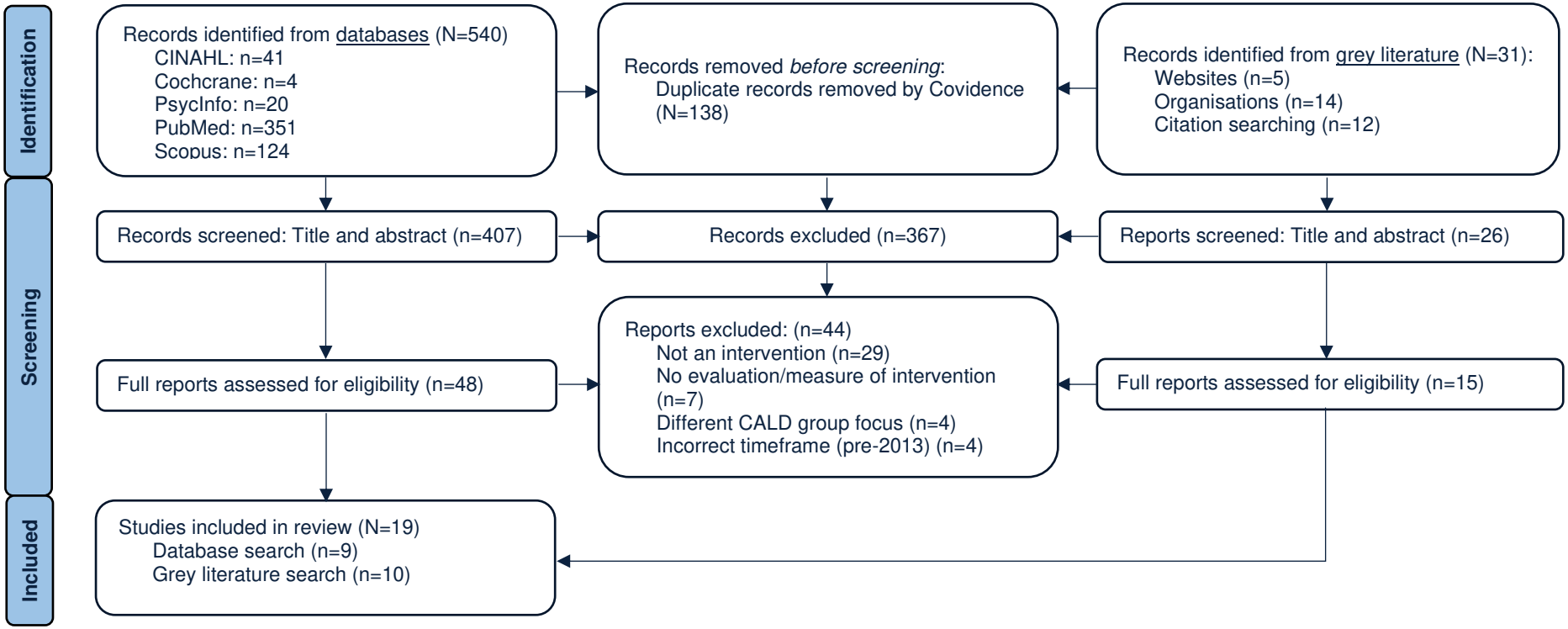

Figure A2.1—PRISMA flowchart for Q1[1] literature (N=571)

[1] Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities? From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/).

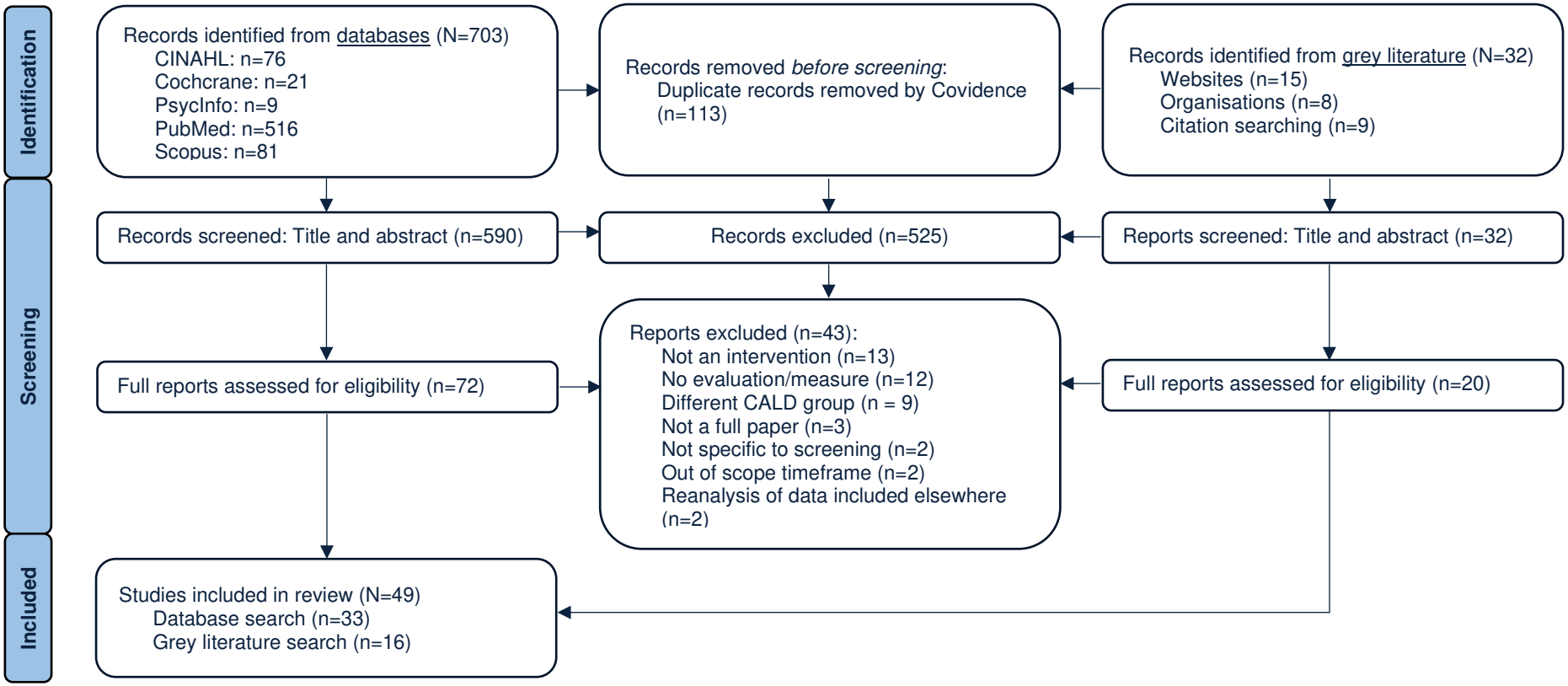

Figure A2.2—PRISMA flowchart for Q2[1] literature (N=735)

[1] Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations? From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/).

Appendix 3—Reference list of eligible studies included in Q1 and Q2

Q1 Reference List

Database search results:

1. Chan L, El-Haddad N, Freeman B, MacKenzie R, Woodland L, O'Hara BJ, et al. Evaluation of 'Shisha No Thanks' – a co-design social marketing campaign on the harms of waterpipe smoking. BMC Public Health. 2022;22(1):1-9.
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Appendix 4—Data extraction tables

Table A4.1 — Studies testing a tobacco cessation intervention in CALD communities

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Chan 2022	Pre-post-test Level IV 5/9	**COUNTRY:** Australia **CALD GROUP (OTHER):** Arab **SETTING:** Community	n=133 65% female, mean age 25.8yrs (18-35yrs)	**INTERVENTION:** Waterpipe smoking awareness-raising campaign (factsheets, video, social media content (short videos, memes, graphics) in English and Arabic **CONTROL:** none	**OUTCOME MEASURE:** Pre vs post (5 month): campaign awareness, knowledge and behaviour, intentions to reduce/quit waterpipe smoking **RESULTS:** (Pre vs Post) Harms of shisha smoking awareness: 45% vs 68% (p=.003) Shisha links to cancer: Strongly agree: 43% vs 56%, ns Shisha links to body damage: Strongly agree: 54% vs 61%, ns Intention to reduce - yes: 47%% vs 50.0%, ns Knowledge of quit support services: 23% vs 23% (ns)	**BRIEF SUMMARY:** The intervention appeared to change awareness of the harms of waterpipe smoking but not knowledge of services or intention to reduce. Although there were improvements in knowledge of the links of waterpipe smoking to cancer and damage to body, the increase was not statistically significant **LIMITATIONS:** Only participants with complete data were included in analyses; small sample size; no control group

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Chang 2013	Non-randomised control trial Level III-2 6/9	**COUNTRY:** United States **CALD GROUP (OTHER):** Chinese (Non-Chinese) **SETTING:** Public health clinic	n=210 (n=169 initial plus n=41 top-up) Initial group: 89% male, 64% aged 50+, 83% Chinese American Intervention 1 (n=13)**:** 77% Chinese (top up: n=41, unknown) Intervention 2 (n=68)**:** 76% Chinese Intervention 3 (n=88): 85% Chinese	**INTERVENTION:** 1 x individual counselling session and 2 x group classes; plus either: Intervention 1: Nicotine replacement therapy (NRT), or Intervention 2: Acupuncture, or Intervention 3: Acupuncture and NRT **CONTROL:** none	**OUTCOME MEASURE:** Smoking cessation rates; and ≥50% reduction in cigarettes smoked per day (from baseline) at 1-week, 1, 3, and 6 months **RESULTS:** *For acupuncture only:* Quit rate: 1 week: 17.5%, 1 month: 23.3%; 3 months: 23.1%; 6 months: 28.9% 50% Reduction in use at one month (OR [95%CI]): 1 week: 0.354 [0.146-0.858], 1 month: 0.449 [0.173- 1.16], 3 months: 0.355 [0.122–1.03], 6 months: 0.569 [0.16–2.02]	**BRIEF SUMMARY:** Some support for intervention to increase quit rates. Effectiveness of intervention in reducing use unclear (results compared to NRT only group) **LIMITATIONS:** High loss to follow-up; variable acupuncture treatment times; small sample size; results aggregated; no control group.
Chen 2021	Post-test Level IV	**COUNTRY:** United States	All (n=14,073): 87% male, 56% aged 45-64yrs	**INTERVENTION:** Counselling and 2 weeks NRT supply	**OUTCOME MEASURE:** Cessation rate at 1 week and 6 months	**BRIEF SUMMARY:** The intervention showed improvements in quit rate. Increase was significantly

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	7/9	**CALD GROUP (OTHER):** Chinese, Vietnamese (Korean) **SETTING:** Asian Speaking Quitline	Chinese: 86% male, 47% aged 45-64yrs Vietnamese: 94% male, 61% aged 45-64yrs	**COMPARATOR:** Efficacy trial. Received behavioural counselling (no NRT supply although they may have used by other means)	**RESULTS:** Cessation rates (OR [95% CI]: 1 week: Trial 32.8 [30.0, 35.5] vs National 30.7 [28.7, 32.7), ns 6 months: (Complete case quite rate): All Trial 20.0 [17.4, 22.5] vs National 28.6 [26.3, 30.9), p<.001; NRT Users only: Trial 22.7 [16.5, 28.9] vs National 30.6 [27.8, 33.4), p<.05; NRT non-users only: Trial 19.3 [16.5, 22.1] vs National 23.1 [19.0, 27.3), ns	higher among those using NRT **LIMITATIONS:** Analyses based on complete cases; sample from national and efficacy trial not strictly; results aggregated
Cummins 2015	Post-test Level IV 6/9	**COUNTRY:** United States **CALD GROUP (OTHER):** Chinese, Vietnamese (Korean) **SETTING:** Asian	All 6 states (n=2,004): 82% male, 57% aged 45-64yrs, 24% Chinese, 19% Vietnamese, 67% from California California: 85% male, 57% aged 45-64yrs, 24%	**INTERVENTION:** Counselling or self-help material or both Participants in four states received free NRT; whilst participants in two counties were eligible for free NRT **COMPARATOR:** Efficacy trial	**OUTCOME MEASURE:** Quit attempts and abstinence at 1 and 6 months. **RESULTS:** (Efficacy trial vs multi-state trial) Quit attempts: Intent to treat analysis: 54.9% vs 65.3%, p<.05. Complete case analysis: 60.5% vs 79.6%, p<.05. 30-day abstinence: Intent to treat analysis: 32.3% vs 32.3%, ns.	**BRIEF SUMMARY:** The intervention showed modest quit attempts and abstinence rates. Quit attempts were significantly higher in the state-specific trial where NRT was provided to the majority of participants **LIMITATIONS:** Methodologies in the efficacy and state-specific studies

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		Speaking Quitline	Chinese, 18% Vietnamese Other 5 states: 74% male, 58% aged 45-64yrs, 24% Chinese, 21% Vietnamese Efficacy trial (n=2,277): 90% male, 45% aged 45-64yrs ,32% Chinese, 37% Vietnamese	(randomised to receive counselling and self-help material vs self-help material only)	Complete case analysis: 39.4% vs 39.4%, ns. 60-day abstinence: Intent to treat analysis: 16.4% vs 18.8%, ns. Complete case analysis: 20.0% vs 22.9%, ns	differed; NRT not offered to all participants in the state-trial. No results provided for those provided with self-help material only. Not clear if the counselling data includes those who also chose to receive self-help material. Results aggregated
El-Haddad 2020	Pre-post-test Level IV 4/9	**COUNTRY:** Australia **CALD GROUP (OTHER):** Arabic	n=133 65% female, mean age 25.8 years n=88 completed both surveys	**INTERVENTION:** Community awareness raising campaign comprising campaign video, digital and radio ads, website, social media accounts, promotional merchandise, and	**OUTCOME MEASURE:** Changes in knowledge, attitudes, and awareness, and intentions to reduce use of waterpipe smoking **RESULTS:** (pre vs post, complete cases analysis) Awareness of harm message (n=80): 45% vs 68%, p<.01	**BRIEF SUMMARY:** The intervention improved awareness of the messages regarding the harms of shisha. The intervention did not appear to change knowledge, attitudes, or

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community		information sessions and online training for community workers **CONTROL:** none	Shisha Knowledge: Contains cancer-causing substances (n=74): 85% vs 84%, ns; Can damage your body (n=82): 89% vs 90%, ns; Support services (n=80): 23% vs 23%, ns Attitude: Shisha less harmful than cigarettes (n=81): 21% vs 20%, ns. Intention to reduce or quit (smokers: n=94): 47% vs 50%, ns	intention to reduce/ quit shisha use **LIMITATIONS:** High number of missing data; no control group
Haddad 2013	Pre-post-test Level IV 7/9	**COUNTRY:** United States **CALD GROUP (OTHER):** Arab **SETTING:** Community	n=11 100% male **NOTE:** Participants using pharmacological interventions were excluded	**INTERVENTION:** 12 week program comprising 6 group counselling, workbooks (5 stages of quitting, information, homework), 3x booster/follow-up phone calls, written guide **CONTROL:** none	**OUTCOME MEASURE:** Smoking cessation and reductions in use **RESULTS:** 8/11 participants completed the 12-week program 2 had ceased smoking at 3 months 8 had reduced their cigarette use in the past 7 days	**BRIEF SUMMARY:** The intervention predominately reduced tobacco use and led to cessation in some cases **LIMITATIONS:** Small sample size; 100% male participants; no control group

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Haddad 2017	Pre-post-test Level IV 8/9	**COUNTRY:** United States **CALD GROUP (OTHER):** Arab **SETTING:** Community	n=79 100% male, mean age 43.2yrs	**INTERVENTION:** Program comprising group weekly telephone counselling, workbooks, and NRT given at baseline free of charge for 8 weeks if requested **CONTROL:** none	**OUTCOME MEASURE:** Abstinence, quit attempts, reduced number of cigarettes smoked per day and week. Baseline vs post-intervention (3 and 6 months) **RESULTS:** (Baseline vs Post: Intent to treat analysis n=79) Reduced use: Cigarettes used per day at 6 months: 20 vs 3, p<.001; Cigarettes used last 7 days: 140 vs 21, p<.001 Smoking status at 6 months: Daily smoker: 49% vs 15%, p<.001. Occasional smoker: 0% vs 16%, p<.001 Cessation rate at 6 months: 43.1% (Baseline vs Post: complete cases n=65) Reduced use: Cigarettes used per day at 6 months: 20 vs 4; Cigarettes used last 7 days: 162 vs 31.	**BRIEF SUMMARY:** The intervention appeared to assist cessation, reduce the number of cigarettes used per day and per week, and reduce daily smoking prevalence **LIMITATIONS:** Only recruited men; no control group

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					Desire to quit: Very much: 85% vs 100%. Confidence in quitting attempt in 1 year: 85% vs 99%. Interest in quitting (changed attitude): 100% Post. Cessation rate at 6 months: 44.6%	
Hua 2015	Pre-post-test Level IV 4/9	**COUNTRY:** Australia **CALD GROUP (OTHER):** Chinese **SETTING:** Community	n=26 100% male, other demographics not reported	**INTERVENTION:** 12-week smoking cessation support group held in workplace (restaurant). Activities included weekly cessation support, education, smokerlyzer testing and free NRT **CONTROL:** none	**OUTCOME MEASURE:** Smoking cessation and maintenance, smoking cessation knowledge at. Baseline (week 1), week 4, week 12. Smokerlyzer results, Chinese Quitline calls **RESULTS:** 14/26 participants completed the 12-week program: 11/26 had ceased smoking and maintained cessation at 3 months; and further 3 had reduced number of cigarettes	**BRIEF SUMMARY:** The intervention improved tobacco cessation or resulted in a reduction in use **LIMITATIONS:** High dropout (12 out of 26); females not recruited; no control group

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					Use of quit services: 18/26 participants contacted the Chinese Quitline. Participants reported lack of knowledge of NRT, and this was the first time they had the opportunity to use NRT; and helped result in a positive experience regarding their quit attempt	
Macnamara 2019	Pre-post-test Level IV 1/9	**COUNTRY:** Australia **CALD GROUP (OTHER):** Chinese **SETTING:** Community	Sample size not reported Demographics not reported, however targeted males	**INTERVENTION:** Prize competition to winner who demonstrated successful 3 month quitting, promoted through media advertising, social media, posters, information flyers and events. **CONTROL:** none	**OUTCOME MEASURE:** Competition registrations; Quitline calls and website visits **RESULTS:** 6 competition registrants; and low call volume and website visits	**BRIEF SUMMARY:** The intervention did not show much improvement in cessation **LIMITATIONS:** No pre intervention measures; no recruitment of participants no measures of changes in knowledge, attitudes, intentions to quit or cessation rates, no control group
NSW Health 2020	Narrative review	**COUNTRY:** Australia	Summary of initiatives,	**INTERVENTIONS:**	**OUTCOME MEASURE:**	**BRIEF SUMMARY:** Overall, interventions implemented in

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	Evidence level unable to be determined 3/11	**CALD GROUP (OTHER):** Various **SETTING:** Community	programs and services implemented in NSW between July 2018-June 2020. 5 related to tobacco. Sample size not reported Demographics not reported	1. Co-designed films in 16 languages 2. *Shisha No Thanks* co-designed young adult project. 3. YouTube videos in 16 languages on help seeking 4. Vietnamese community education project on smoking 5. Community consultations with Arabic, Hindi, Vietnamese, Cantonese and Mandarin speakers to explore smoking behaviours and beliefs, and smoking cessation knowledge	**RESULTS:** 1. Jurisdiction award. 2. 350,000+ campaign video views, statistically significant increases in awareness of messages about the harms of waterpipe smoking. Jurisdiction prize 3. Jurisdiction award 4. Knowledge of smoking-effects limited to lung cancer. A large proportion smoked while socialising. The project highlighted the crucial roles of family and friends to provide positive support to smokers to quit. 5. Resulted not provided	NSW appear to have increased awareness and knowledge of the harms of tobacco use (including Shisha). **LIMITATIONS:** Only summary information published; unable to report intervention(s) effectiveness

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Peterson 2018	Pre-test Level IV 8/10	**COUNTRY:** United States **CALD GROUP (OTHER):** Chinese **SETTING:** Community	n=32 100% male, mean age 37.3yrs	**INTERVENTION:** An mHealth tobacco cessation intervention using MMS (graphic) mobile phone technology comprising 16 graphic threat health messages, 8 information only messages on quitting in Chinese **CONTROL:** none	**OUTCOME MEASURE:** To determine pilot efficacy of for Chinese immigrants **RESULTS:** Messages focused on the impact of smoking on family especially children rated more positively. Ideal frequency of messages was a few times a week. Fear-based messaging was considered effective but not if used frequently. 62.5% indicated at least somewhat agreement that the messages made them want to stop smoking	**BRIEF SUMMARY:** The intervention appeared to improve intention to stop smoking. **LIMITATIONS:** Pilot study (qualitative) only looking at opinions on the intervention strategy; 100% men; no control group.
Poureslami 2020	Non-randomised experimental trial Level III-2	**COUNTRY:** Canada **CALD GROUP**	n=70 71% male, 44% aged 19-35yrs	**INTERVENTION:** Counselling (4x 60min in-person sessions with a bilingual counsellor) and take home educational materials	**OUTCOME MEASURE:** Changes in smoking behaviour, knowledge, beliefs and risk perceptions. Baseline vs 6 month, and 8 month follow up	**BRIEF SUMMARY:** The intervention appeared to reduce tobacco use (including no use)

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	8/9	**(OTHER):** Chinese **SETTING:** Clinical and community		Client could have a family member/friend as a support person **CONTROL:** Take-home educational material; three telephone follow-up assessments	**RESULTS:** Change in smoking status: 64 (91%) reduced or quit, 3 (4%) had no change, 3 (4%) increased their intake Qualitative findings: Perceptions of smoking: stigma/shame (negative), denial of addiction (negative), stress reliever (positive); Barriers to cessation: Lack of support, lack of stress management skills, traditional Chinese norms, lack of motivation to quit	**LIMITATIONS:** Thematic analysis used to assess change in knowledge, beliefs and risk perception
Saw 2018	Post-test Level IV 8/10	**COUNTRY:** United States **CALD GROUP (OTHER):** Chinese **SETTING:** Healthcare	n=30 (15 smoker and non-smoker pairs) Smokers: 100% male, mean age 61.0yrs Non-smokers: 100% female, mean age 56.5yrs	**INTERVENTION:** Creating Smokefree Living Together Program - Smokefree education intervention **Brief intensity -** In-language smoking cessation resources, classes, biochemical feedback of smoke	**OUTCOME MEASURE:** Smoking cessation and reduction, changed knowledge, baseline to 12 months **RESULTS:** (Baseline to 12 months) 30-day smoking status: from non-daily smoking to abstinent: 26.7%; From daily to non-daily: 40.7%; No change (daily): 13.3%, no change (non-daily): 6.7%.	**BRIEF SUMMARY:** Overall, the intervention increased knowledge, reduced tobacco use, and increased cessation **LIMITATIONS:** Did not compare results between the two intervention arms; all smokers were male

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
				exposure for both smokers and non-smokers at 3 months (results included tailored motivation messages), magnet **Moderate intensity** - As per brief intensity plus 2 group education sessions (in household pairs) and three follow-up personal calls	Second hand smoke exposure at home: exposed at home to no exposure: 13.3%, no change (no home exposure) 86.7% Follow up: (qualitative) Increased knowledge of health harms of smoke exposure within the pair improved non-smokers' support for smokefree living. Project magnets provided cues to action; Communication strategies improved household relationships and assertiveness for smokefree environments	
Tat 2015	Post-test Level IV 3/9	**COUNTRY:** United States **CALD GROUP (OTHER):** Chinese, Vietnamese (Korean)	n=2471 42.6% male, 57.4% female	**INTERVENTION:** Individual explanations first- and second-hand tobacco exposure risks and how to access the California Smokers' Helpline, with brochures in English, Vietnamese, Korean and Chinese	**OUTCOME MEASURE:** Increase awareness of the California Smokers' Helpline and decrease use of tobacco **RESULTS:** 98 accepted 'in depth' messaging, 1,816 accepted 'brief' messaging, 557 rejected the messaging.	**BRIEF SUMMARY:** The intervention improved knowledge of support options to help quit smoking **LIMITATIONS:** Observation data only; no demographic data collected; possible risk of bias in participant

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community		used to guide discussions **CONTROL:** none	67% of smokers accepting information and brochure said they would either call the Helpline whilst non-smokers said they'd pass the information on to a smoker. Qualitative: Few smokers were aware of the helpline but appreciated the information	recruitment; no control group, results aggregated
Tong 2018	Randomised controlled trial Level II 9/13	**COUNTRY:** United States **CALD GROUP (OTHER):** Chinese **SETTING:** Healthcare	n=203 pairs (smoker and non-smoker household pair) Brief intensity (n=110): Smokers: 100% male, mean age 53.4yrs (SD 13.9, range 18-84yrs); Non-smokers: 100% female, mean age 50.0yrs	**INTERVENTION**: **Moderate intensity**: 2 x group sessions, plus laboratory report of baseline smoke exposure, 3 follow up calls over 6 months, and magnet with scheduling information **Brief intensity:** 1 x group session, magnet with scheduling information only	**OUTCOME MEASURE:** Biochemically validated past month smoking abstinence, elimination of non-smoker household exposure at baseline, 6 and 12 months **RESULTS:** (Baseline, 6 months, 12 months - Intention to treat analysis): Daily smoking status: Brief intensity 75.2%, 46.8%, 47.7%; moderate intensity 77.7%, 54.3%, 54.3%. Smoking cessation: abstinent in past 30 days: Brief intensity: 0%, 17.4% 21.2%; moderate intensity 0%,	**BRIEF SUMMARY:** Both brief intensity and moderate intensity interventions were effective at reducing tobacco use and increasing quit rates **LIMITATIONS:** Participants were able to use NRT if they attained it themselves; all smokers were male

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			(SD 11.9, range 26-82yrs) Moderate intensity (n=95): Smokers: 100% male, mean age 53.2 (SD 14.9, range 25-86yrs); Non-smokers: 100% female, mean age 49.0 (SD 14.2, range 18-78yrs)		20.2%, 24.5%; Quit attempts in past year: Brief intensity 6.8 (SD 11.3), 7.3 (SD 17.3), 10.1 (SD 26.0); Moderate intensity: 3.9 (SD 5.3), 5.5 (SD 13.1), 7.6 (SD 16.6); Reduction in use: Cigarettes used per day (Daily). Brief intensity: 12.0 (SD 6.2), 10.0 (SD 4.7), 11.0 (SD 4.7); Moderate intensity: 11.7 (SD 6.4), 8.2 (SD 5.0), 9.4 (SD 5.0); Cigarettes used per day (non-daily). Brief intensity: 4.4 (SD 4.2), 3.1 (SD 2.3), 2.7 (SD 2.1); Moderate intensity: 5.4 (SD 4.5), 5.4 (SD 5.1), 5.2 (SD 6.3). Second-hand smoke exposure: Smoke at home: Brief intensity 12.8%, 3.8%, 2.0%; moderate intensity: 10.6%, 6.5%, 3.3% Both groups had significant reductions in biochemical 30-day abstinence rates: moderate intensity group, 0%-20.7%; brief-intensity group, 0%-20.0%; p=.002 over time;	

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					and significant reductions in home exposure: moderate-intensity group, 24.5%-42.2%; brief-intensity group, 24.8%-33.3%; p=.0001 over time. More smokers in the moderate-intensity group used subsequent cessation group classes (moderate-intensity group, 50%; brief-intensity group, 24%; p=.004). Smoking declined in both groups at home (p=.0008), in the car (p=.0093) and outside (p<.0001), but not at work. Smokers in both groups doubled their use of self-attained nicotine-replacement therapy (from 3.9% to 10.4%; p=.002)	
Tsoh 2015	Pre-post-test Level IV 8/9	**COUNTRY:** United States **CALD GROUP (OTHER):**	n=192. Smoker (n=96): 100% male, mean age 54yrs, 25%	**INTERVENTION:** Lay health worker outreach to smokers and their families. Over two months: 2x 90 education session (small group)	**OUTCOME MEASURE:** Cessation rate in past week and month. Use of smoking cessation resources. Change in knowledge, intention to quit. Baseline vs 3-month follow-up	**BRIEF SUMMARY:** The intervention appeared to improve abstinence rates, knowledge, use of quitting

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		Chinese, Vietnamese **SETTING:** Community	Chinese, 75% Vietnamese Family member (n=96): 94% female, mean age 50yrs, 25% Chinese, 75% Vietnamese	with smoker-family dyads and 2x 10-15 min individual telephone to reinforce progress and provide support. **CONTROL:** none	**RESULTS:** (Baseline vs 3 months: intent to treat analysis). Cessation: Past week abstinence 0% vs 30.2%; Past month abstinence 0% vs 24.0%; Attempted to quit (≥24hrs) 22.9% vs 59.4%, p<.001 Accessed quit resources: NRT/ prescription medicine 2.1% vs 15.6%, p=.002; Quitline: 0% vs 38.5%; physician/health professional advice: 0% vs 28.1%; Any quit resource: 2.1% vs 60.4%, p<.001 (Baseline vs 3 months: Complete cases) Knowledge**:** mean 2.1 (SD: 1.0) vs 2.9 (SD:1.0), p=.006 Self-efficacy to quit: mean 4.8 (SD: 3.0) vs 6.9 (SD: 3.0), p<.001 Intention to quit: mean 2.2 (SD: 1.4) vs mean 3.9 (SD:0.5), p<0.001	resources, self-efficacy to quit, and intention to quit **LIMITATIONS:** pre post knowledge scores analyses excluded missing data (n=2 smokers); family member support limited to non-smokers; all smokers male; no control group; results aggregated

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Unknown	Post-test Level IV 6/9	**COUNTRY:** Australia **CALD GROUP (OTHER):** Arabic, Chinese, Vietnamese (other CALD groups) **SETTING:** Community	n=32 (number of participants who completed the follow up survey) 75% female	**INTERVENTION:** An updated public awareness campaign to address multiple CALD groups. Included education material, video, website, social media, community worker training module and online research to practice forum. Resources were published in 8 languages – English, Arabic, Chinese, Dari, Farsi, Tamil, Turkish and Vietnamese **CONTROL:** none	**OUTCOME MEASURE:** Community Worker e-learning module evaluation 6 months after completion **RESULTS:** Knowledge of shisha harms: 62.5% strongly agree, 34.4% somewhat agree Increased confidence to discuss shisha harms with clients: strongly agree: 40.6%, somewhat agree 46.9%. Increased knowledge of where to refer clients for support/more information: strongly agree 18.8%, somewhat agree 62.5%. Applied knowledge learnt from the training: 21 (of 32) applied to individual conversations with clients, 6 (of 32) applied it to their own life, 56% indicated the module had a significant or moderate impact on their practice	**BRIEF SUMMARY:** The intervention appeared to improve knowledge and confidence to assist Community Workers to talk to clients about Shisha. Many Community Workers had applied their learnings from the intervention in conversations with clients **LIMITATIONS:** Data reported is on the perspectives of community Workers, not the person using Shish; no control group

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Zhao 2019	Pseudo-randomised controlled trial Level III-1 8/13	**COUNTRY:** United States **CALD GROUP (OTHER):** Chinese (Korean) **SETTING:** Community	n=86 100% male; 30% aged 41-55yrs, 55% Chinese	**INTERVENTION:** 2x2 intervention (message type x information provided). Message type: Graphic images plus text health messages or text health messages only. Information provided: ASQ information, or culturally tailored quitting tips.	**OUTCOME MEASURE:** Past week cessation rate, quit rate, quitting attitude, smoking consequences (beliefs). Baseline vs 4-week **RESULTS:** Reduced use (pre vs post: complete cases): ExCo 17.1 (SE: 1.3) vs 13.5 (SE: 1.1), p=.001 Quitting attitude: 8.0 (SE: 0.2) vs 8.5 (SE: 0.1), p=.03; (post intervention) - message type: 0.7 graphic, 0.2 text, p=.04. Information provided 0.4 Tips, 0.5 ASQ, p=.74. Negative smoking consequences (pre vs post): 4.1 (SE: 0.1) vs 4.2 (SE: 0.1), p=.25. (post) - Message type: 0.11 graphic, 0.06 text, p=.65. Information provided 0.13 Tips, 0.03 ASQ, p=.40. Positive smoking consequences (pre vs post): 3.65 (SE: 0.09) vs 3.60 (SE: 0.08), p=.64. (Post intervention) - Message type: -0.08 graphic, -0.01	**BRIEF SUMMARY:** Overall the intervention resulted in reduced expired air CO levels (i.e., changed behaviour), and improved attitudes towards quitting. There did not appear any significant differences in smoking behaviour across the intervention conditions employed. The use of graphics plus text health messages was more effective at increasing positive quitting attitudes than text message only **LIMITATIONS:** Loss to follow-up relatively high, small samples when compared by intervention; results aggregated

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					text, p=.641. Information provided -0.11 Tips, -0.01 ASQ, p=.48 Cessation: Past week abstinence (post) Message type: 20% graphic, 8% text, p=.230. Information provided 11% Tips, 18% ASQ, p=.27 Currently trying to quit: 56% graphic, 44% text, p=.18. Information provided 50% Tips, 50% ASQ, p=.93 Reduced cigarette consumption: 50% graphic, 45% text, p=.55. Information provided 63% Tips, 29% ASQ, p=.10	
Zhou 2015	Interrupted time series with control group Level III-2 7/9	**COUNTRY:** United States **CALD GROUP (OTHER):** Vietnamese (Cambodian, other)	n=14,540 over 5 years (~904 Vietnamese per year and ~334 Cambodian per year), 100% male Vietnamese: 28% aged 18-34yrs	**INTERVENTION:** REACH intervention comprising capacity building, targeted education material and education sessions **CONTROL:** Compare prevalence in REACH to non-REACH	**OUTCOME MEASURE:** Compare prevalence in REACH and non-REACH populations. Smoking prevalence and quit ratio per survey year (5 years) **RESULTS:** Current smoking prevalence (year 1-5): Vietnamese REACH group 30.3, 28.4, 30.6, 23.0, 24.2, p=.005; Vietnamese Californian	**BRIEF SUMMARY:** The intervention showed significant reductions in smoking prevalence over the 5-year timeframe. **LIMITATIONS:** Unclear whether all intervention components relate to tobacco cessation or other health

First author, year	Study design, evidence level, JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community		populations. For Vietnamese population, the comparison was REACH vs California.	group 19.4, 20.2, 18.2, 18.9, 18.3, p=.364 Quit ratio (year 1-5): Vietnamese REACH group 26.8, 35.5, 46.3, 50.2, 35.7, p<.001; Vietnamese Californian group 59.7, 59.5, 60.4, 58.5, 59.9, p=.609	behaviours targeted in the REACH intervention; 100% male.

Table A4.2 — Studies testing a breast, bowel and/or cervical cancer screening intervention in CALD communities

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Andersson 2021	Interrupted time series (no control) Level III-3 4/9	**COUNTRY:** Australia **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Arabic (South Asian, General population) **SETTING:** Community	Not reported	**INTERVENTION:** Targeted supporting communication strategies (media, toolkits, community session) to reach Arabic and Tamil communities regarding the National Bowel Cancer Screening Program (NBCSP): **CONTROL:** none	**OUTCOME MEASURE:** Increase participation and awareness of the National Bowel Cancer Screening Program **RESULTS:** (2019 vs 2020) Number of tests completed amongst Arabic speaking participants: 3,293 vs 2,416 (-26.63% change)	**BRIEF SUMMARY:** The intervention did not increase participation in screening by Arabic speaking participants, (however COVID-19 may have impacted results). **LIMITATIONS:** Intervention was implemented in a time of considerable COVID-19 safety restrictions; no control group.
Beauchamp 2020	Randomised controlled trial Level II 11/13	**COUNTRY:** Australia **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Arabic (Italian)	RCT 1 (n=1,032): 31% Arabic (n=322) Intervention (n=572): Arabic n=164; Control	**INTERVENTION:** Translated reminder letters and in-language phone calls **RCT1:** Intervention: English and Arabic or Italian-translated letters	**OUTCOME MEASURE:** Screening booking rates within 14 days **RESULTS:** (Intervention vs control) Booked a screening appointment: RCT1: All: 37.4% vs 38.9%, ns; Arabic: 29.9% vs 30.4%, ns.	**BRIEF SUMMARY:** The translated reminder letters had similar effect to screening bookings as the non-translated reminder letters. The telephone intervention significantly increased booked screening appointments

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community	(n=460): Arabic n=158 RCT 2 (n=195): Intervention (n=95): Arabic n=80; Control (n=100): Arabic n=37	only; Control: English letters only (usual care) **RCT2:** Intervention**:** Reminder telephone calls in Arabic or Italian Control: No phone call (usual care)	RCT2: All: 64.2% vs 6.0%, p<.0001; Arabic: 54.1% vs 4.7%, p<.0001	compared to usual care (no phone call) **LIMITATIONS:** An appointment does not mean the person completed the screening.
Berger 2017	Pre-post test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese, Vietnamese (Hispanic, Korean, Caucasian, and Native American)	n=252 100% women, 48% aged 60-70yrs, 77% Chinese, 10% Vietnamese, 7% mixed	**INTERVENTION:** Asian Breast Cancer Project (ABC): peer-led community-level program comprising: workshop, handouts, Komen shower card, and stickers. In preferred language **CONTROL:** none	**OUTCOME MEASURE:** Pre-post measure of knowledge about breast cancer screening and prevention **RESULTS:** Change in knowledge (pre-post workshop: correct response %): lump discovery does necessarily mean cancer 69% vs 80%, p<.001; Correct age to start mammogram screening 98% vs 97%, ns; Mammograms do not cause breast cancer 92% vs 93%, ns; Risk of breast cancer increases	**BRIEF SUMMARY:** The workshop was effective in increasing knowledge in areas where knowledge was low to start with. **LIMITATIONS:** The group had high baseline knowledge of some areas; missing data; evaluation only related to the workshop (effectiveness of take-home material not

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community			with age 89% vs 93%, ns; Women do not need clinical breast exams by healthcare providers every 5 years. 48% vs 67%, p<.001	assessed); no control group; results aggregated
Brooks 2015	Post-test Level IV 3/9	**COUNTRY:** Australia **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese, Vietnamese, Arabic, (general population, Aboriginal/Torres Strait Islander peoples, other CALD) **SETTING:** Community	n=1,051 18% aged 55-59yrs 98 CALD individuals, 21% aged 55-59yrs	**INTERVENTION:** Breast Screen Australia Program (BSAP) public awareness campaign targeting Aboriginal and Torres Strait Islander and CALD: included in-language print material and radio messages **CONTROL:** none	**OUTCOME MEASURE:** Program awareness, screening uptake, attitudes, knowledge **RESULTS:** Recognition of campaign material: CALD: 26% (19% print, outdoor and online; 9% radio); Awareness of program: CALD women were significantly less likely than other women to have heard of the program (83% compared with 89%, respectively)	**BRIEF SUMMARY:** The intervention increased awareness of the program to CALD communities however not to the same level as non-CALD women. **LIMITATIONS:** Few CALD participants; no control group; results aggregated.
Chan 2015	Systematic review	**COUNTRY:** United States or Canada	n=10 RCT studies	**SYSTEMATIC REVIEW:** Effectiveness of breast	**OUTCOME MEASURE:** Knowledge and beliefs about breast or cervical	**BRIEF SUMMARY:** Although breast/cervical

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	Level I 10/11	**CANCER TYPE:** Breast cancer, cervical cancer **CALD GROUP (OTHER):** Chinese (African American, Hispanic, Samoan, Mexican American) **SETTING:** Community or healthcare	Mean age range 29.8-55.8yrs	and cervical cancer screening programs for ethnic minority women	cancer, screening, screening intentions and uptake rates **RESULTS:** Demonstrated improvements in disease knowledge, screening intentions and pap test uptake, however evidence of their effectiveness is limited. The programme content played an important role in increasing participants' knowledge and changing their behaviour, mainly covering key messages on breast or cervical cancer and screening: the facts of the disease, information on the importance and effectiveness of screening, pap test demonstration, screening recommendations, myths and misconceptions, and health beliefs about cancer and screening	cancer screening programs have improved knowledge, screening intentions and pap test uptake, the evidence regarding their effectiveness is limited **LIMITATIONS:** 10 studies included from 2002-2015. Studies included other CALD groups so not directly applicable to targeted CALD groups. Only 2 studies were included from relevant reference period (2013+)
Crawford 2015	Post-test (qualitative)	**COUNTRY:** Canada	n=70	**INTERVENTION:** Peer health education program comprising	**OUTCOME MEASURE:** Thematic analysis of participant experiences	**BRIEF SUMMARY:** Intervention appeared to improve screening

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	Level IV 8/10	**CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Arabic, Chinese, Vietnamese (South Asian) **SETTING:** Peer health educator program (health care)	100% women, 37% aged 50-59yrs (range 40-74), 36% Arabic, 32% South Asian, 16% Chinese, 16% Vietnamese	information sessions and patient navigation **CONTROL:** none	**RESULTS:** Changed behaviour: Arabic women embraced learning, took action to change lifestyle, improved health, reduced risk Screening knowledge: Chinese/Vietnamese - screening as a preventative behaviour. Knowledge: Chinese/Arabic empowered with knowledge, take individual responsibility; Arabic used knowledge to educate other women. Chinese/Arabic/Vietnamese enhanced understanding of screening benefits and reason for it. System access: Chinese/Arabic/ Vietnamese welcomed peer educator's presence at screening, provided emotional and language support, trusted, promoted cultural safety, helped navigate health care system. More likely to undertake the procedure, and follow up if needed.	knowledge and screening rates in targeted CALD groups. **LIMITATIONS:** Qualitative analysis. Effect of the intervention unable to be quantified; no control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Cullerton 2016	Pre-post test Level IV 7/9	**COUNTRY:** Australia **CANCER TYPE:** Breast cancer, cervical cancer, bowel cancer **CALD GROUP (OTHER):** Arabic, Vietnamese (Bosnian, South Asian, Samoan and Pacific Island, Sudanese, Spanish-speaking) **SETTING:** Members from the ECCQ Chronic Disease Program's	n=159 Bowel cancer session (n=69): 69% female, 52% aged 35-64yrs, 22% Arabic, 23% Vietnamese Breast cancer session (n=69), 100% female, 54% aged 35-64yrs, 20% Arabic, 18% Vietnamese Cervical cancer session	**INTERVENTION:** Culturally tailored bowel, breast and cervical education sessions. Education sessions delivered separately for each cancer, with pictorial and written materials provided in audience languages **CONTROL:** none	**OUTCOME MEASURE:** Pre-post education sessions. Changes in knowledge, attitudes and intention to screen **RESULTS:** (Pre vs post) Knowledge: Significant improvements in 3 of 4, 4 of 4 and 1 of 4 questions for bowel, breast and cervical cancer, respectively Attitudes: Significant improvements in 1 of 6 questions each for bowel, breast and cervical cancer Knowledge**:** % haven't heard of: faecal occult blood test (FOBT): 56% vs 23%, p<.01; mammogram 22% vs 5% p=.04; pap smear 14% vs 0%. Intention to participate in screening: FOBT 25% vs 49% (7% increase for Arabic participants). Pap smear 81% vs 81%. Mammogram Arabic: 78% vs "more" (exact % not reported)	**BRIEF SUMMARY:** The intervention appeared to improve knowledge of bowel and breast cancer but not cervical cancer knowledge and a small change in attitude towards screening. There was an increase in intention to screen for bowel cancer **LIMITATIONS:** Due to small sample sizes, CALD group differences difficult to assess; no control group; results aggregated

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			(n=21): 100% female, 62% aged 35-64yrs, 62% Arabic			
Duong 2021	Pre-post test Level IV 8/10	**COUNTRY:** United States **CANCER TYPE:** Cervical cancer, bowel cancer **CALD GROUP (OTHER):** Vietnamese **SETTING:** Community	n=41 (10 families) 90% female, median Family Health Advocate (FHA): age 20yrs, 100% second generation immigrants, 70% intermediate Vietnamese proficiency	**INTERVENTION:** Let's Chat: Family social media group chat intervention – Family Health Advocate educated family members on: colonoscopy, alternative CRC screening methods, HPV vaccination and pap testing (over 4 weeks). Family Health Advocate support comprised: 1x1 hr in person training session, weekly text	**OUTCOME MEASURE:** Pre-post survey, screenshots of conversations (qualitative analysis). Change in knowledge, **RESULTS:** Qualitative analyses. Knowledge and intent to screen: Increased knowledge about screening and intent to screen.. Several family members reported group chats were easier to process the cancer screening messages than talking face-to-face. Access to screening: Family member offered to take older	**BRIEF SUMMARY:** The intervention appeared to increase participants knowledge of screening and increased intention to screen. Action was taken to make appointments for screening. No measure of whether screening rates increased **LIMITATIONS:** Qualitative analysis limits understanding degree of change in knowledge; no control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			Family members: mean age 40yrs (18-61yrs)	reminder messages, family message template, infographics, videos and weblinks for dissemination to family members if needed. **CONTROL:** none	member for CRC screening and made the appointment	
Fang 2019	Randomised controlled trial, Level II 7/13	**COUNTRY:** United States **CANCER TYPE:** Cervical cancer **CALD GROUP (OTHER):** Vietnamese **SETTING:** Community	All (n=1,488): 100% women,76% aged 30-64yrs (range 18-70yrs) Intervention: 73% aged 30-64yrs Control: 78% aged 30-64yrs	**INTERVENTION:** A 1x 2hr cervical cancer educational program delivered by a bilingual community health educator supported by written information **CONTROL:** A 1x 2hr educational program delivered by a bilingual community health educator on general health topics, which included cancer	**OUTCOME MEASURE:** Control vs Intervention. Change in knowledge, health beliefs, self-efficacy. Pre-post. **RESULTS:** (Pre vs Post) Change in knowledge: Intervention 0.3 vs 0.9, p<.001; Control 0.4 vs 0.4, ns; Intervention vs Control p<.001 Perceived Susceptibility: Intervention 2.6 vs 2.7, ns; Control 2.4 vs 2.5, ns; Intervention vs Control ns Perceived Severity: Intervention 3.4 vs 3.6, ns; Control 3.3 vs 3.3, ns; Intervention vs Control ns.	**BRIEF SUMMARY:** The intervention arm showed improvements in knowledge and perceived benefit of screening scores, and a reduction in perceived barriers to screening. For the same factors, there were no changes for the control group. Both groups showed improvements in self-efficacy with the increase significantly higher in the intervention group. The

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
				screening information and written information	Perceived Barriers: Intervention 3.1 vs 2.3, p<.001; Control 3.2 vs 3.5, ns; Intervention vs Control p=.002 Perceived Benefits: Intervention 3.5 vs 4.5, p<.001; Control 3.6 vs 3.7, ns; Intervention vs Control p<.001 Self-efficacy: Intervention 6.6 vs 9.0, p=.001; Control 7.2 vs 7.4, p=.020; Intervention vs Control p=.003	intervention did not alter participants perceived susceptibility or severity **LIMITATIONS:** did not measure changes in screening uptake
Fang 2020	Systematic review Level III-3 5/11	**COUNTRY:** United States **CANCER TYPE:** Breast cancer, cervical cancer, bowel cancer **CALD GROUP (OTHER):** Chinese, Vietnamese, Arabic (various) **SETTING:** Various	42 studies: Breast cancer (n=16) Cervical cancer (n=12) Bowel cancer (n=9)	**SYSTEMATIC REVIEW:** Review of current progress in promoting cancer screening participation among US immigrants.	**OUTCOME MEASURE:** Progress of programs. **RESULTS:** 28/42 studies (from 2002-2019) offered navigation assistance (to overcome access barriers) which increased screening. Despite efforts, screening rates remain well below USA national goals. Nearly all offered education (culturally appropriate) and addressed individual screening knowledge gaps and beliefs	**BRIEF SUMMARY:** Interventions have generally been successful in improving screening rates in immigrant US populations. However, rates are still below the national average **LIMITATIONS:** Interventions targeted a variety of CALD groups

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			Multiple cancers (n=5)		Behavioural/education interventions: Screening rates post-intervention were 38-56% for breast cancer, 24-62% for cervical cancer and 45-78% for colorectal cancer Health care system interventions: Screening rates post-intervention were 32-80% for breast cancer, 39-80% for cervical cancer and 55-85% for colorectal screening. HPV vaccination post-intervention ranged from 66-81%.	which limits generalisation to targeted CALD groups
Fernández-Esquer 2020	Pre-post test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Breast cancer, cervical cancer **CALD GROUP (OTHER):** Vietnamese	n=186 100% women, mean age 47yrs	**INTERVENTION:** Sức Khỏe là Hạnh Phúc (Health is Happiness) cancer prevention program comprising: in person education sessions, screening brochures, patient navigation (to non-	**OUTCOME MEASURE:** Pre-post-test (5 months). Screening rates post intervention among non-compliant group and whether accepted patient navigation assistance. **RESULTS:** Pre-test adherence to screening: mammogram 75% (aged 40+), Pap smear 63% (aged 21+). Patient navigation accepted by non-	**BRIEF SUMMARY:** Patient navigation increased pap-test screening adherence in non-compliant women compared to non-compliant women who did not choose to receive patient navigation. Acceptance of patient navigation did not significantly increase

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Nail salons		adherent, age-appropriate participants) **CONTROL:** none	adherent women: Pap-test 57%, mammogram: 77% (Patient navigated vs not) Post-test adherence to screening: Pap test adherent: 83.7% vs 50.0% (group difference: $\chi 2 = 8.54$, df = 1, p = .003); mammogram: 77.3% vs 71.4% (ns)	mammogram screening above those who did not use patient navigation **LIMITATIONS:** small sample limits generalization of findings, unable to assess the joint influence of cancer education and navigation on screening participation
Fung 2018	Randomised controlled trial Level II 8/13	**COUNTRY:** United States **CANCER TYPE:** Breast cancer, cervical cancer, bowel cancer (other cancers) **CALD GROUP (OTHER):** Chinese **SETTING:** Chinatown Public	All (n=395): 81% female, 33% aged >65yrs Intervention (n=198): 77% female, 31% aged>65yrs Control (n=202):	**INTERVENTION:** 1 x 1hr cancer screening and prevention education seminar to address knowledge of common cancers **CONTROL:** 1 x 1hr cancer research in the community seminar to promote biospecimens donations for cancer research	**OUTCOME MEASURE:** Pre and post seminar changes in knowledge, attitudes and screening **RESULTS:** (Pre vs Post seminar) Knowledge: Lower cancer risk by eating healthy foods: Intervention: 93.1% vs 97.0%, p<.001; Control: 97.0% vs 96.0%, ns; Intervention vs control, p=.004. Screening for early detection: Intervention: 88.1% vs 88.6%, ns; Control: 87.0% vs 87.6%,	**BRIEF SUMMARY:** The intervention showed only slight improvements in some cancer knowledge areas above control. The intervention showed improvements in pap test and colon screening, but these were not significantly higher than control at post-test.

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		Health Centre (clinic setting)	86% female, 34% aged >65yrs		ns; Invention vs control, ns. I can't do anything to prevent cancer: Intervention: 5.9% vs 4.5%, ns; Control: 1.0% vs 6.2%, p=.002; Invention vs control, p=.04. Can get tested to find (breast, cervical, colon) cancer early: Breast - Intervention: 94.2% vs 95.5%, ns; Control: 92.2% vs 93.4%, ns; Invention vs control, ns. Cervix - Intervention: 90.3% vs 91.6%, ns; Control: 89.8% vs 89.8%, ns; Invention vs control, ns. Colon - Intervention: 80.2% vs 83.7%, ns; Control: 74.6% vs 78.2%, p=.07; Invention vs control, ns. Screening (completed or planned): Mammogram (women only) - Intervention: 88.6% vs 88.6%, ns; Control: 88.7% vs 88.6%, ns; Invention vs control, ns. Pap test (women only) - Intervention: 72.9% vs 75.5%, p=.04; Control: 72.9% vs 76.5%, ns; Invention vs control, ns. Colon cancer - Intervention: 47.0%	**LIMITATIONS:** Males underrepresented. Significant group differences for gender across groups (p=.02). Intention to screen was not verified with completion

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					vs 54.5%, p<.001; Control: 47.7% vs 49.7%, ns; Invention vs control, ns. Colon cancer (aged 50-75yrs) - Intervention: 58.1% vs 64.5%, p=.002; Control: 58.8% vs 58.8%, ns; Invention vs control, ns	
Gao 2016	Pre-post test (qualitative) Level IV 8/10	**COUNTRY:** United States **CANCER TYPE:** Cervical cancer **CALD GROUP(OTHER):** Chinese **SETTING:** University	n=44 52% female, mean age 25yrs	**INTERVENTION:** Bilingual Gardasil vaccine education flyers. **CONTROL:** none	**OUTCOME MEASURE:** Pre-post intervention (reading Gardasil brochure): knowledge of cervical cancer, HPV infection and vaccination. **RESULTS:** Knowledge**:** Post intervention deeper understanding of HPV infection, the vaccine, and who should receive the vaccine; Developed some stigma when knowledge of HPV infection was low, less stigma about HPV infection once gained more knowledge about what it is and its causes	**BRIEF SUMMARY:** The intervention improved participants knowledge of cervical cancer, HPV infection and vaccination **LIMITATIONS:** Qualitative analysis limits effect of change. No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Gauss 2013	Pre-post test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Cervical cancer **CALD GROUP (OTHER):** Arab (Latinos and Black) **SETTING:** Community	All (n=420):100 % women, mean age 47yrs Arab (n=128): mean age 47yrs	**INTERVENTION:** The Kin Keeper[SM] Cancer Prevention Intervention – involves all adult female family members. Community health workers conducts a home-based education intervention in preferred language. All participants then complete a personal action plan with cervical cancer screening goals **CONTROL:** none	**OUTCOME MEASURE:** Pre-post (immediately after (post test 1) and 12 months later (post test 2)). Perception of screening pain and impact on screening goals. **RESULTS:** Pain perception: Pre vs Post-test 1: Arab 24.2% vs 3.9%, p<.001; All 29.8% vs 13.8%, p<.001. Pre vs Post-test 2: Arab 24.2% vs 14.8%, p=.05; All 29.8% vs 28.8%, ns; Post-test 1 vs Post-test 2: Arab 3.9% vs 14.8%, p=.002; All 13.8% vs 28.8%, p<.001 Goal to receive a pap test: Arab - Post-test 1: find a health care provider (step 1) 1.8%; schedule first ever pap test (step 2): 3.7%; Continue yearly pap test (step 3): 94.5%	**BRIEF SUMMARY:** The intervention reduced Arab participants' perception of the pap test being painful immediately following the intervention (post-test 1), however pain perception increased to similar levels by post-test 2 but still significantly lower than baseline for Arab participants. Almost all participants reported a goal of continuing yearly pap tests immediately following the intervention **LIMITATIONS:** goal of receiving pap test at post-test 2 not reported. Given increase in pain perception, unclear whether goal may be impacted. No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Gondek 2015	Pre-post test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Arabic (immigrant / refugee, various) **SETTING:** Community (refugee resettlement agencies)	n=348 51% aged over 40, 29.5% Middle Eastern	**INTERVENTION:** Immigrant and Refugee Health Education Program comprising: 1 x 60–90-minute breast health education session delivered in multiple languages using interpreters with an interactive breast models; patient navigation and mobile screening provided to age appropriate non-compliant women **CONTROL:** none	**OUTCOME MEASURE:** Pre-Post test changes in knowledge and mammogram screening rate **RESULTS:** (pre vs post-test) Mammogram knowledge: What is a mammogram? 42.7% vs 81.4%, p=.001. Correct age to start mammogram screening: 40.2% vs 81.6%, p=.002. Lump in the breast does not always mean cancer: 29.8% vs 64.2%, p<.001. bruise/ hit to your breast does not cause cancer 32.3% vs 83.9%, p<.001. cancer does not always mean death 46.3% vs 70.1%, p<.001. Men can be diagnosed with breast cancer 26.5% vs 67.9%, p<.001. Medium knowledge score: 2 vs 4, p<.001 Screening behaviour: 60/170 (35%) completed a mammogram during the follow-up interval. 36 (60%) used the mobile mammogram unit. 20 of the 60 women completing the	**BRIEF SUMMARY:** The intervention improved participants knowledge of breast cancer and screening, and improved screening rates, particularly among those never previously screened **LIMITATIONS:** No control group. Results aggregated

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					mammogram had never had a mammogram previously	
Hu 2020	Systematic review Level I 11/11	**COUNTRY:** United States **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Chinese, Vietnamese (Asian', Latinas, Pacific Islander, Hispanic, Filipino, African, Hmong, Korean) **SETTING:** Community and health-care settings	n=13 RCT studies. n=8090 persons, sample size range: 283-1789 Asian focused (n=4)	**INTERVENTION:** Peer support (peer counselling, peer education and peer navigation) interventions vs other interventions (usual care, other interventions unrelated to CRCs) to promote uptake of colorectal cancer screening **CONTROL:** none	**OUTCOME MEASURE:** Peer support intervention vs other. Follow-up ranged from 6-12 months **RESULTS:** Superiority of peer support intervention over print for increasing the completion of any CRCS test (RR, 1.12; 95% CI, 1.05–1.18). Peer support intervention promoted CRCS more effectively than usual care (RR, 1.26; 95% CI, 1.09–1.46). Subgroup analysis showed that peer support intervention achieved great results in Asian Americans; and intervention of peer counselling achieved greater results.	**BRIEF SUMMARY:** Peer support interventions are more effective than FOBT outreach, print, and usual care in increasing CRCS completion rates, and reported greater increase in awareness of CRCS guidelines and increased intention to undergo CRCS **LIMITATIONS:** Substantial heterogeneities were observed in all these meta-analyses, which weakened the reliability of these findings. No control group. Results aggregated

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					Peer support group had greater increases in awareness of CRCS guidelines than in the control group. Subgroup analyses revealed greater increases in peer education than pure print in all items of CRCS guidelines. Peer support group had a stronger intention than the print group to undergo any CRCS	
Jang 2021	Systematic review Level III-3 10/11	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese, Vietnamese (Japanese, Korean)	n=12 studies, Sample size range: 93-2330 Chinese focused (n=5)	**SYSTEMATIC REVIEW:** Most interventions had multiple components (brochures, group sessions, newspaper articles, television/radio announcements). Majority of interventions were culturally tailored	**OUTCOME MEASURE:** Follow up ranged from 2-24 months **RESULTS:** Women who adhered to the study intervention had significantly higher mammography receipt than usual care/control Culturally tailored interventions were more effective in increasing mammography screening rates.	**BRIEF SUMMARY:** Culturally tailored interventions proved to be effective in increasing mammography screening rates **LIMITATIONS:** Included studies from 1999-2017 (4 in target year)

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: various (e.g., healthcare, community)			Video intervention reported the highest mammography rate change, with a 44% difference pre- to post-intervention (Chinese group). Culturally targeted video significantly more successful than fact sheet in increasing mammography screening among Chinese American immigrant women with low acculturation	
Kim 2018	Comparative study without control Level III-3 8/9	**COUNTRY:** United States **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	All (n=198): 100% women, 83% aged 50-64yrs Chinese/Chinese group (n=65): 82% aged 50-64yrs White/English group	**INTERVENTION (3 groups):** 90 minute culturally tailored presentation on CRC screening, translated into Chinese, offered a free FOBT to take home. There were three presentation groups where the racial/ethnic and language	**OUTCOME MEASURE:** FOBT uptake by language/ethic concordance. Pre-post presentation **RESULTS:** (Pre vs post) Change in belief of CRC screening**:** mean (SD): Chinese/Chinese 4.2 (2.9) vs 7.2 (2.5), p<.001. White/English 6.2 (2.4) vs 8.2 (2.2), p<.001. Chinese/ English 4.1 (3.0) vs 7.2 (2.7), p<.001 Rate of FOBT return: (All: 61%) Chinese/English 73% vs White/	**BRIEF SUMMARY:** Regardless of racial/ethnicity and language of the presentation, the education session changed beliefs regarding CRC screening. Participants who attended presentations delivered by a person of Chinese ethnicity and in English were significantly more

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			(n=69): 84% aged 50-64yrs Chinese/English group (n=64): 83% aged 50-64yrs	concordance of the presenter was assessed: 1. Chinese/Chinese 2. Chinese/English 3. White/English **CONTROL:** none	English 61% vs Chinese/Chinese 48%, p=.011 Post-education intention to screen significantly predicted FOBT kit return for testing. After adjustments, the Chinese/English group were 2x more likely to return the kit than other groups (2.7 (1.3–5.9))	likely to return a completed FOBT. **LIMITATIONS:** Only recruited women therefore findings may not be generalizable to males
Kwok 2016	Pre-post test Level IV 8/9	**COUNTRY:** Australia **CANCER TYPE:** Breast cancer, cervical cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	n=302 Mean age 46.5yrs (range 30-78yrs)	**INTERVENTION:** Happy and Health Life program in Chinese language comprising: 1 x 35–40-minute education presentation, and take-home information kit (booklet, promotional material) **CONTROL:** none	**OUTCOME MEASURE:** Awareness of screening practices, screening intention within the next six months; and cancer knowledge **RESULTS:** (pre vs post) Awareness: Heard of breast awareness: 41.7% vs 81.9%; Aware of mammogram testing 69.4% vs 97.2%; Aware of Pap smear test: 77.0% vs 100%; Aware of screening age for mammogram (targeted age group) 41.7% vs 82.6%; Aware of screening	**BRIEF SUMMARY:** The intervention increased knowledge, beliefs and awareness of breast and cervical cancer and associated screening. Intention to screen increased **LIMITATIONS:** used complete cases analysis (5% left the program and were excluded from the

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					age for pap smear test (targeted age group) 23.6% vs 86.0% Intention to have Pap smear in near future: All: 47.9% vs 76.4%; Among those aged 50-59yrs: 43.6% vs 65.3%. Knowledge and belief scores significantly increased	analysis). Measured intention to screen and therefore social desirability bias may be at play. No control group
Lee 2014	Randomised controlled trial Level II 8/13	**COUNTRY:** United States **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Vietnamese **SETTING:** Community	All (n=56): 64% female; 50% aged 50-59yrs, 36% aged 60-69yrs, 14% aged 70-79yrs Intervention: 64% female; 40% aged 50-59yrs, 43% aged	**INTERVENTION:** Mailout of a 20-minute educational video in Vietnamese on bowel screening that covered general CRC information and importance of early detection, step-by-step colonoscopy demonstration video, and Vietnamese community narratives	**OUTCOME MEASURE:** Baseline, 1-month and 1-year post-intervention surveys. Self-reported receipt of CRC screening (assessed at 1-month and 1-year); knowledge, attitudes and beliefs about CRC screening (assessed at 1-month only) **RESULTS:** Screening behaviour (Yes): one-month: intervention n=7 (25%) vs control n=8 (29%), ns; 1-year: intervention n=16 (57%) vs control n=12 (43%), ns.	**BRIEF SUMMARY:** CRC screening behaviour, knowledge and attitudes increased in both groups (DVD vs printed material) but there were no significant differences across groups. Both methods were therefore effective **LIMITATIONS:** DVD intervention now dated as a delivery mechanism due to

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			60-69yrs, 17% aged 70-79yrs Control: 64% female; 61.5% aged 50-59yrs, 27% aged 60-69yrs, 11.5% aged 70-79yrs	**CONTROL:** Mailed out a Vietnamese-language print brochure developed by the American Cancer Society to promote CRC screening	Knowledge of CRC screening methods**:** colon cancer: baseline intervention n=6 (21%), control n=12 (43%) / one-month intervention n=27 (96%), control n=27 (96%), ns; sigmoidoscopy: baseline intervention n=9 (32%), control n=9 (32%) / one-month intervention n=27 (96%), control n=27 (96%), ns; colonoscopy: baseline intervention n=12 (43%), control n=11 (39%) / one-month intervention n=26 (93%), control n=27 (96%), ns Attitudes toward and beliefs about CRC screening: between group differences seen for only 1/7 attitude statements; no between group differences across 13 beliefs toward CRC screening statements	advances in technology and popularity of internet streaming services
Lee 2018	Pre-post test Level IV	**COUNTRY:** Canada	n=30 Mean age 50yrs (SD	**INTERVENTION:** Education program comprising 2-hour	**OUTCOME MEASURE:** Baseline vs week 4. Knowledge and attitude on Chinese breast cancer screening	**BRIEF SUMMARY:** The intervention significantly improved participants'

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	6/9	**CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	10.96) (range 31-69yrs)	session per week for 4 weeks covering Ontario Healthcare System, eating behaviours and breast cancer,: Breast cancer prevention and screening and focus group discussion **CONTROL:** none	belief questionnaire (CBCSBQ) and breast cancer knowledge questionnaire (BCKQ) **RESULTS:** (Week 1 vs Week 4) CBCSBQ: Significant changes overall (Total scale score: 35.12±3.92 vs 42.50±4.07, p<.05) and on nearly all subscales (attitude: 12.37±3.06 vs 15.46±2.99, p<.05; knowledge: 11.33±2.19 vs 16.00±2.50, p<.05; Barriers to screening: 11.42±2.71 vs 11.04±3.25, ns) BCKQ (knowledge): cure, cause, gender, RR, screening subscale 3.29±1.70 vs 4.42±1.97, p<.05; epidemiology/risk factors subscale 2.17±1.46 vs 3.42±1.66, p<.01; symptoms 1.08±1.06 vs 2.00±0.98, p<.05. diagnosis/treatment 2.46±1.14 vs 2.83±0.56, ns.; total	breast cancer screening knowledge and breast cancer screening attitude **LIMITATIONS:** Unclear whether any participants were lost to follow up and/or how missing data was dealt with in the analysis. No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					knowledge scale 9.25±3.70 vs 12.67±3.76, p<.001	
Lee-Lin 2013	Pre-post test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	n=44 100% women, age range: 40-84yrs	**INTERVENTION:** Targeted breast health educational program, two parts: (1) group teaching with targeted messages, (2) followed by an individual telephone counselling session within 10 days of group. The sample was divided into three groups for program delivery with group messages targeted to the participants' stage of readiness **CONTROL:** none	**OUTCOME MEASURE:** Completion of mammography screening test, knowledge, beliefs; Movement in stage of readiness. Pre vs post intervention (12-weeks).**RESULTS:** (Complete case analysis) Screening behaviour: 50% had a mammogram by 12-week post-test. Stage of readiness: 23/42 (52%) were in the contemplation or contemplation relapse stage and 19 (43%) were in the precontemplation or precontemplation relapse stage at baseline. Of the 37 participants with valid data, 51% (n = 19) reached the action stage by completing a mammogram during the study period, of which 37% (n = 7) were in the precontemplation stage and 63% (n = 12) were in the contemplation	**BRIEF SUMMARY:** The intervention resulted in an increase in mammogram screening among those who were not compliant with mammogram screening. Limited improvements in knowledge/beliefs **LIMITATIONS:** Complete case analysis (2 dropped out). Small sample size may impact statistical findings. No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					stage at baseline. Of those that did not reach the action stage (n = 18), 50% (n = 9) were in the precontemplation stage and 50% (n = 9) were in the contemplation stage at baseline. Knowledge and beliefs: only breast cancer susceptibility significantly changed over time (t[40] = –2.88, p < 0.01). Susceptibility scores increased almost 15% from pre- (— X = 2.31, SD = 0.72) to post-test (— X = 2.65, SD = 0.7). Cohen's d for this effect was 0.44	
Lee-Lin 2015A	Randomised controlled trial Level II 10/13	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese, Vietnamese	All (n=300): 100% women, mean age 58.8yrs (range 40-85yrs)	**INTERVENTION:** Targeted Breast Health Educational Program (TBHEP) comprising: in-person group education session, follow-up telephone call within 10 days, individual	**OUTCOME MEASURE:** Pre-post. Baseline, 3-, 6-, and 12-month telephone follow-up surveys. Mammography completion **RESULTS:** (Intent to treat analysis) Screened: 3 months: intervention 59% vs control 18%, p<0.0001; 6-months intervention 69% vs control	**BRIEF SUMMARY:** Both the intervention and control increased mammogram screening completion at 12 months. Mammography completion was significantly higher in the intervention

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community	Intervention: n=147 Control: n=153	telephone counselling (patient navigation provided if needed) **CONTROL:** Chinese version of the two-sided colour mammogram informational brochure developed by the National Cancer Institute	27%, p<0.0001; 12-months: intervention 71% vs control 43%, p<0.0001. The unadjusted ORs at 3 months (OR = 6.35, 95% CI: 3.75, 10.75), 6 months (OR = 6.20, 95% CI: 2.60, 14.81), and 12 months (OR = 3.23, 95% CI: 1.22, 8.55) indicate the increased odds of mammogram completion in the intervention group compared to the control group. When adjusting for marital status, age, age immigrated (sig diff between groups at baseline), results remained significant (3 months OR = 8.81, 95% CI: 4.83, 16.05; 6 months OR 9.10, 95% CI: 3.50, 23.62; 12 months OR = 4.61, 95% CI: 1.59, 13.37)	than control at 3, 6 and 12 months **LIMITATIONS:** Loss to follow up; Intervention and control groups had significantly different socio-demographic characteristics; results aggregated

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Lee-Lin 2015B	Randomised controlled trial Level II 8/13	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	n=300 Mean age 58.8yrs (range 40-85yrs)	**INTERVENTION:** Targeted Breast Health Educational Program (TBHEP) - in-person group education session, accompanied by PowerPoint slides, which covered topics: breast cancer incidence and risk factors; particular risks for breast cancer in Asian women; the process of getting a mammogram; the benefits of mammogram; and how to overcome general and cultural barriers to obtaining mammograms. Within 10 days, individual telephone counselling follow-up session occurred - to help participants overcome	**OUTCOME MEASURE:** Pre-post. Baseline survey self-administered., 3-, 6-, and 12-month telephone follow-up surveys. Change in knowledge and beliefs. **RESULTS:** (Intervention: Complete case analysis) **Knowledge:** (Median) 3mths: 5.0 vs. 4.0, p<0.001. 6mths: 5.0 vs. 4.0, p=0.002, 12mths: 5.0 vs. 4.0, p=0.03. **Cultural and health beliefs:** Perceived susceptibility to breast cancer: 3mths: mean, 2.5 vs. 2.3; median, 2.3 vs. 2.3; p=0.007. 6mths: 2.0 vs 2.3, ns, 12mths: 2.0 vs. 2.3, ns. Cultural modesty concerns: 3mths: 2.0 vs. 2.5, p<0.001. 6mths: 2.0 vs. 2.5, p<0.001. 12mths: 2.0 vs 2.0, ns	**BRIEF SUMMARY:** The intervention improved knowledge and beliefs regarding breast cancer **LIMITATIONS:** Missing data may impact results

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
				barriers relating to cost, fear/concern over the procedure, transportation, language, child care, and health care access e.g., provided logistical assistance, financial assistance, and navigation if needed (e.g. set up the appointment, provided a translator to attend service, paid the cost if person uninsured) **CONTROL:** Chinese version of the two-sided colour mammogram informational brochure developed by the National Cancer Institute		

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Li 2020	Pre-post test Level IV 5/9	**COUNTRY:** United States **CANCER TYPE:** Colorectal cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	n=11 60% female, mean age 63.7yrs (range 56–75yrs)	**INTERVENTION:** A 1-hr Family Health History (FHH)- based CRC prevention workshop. The workshop consisted of four modules (what is CRC, how to collect FHH of CRC, how to assess CRC risk based on FHH, how to prevent CRC). 2 months later, an individual follow-up phone consultation. Health insurance enrolment and navigation services were also provided, if needed. Received free FOBT screening **CONTROL:** none	**OUTCOME MEASURE:** Baseline, immediately after workshop, 2 weeks, 3, 6, and 12 months. Change in attitudes, self-efficacy, and intention regarding FHH communication with family members and physicians. Research team obtained participants' FOBT results **RESULTS:** Perceived susceptibility of CRC: Baseline vs after workshop: increase, p=0.01; Attitudes: increase, ns. Self-efficacy: increase, ns; Intention regarding FHH communication with family members and physicians: increase, ns	**BRIEF SUMMARY:** The intervention showed some improvements in the expected direction regarding attitudes, self-efficacy and intention. However, the significance was not detected in all instances, possibly due to small sample size (pilot study) **LIMITATIONS:** Pilot study to assess feasibility of program. Table of results not provided. Small sample size may limit statistical significance. No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Lofti-Jam 2021	Pre-post test Level IV 3/9	**COUNTRY:** Australia **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Vietnamese (South Asian (Tamil) and Aboriginal) **SETTING:** Community	n=210 (Vietnamese n=146; 70%) n=120 (all Vietnamese, completed 'show of hands' survey oppose to individual survey)s n=90 completed individual surveys (Vietnamese n=26, 29%)	**INTERVENTION:** Six community education sessions with South Asian, Vietnamese and Aboriginal community members. Information about the importance of bowel screening was provided, along with instructions and support on how to complete the bowel kit when it arrived in the mail. Written in-language resources were provided as were referrals for further support if needed **CONTROL:** none	**OUTCOME MEASURE:** Knowledge, intention to screen **RESULTS:** Education sessions: Hard survey group: Improved understanding: 97%; Increased confidence to complete kit 97%, Intend to do kit when next receive 90%, encourage parents of relatives to do kit 97%. Verbal survey: (not all questions asked) Intend to do kit when next receive 75%	**BRIEF SUMMARY:** The intervention improved knowledge, confidence to complete the FOBT kit, and intention to complete the kit **LIMITATIONS:** Only findings related to education sessions are reported; findings may be impacted by COVID; some data was by 'show of hands'; no control group; results aggregated
Ma 2015	Randomised controlled trial	**COUNTRY:** United States	All (n=1,416): mean age 52yrs	**INTERVENTION:** Intervention comprised: small group education sessions run by	**OUTCOME MEASURE:** Screening rate, knowledge and beliefs (perceived risks and susceptibility, perceived benefits, and self-	**BRIEF SUMMARY:** The intervention showed improvements in cervical

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	Level II 7/13	**CANCER TYPE:** Cervical cancer **CALD GROUP (OTHER):** Vietnamese **SETTING:** Community	Intervention: n=758 Control: n=658	community health worker; multimedia educational material; visual aids; patient navigation. In English and Vietnamese. **CONTROL:** general health information from federal agencies/ community organizations (Vietnamese)	efficacy), and perceived health care barriers to adherence to cervical cancer screening **RESULTS:** (Intervention vs Control) 12-month pap test (completed): 63.3% vs 1.4%, p=.0001 in women non-compliant at baseline Plan to complete: sig higher for Intervention than Control (difference 33.11, p=.0017	cancer screening and intention to screen **LIMITATIONS:** This article only focused on the primary outcome of increase in cervical cancer screening (receipt of Pap test during the past 12 months).
Ministry of Health 2014	Pre-post test Level IV 8/9	**COUNTRY:** New Zealand **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Asian (Māori, Pacific, other)	**Pre-test:** n=700, 51.3% female; 28.0% aged 50-54yrs; 4.1% Asian (500 random sample; n=100 Māori;	**INTERVENTION:** Feasibility of launching a national bowel screening program in New Zealand.	**OUTCOME MEASURE:** Awareness, knowledge and attitudes towards bowel cancer. Bowel cancer screening uptake. 2 years between surveys **RESULTS:** (pre vs post) Awareness of bowel screening tests: Asian 41% vs 82%, sig increase	**BRIEF SUMMARY:** The intervention significantly improved awareness of bowel cancer screening **LIMITATIONS:** Stats for Asian sub-group not reported for most variables. Mid-point findings (see Ministry of Health 2016 for full report)

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community	n=100 Pacific) **Post-test:** n=700, 51.3% female, 27.4% aged 50-54yrs, 3.7% Asian (500 random; n=100 Māori; n=100 Pacific)		Awareness of the Bowel Screening Program: Asian 17% vs 73%, sig increase	
Ministry of Health 2016	Pre-post test Level IV 8/9	**COUNTRY:** New Zealand **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Asian (Māori, Pacific, other)	All eligible BSPS Population Registrants Round 1: n=121,567 Round 2: n=62,520	**INTERVENTION:** National Bowel Screening Program pilot. Pre-invitation letter; Invitation (information leaflet, consent form, kit and reply paid envelope); Reminder letter (non-responders);	**OUTCOME MEASURE:** Completion of iFOBT. **RESULTS:** Complete iFOBT Round 1: All: 56.9%; Asian: 53.7%; Round 2: All: 51.6%, Asian: 48.8% Round 1 and 2 Asians sig less likely to participate than European/other people. Participation rates	**BRIEF SUMMARY:** The intervention improved completion of iFOBT screening among Asian participants. Completion rates however still significantly lower than other population groups.

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community		Phone or face-to-face contact: (Māori, Pacific and Asian non-responders to reminder) **CONTROL:** none	decreased between Round 1 and Round 2 for Asian participants	**LIMITATIONS:** No control group. Results aggregated (Asian)
Nguyen 2014	Randomised controlled trial Level II 7/13	**COUNTRY:** United States **CANCER TYPE:** Breast and Cervical cancer **CALD GROUP (OTHER):** Vietnamese **SETTING:** Community	n=102 Mean age 39yrs (SD = 13.7yrs)	**INTERVENTION:** Suc Khoe La Quan Trong Hon Sac Dep! (Health is Better than Beauty!) - used a modified form of the Vietnamese flip charts on female cancer topics (to increase female cancer knowledge), attended a 2.5hr education session and given take-home booklets on breast and cervical cancer and information of where Pap testing is offered to non-insured/low-income	**OUTCOME MEASURE:** Cancer screening awareness, knowledge (breast, cervical), attitudes (breast, cervical), behaviour. Baseline and 6-month follow-up measures **RESULTS:** (pre vs post, intent to treat analysis) Cancer knowledge: Intervention improved knowledge over control β = .34, t(93) = 3.28, p = .002; Cervical cancer knowledge: Intervention improved knowledge over control β = .40, t(89) = 3.28, p = .002 Attitudes towards screening: Breast: Intervention improved attitude over control β = .23, t(93) = 2.24, p = .03;	**BRIEF SUMMARY:** The intervention increased participants knowledge, improved attitudes and screening behaviour regarding breast cancer. The intervention did not improve attitude and screening behaviour regarding pap tests **LIMITATIONS:** 7 participants lost to follow-up

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
				populations. (Material available in English and Vietnamese) **CONTROL:** Provided with printed materials (available in English and Vietnamese) on health-related information that was not related to breast or cervical cancer topics (e.g., good nutrition, high blood pressure, smoking, and exercise)	Cervical: No group difference in attitude β = .11, t(89) = 1.01, ns. Receipt of exam/test: Clinical breast exam: Intervention more likely to have a CBE than control β = 1.31, χ (1) = 4.50, p = .03; Pap test: No difference in pap test between intervention and control $\chi^2(8)$ = 13.80, ns	
Nguyen 2015	Randomised controlled trial Level II 9/13	**COUNTRY:** United States **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Vietnamese	All (n=640) Intervention (n=320): 50% women, 67.8% aged 50-64yrs Control (n=320):	**INTERVENTION:** Lay health workers (LHWs) led 2 education sessions about CRC screening. **CONTROL:** LHWs led 2 sessions on healthy eating and physical activity	**OUTCOME MEASURE:** CRC screening test by 6-month follow-up. Change in knowledge, attitudes, and belief regarding colon cancer. **RESULTS:** (Intervention vs control) CRC screening: 56% vs 19%; p<.001.	**BRIEF SUMMARY:** The intervention showed improvements in CRC screening above the control. Both the intervention and control showed improvements in knowledge, however knowledge among the

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community	50% women, 75.0% aged 50-64yrs		Knowledge (Pre- vs post-test): heard of colon polyps: Intervention: 26% vs 94%, p<.001; Control: 27% vs 46%, p<.001; Intervention vs Control difference: 49, p<.001; Recommended start age: Intervention: 42% vs 91%, p<.001; Control: 39% vs 60%, p<.001, Intervention vs Control difference: 28, p<.001; Can be cured if found early: Intervention: 86% vs 99%, p<.001; Control: 90% vs 95%, p<.05; Intervention vs Control difference: 8, p<.01 Attitudes (Pre- vs post-test): worried about getting: Intervention: 45% vs 42%, ns; Control: 42% vs 53%, p<.01; Intervention vs Control difference: -14, p<.01; Thought might get: Intervention: 28% vs 54%, p<.001; Control: 47% vs 19%, p<.001; Intervention vs Control difference: 7, ns	intervention group increased significantly more than the control group **LIMITATIONS:** There was potential for contamination between the intervention and control group (share information across groups)

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Nguyen 2017	Randomised controlled trial Level II 11/13	**COUNTRY:** United States **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	All (n=725): 81.1% female, mean age 62.2yrs (SD 6.9yrs) Intervention (n=360): 83.1% female, mean age 62.8yrs (SD 6.8yrs) Control (n=365): 79.2% female, mean age 61.6yrs (SD 7.0yrs)	**INTERVENTION:** Lay health worker were trained to teach participants about CRC in two small group sessions and two telephone calls, plus in-language brochure **CONTROL:** Brochure only	**OUTCOME MEASURE:** Change in self-reports of ever/current CRC. Baseline to 6 months post-intervention **RESULTS:** Knowledge: increase was significant for 9/9 measures in the Intervention group and 6/9 in the Control group. Intervention group had higher knowledge post-test than control in all 9 knowledge measures. Behaviour: increase was significant for 4/4 measures in the Intervention group and 3/4 in the Control group. Intervention group had higher behaviour post-test than control in 3/4 behaviour measures. Ever screened: Intervention: 73.9%-88.3%, p<0.0001; Control: 72.3%-79.5%, p=0.0003. Intervention versus Control: OR 1.94 (95% CI=l.34, 2.79).	**BRIEF SUMMARY:** Both the intervention and group increased their bowel cancer knowledge and screening behaviour. However, improvements were significantly higher in the intervention group **LIMITATIONS:** High proportion of participants were women

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					Up to date screening: Intervention 60.0%-78.1%, p<0.0001. Control: 58.1 %-64.1%, p=0.0003. Intervention versus Control: OR 2.02 (95% CI=1.40, 2.90)	
Nguyen-Truong 2017	Pre-post test Level IV 8/9	**COUNTRY:** United States **CANCER TYPE:** Breast Cancer **CALD GROUP (OTHER):** Vietnamese **SETTING:** Community or healthcare	n=40 Mean age 66yrs (range 50–80yrs)	**INTERVENTION:** Early Care for Health–Vietnamese Women's Breast Health Program comprising: 1 x 1hr educational group session with, follow-up individual counselling session 10 days later (patient navigation if required) **CONTROL:** none	**OUTCOME MEASURE:** knowledge, attitudes/beliefs, mammogram screening. Baseline vs 12 week **RESULTS:** (Pre vs Post Intervention (X (sd))) knowledge: 0.3 (1.4) vs 0.6 (0.5) t[39] = –14.7, p < 0.001 Perceived susceptibility: 2.9 (0.8) vs 3.3 (0.5) t[39] = –2.7, p<0.05 Mammogram and breast cancer benefits: 4.5 (0.5) vs 4.9 (0.3) t[39] = –4.1, p<0.001. Mammogram and breast cancer barriers: 2.2 (0.6) vs 1.3 (0.5) t[39] = 8.9, p < 0.001.	**BRIEF SUMMARY:** The intervention improved knowledge, and change attitudes and beliefs about mammography. The intervention improved mammogram screening adherence **LIMITATIONS:** one participant who provided baseline data did not attend the education session and was excluded from all analyses except screening (reported as non-compliant). No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					Cultural barriers: crisis orientation: 1.5 (0.6) vs 1.1 (0.2) t[39] = 4.2, p < 0.001; modesty: 1.8 (0.56) vs 1.3 (0.5) t[39] = 5.0, p < 0.001; rely on others: 3.4 (1.1) vs 2.3 (1.1) t[39] = 5.0, p < 0.001; use of Eastern/Asian medicine: 2.3 (0.8) vs 1.4 (0.6) t[39] = 5.7, p<0.001 Mammogram screening: 75% (30/40) at follow up	
Nightingale 2020	Synthesis of published, grey and expert opinion – Evidence level unable to be determined 8/11	**COUNTRY:** Australia **CANCER TYPE:** Breast cancer, bowel cancer, cervical cancer **CALD GROUP (OTHER):** various **SETTING:** Community	n=14 peer reviewed papers n=19 grey literature reports n=25 other Australian research (not captured elsewhere)	**SYTHESIS:** Synthesis data from multiple sources to gain a thorough understanding of interventions that aim to increase participation in the screening. 1. Breast cancer: In-language phone call 2. Bowel screening: Co-designed resources	**OUTCOME MEASURE:** Evaluation of interventions implemented (2014-2019) **RESULTS:** Current data suggests programs are not meeting the needs of many people who speak a language other than English. While localised community-based programs can make a difference in increasing knowledge, awareness and intent to screen among under-screened communities, a whole-of-	**BRIEF SUMMARY:** the review concluded that the evidence to support the effectiveness of interventions in the Australian context was more limited than anticipated. This is likely due to several factors, including a lack of program level resources and capacity to conduct

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			n=47 expert stakeholder interviews	3. Bowel cancer: in-language/culturally appropriate community education and support sessions (Arabic-, Mandarin-speaking). 4. Translated breast screening resources on government/state websites 5. The Ophelia Project, - breast screening awareness campaign in pharmacies serving high number of Arabic-speaking people. 6. The Ophelia Project **-** peer educators engaged Arabic community organisations - trained to share key	system focus on increasing equity is essential to bridge these gaps at a population level 1. Breast screening: promising approach 2. Increased CALD community's confidence/ capability to discuss/promote bowel screening 3. Increased understanding of bowel screening important and high intention to screen rates (75%) 4. Results not discussed 5. Increasing the confidence of pharmacy staff to promote screening to clients, no measure of screening 6. 7 women made a mammogram appointment, peer educator accompanied 2 to appointment 7. Intervention group 10x more likely to book mammography appointment (62.4% intervention, 6.0% usual care). 2nd study: As	rigorous evaluations of initiatives and under-utilised registry support **LIMITATIONS:** National-level data on subpopulations is not available, and these figures are all derived from relatively small studies in specific geographical areas. Many studies implemented have not been formally evaluated

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
				messages with community members 7. Ophelia Project - trialled in-language reminders to increase screening participation 8. Mobile screening van and digital campaign 9. Self-collection of cervical cancer screen for women refusing a clinician-collected test during consultation	a result of in-language calls, 459 made an appointment (response rate 45%). Of those, 380 attended their screening. 37% of the total population who received calls participated in breast screening 8. 1/4 clients screened using the mobile 9. 98 women offered self-collection, 84 (85.7%) underwent cervical screen. Most women (n = 79, 94.0%) completed self-collection and 5 (5.9%) opted for conventional cervical exam	
NSW Government: Cancer Institute	Cohort study Level III-2 3/9	**COUNTRY:** Australia **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):**	56 community education sessions ~1,500 in attendance from 15	**INTERVENTION:** Multilingual 'Bowel Health and Screening' Flipchart and Facilitator Manual resources (9 languages), multiple community and health worker targeted training	**OUTCOME MEASURE:** Perceptions and intention to participate in bowel screening. Importance of bowel screening test, confidence doing bowel screening test at home. Both outcomes post community education session (yes/no) only	**BRIEF SUMMARY:** The intervention appeared to result in high understanding of bowel screening, confidence to perform the test, and intention to screen

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		Vietnamese (immigrant /refugee) **SETTING:** Community	language and cultural groups	sessions held, and bowel screening grants available **CONTROL:** none	**RESULTS:** Vietnamese: 97% of participants stated they understood the importance of doing a test every 2 years and 85% stated they were confident to do the test at home. NSW Refugee Health Service participants: 95% stated they would 'definitely' do the bowel screening in the future. Sydney LHD: better understanding of the importance of bowel screening, key risk factors, and signs and symptoms. Pink Sari participants: 91% felt more confidence about undertaking the test. 96% understood the importance of screening. 89% would seriously consider doing the test in future	**LIMITATIONS:** This is an overview governmental document of the intervention and the associated grants, some of which applied to the Vietnamese workers and community members. Significance testing not undertaken. No control group
NSW Health 2020	State-wide review of programs – level unable	**COUNTRY:** Australia **CANCER TYPE:** Breast cancer,	Summary of initiatives, programs and services implemented in NSW	**INTERVENTIONS:** 1. Bowel/breast/cervical screening flipcharts and facilitator manuals.	**OUTCOME MEASURE:** Bowel, breast, and cervical screening - various time frames/programs **RESULTS:** 1. Jurisdiction award.	**BRIEF SUMMARY:** Overall, interventions implemented in NSW appear to have led to increased screening rates for breast, bowel and

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
	to be determined 3/11	bowel cancer, cervical cancer **CALD GROUP (OTHER):** Various **SETTING:** Community	between July 2018-June 2020. n= 7 breast, bowel and/or cervical cancer screening initiatives	a. Bowel: co-design multicultural community education program, resources and workforce training 2. Patient Reported Measures project for Arabic-speaking patients. 3. Toolkit to build the capacity of the primary care sector 4. In-language information materials and brochures 5. Ensure mainstream services meet the needs of people from culturally diverse backgrounds (e.g. Interpreter support) 6. Community Education program –	a. 10 NSW community organisations were actively involved in the delivery of bowel screening community education for the first time, 56 community education sessions reached ~1500 community members 2. High completion rates, improved shared decision-making between clinicians and patients. 3. No results reported. 4. Wide dissemination. 5. No results reported. 6. 128 education sessions to approximately 1569 women. 7. No results reported.	cervical cancer among CALD populations **LIMITATIONS:** Only summary information provided on interventions. Unable to determine effectiveness of interventions reported on

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
				in-language education 7. Cervical screening during the antenatal period.		
Padela 2019	Pre- post-test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Arabic (South Asian) **SETTING:** Community (Mosques)	n=58 Mean age 50.4yrs (SD 8.4yrs), Arab 34.6% (n=18), South Asian 55.8% (n=29)	**INTERVENTION:** 2 x half day group workshops - guest lectures (female peers, religious scholars, health experts), facilitated group discussions on breast cancer screening guidelines and procedures, religious dimensions of health, and access to healthcare **CONTROL:** none	**OUTCOME MEASURE:** Pre-post. Changes in knowledge, intention to obtain mammography **RESULTS:** (Pre vs post intervention) Mammography knowledge: sig increase in mean knowledge (0.53, p<0.001); Facilitator belief agreement: no sig change (0.92, p=0.08). Barrier belief agreement: no change (0.05, p=0.94); Screening: 22/58 participants (38%) obtained a mammogram at 1 year follow-up.	**BRIEF SUMMARY:** The intervention increased knowledge and had some improvements in mammography screening **LIMITATIONS:** Required English proficiency, some participants (n=5, 9.3% were born in the United States); Mammogram rate was reported in the discussion with no information regarding how it was collected; timeframe of post intervention survey unclear; 20 individuals lost

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
						to follow up; no control group; results aggregated
Percac-Lima 2013	Retrospective cohort study Level III-2 7/9	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Arabic (Somali, Serbo-Croatian (Bosnian)) **SETTING:** Healthcare	All (n=4,274): 100% women, mean age 54.4yrs Intervention (n=188): Arab n=48 (26%), mean age 52.8yrs (SD 9.0) Comparison (n=4,086): English-speaking n=2,072, mean age 55.8yrs (10.0). Spanish-	**INTERVENTION:** Refugee Patient Navigator Program Navigators: 6 x 2-hour breast care training sessions Patients: received information about the program, mailed educational handouts, provided patient navigation (in person or phone) and education **CONTROL:** usual care	**OUTCOME MEASURE:** Pre-post: Mammogram completion the year prior to the PN program and 3 years after **RESULTS:** Mammogram screening (Baseline): refugee 64.1% (95% CI: 49%–77%) vs 1. English-speaking: 76.5% (95% CI: 69%–83%), p=0.02; vs 2. Spanish-speaking: 85.2% (95% CI: 79%–90%) p<0.001). Mammography screening (pre vs post): Arabic-speaking women: 44.4% vs 75.0%. Mammography screening (intervention vs comparison): Year 1: Intervention (refugee): 77.3% (95% CI: 64%–87%) vs 1. English-speaking: 76.8%, (95% CI: 70%–82%), ns; vs 2. Spanish-speaking:	**BRIEF SUMMARY:** The intervention increased mammogram screening in refugee populations and to levels similar to those seen among community peers **LIMITATIONS:** Sig age difference between intervention and English-speaking groups (p<.001). Results aggregated across the years

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			speaking n=2,014, mean age 53.1yrs (9.5) years		82.8% (95% CI: 76%–88%) ns); Year 2: Intervention: 84.7% (95% CI: 76%–91%) vs 1. English-speaking 81.8% (95% CI: 75%–87%), ns vs 2. Spanish speaking: 85.5% (95% CI: 79%–90%), ns; Year 3: Intervention: 81.2% (95% CI: 72%–88%) vs 1. English-speaking: 80.0% (95% CI: 73%–86%) ns vs 2. Spanish-speaking: 87.6% (95% CI: 82%–92% ns)	
Raines Milenkov 2020	Cross-sectional Level IV 6/9	**COUNTRY:** United States **CANCER TYPE:** Cervical cancer; Breast cancer; Colorectal cancer **CALD GROUP (OTHER):** Arabic (Myanmar, Central	**All** (n=874): 81% female, Arab 8%, 27% aged <30yrs Arab: 90% female, 42% aged 30-39yrs	**INTERVENTION:** Building Bridges Program Community health workers: received training and education, assisted by videos, anatomical models, expert speakers, and field trips	**OUTCOME MEASURE:** Baseline vs post intervention. Cancer screening uptake **RESULTS:** (% of eligible) Cervical cancer screen: 37%, p=.01; 74% had never had a cervical cancer screen before; Arab: 24% (lowest uptake among all 6 groups), however they sig increased utilization of cervical cancer	**BRIEF SUMMARY:** The intervention increased rates of cervical, breast and colon cancer screening, however the increase was not significant for colon cancer. High screening completion occurred among those who had never previously been screened

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		Africa, Bhutan, Somalia, Other) **SETTING:** Community		Refugees: In-language education sessions (individual and group) supported by videos, anatomical models; offered opportunity to be screened, if eligible (breast, cervical, and/or colon cancer); patient navigation **CONTROL:** none	screening (OR = 0.41; 95% CI = 0.20, 0.83) Breast cancer screen: 54%, p=.01; 79% of those screened had never had a screen before. Arab: 50%, ns Colon cancer test: 27%, ns. 100% of those screened had never had a screen before; Arab 40%, ns (highest uptake among all 6 groups, ns)	for cervical, breast or colon cancer **LIMITATIONS:** Small number of people eligible for colon cancer may have impacted significance analyses. No control
Rustveld 2013	Pre-post-test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Cervical cancer; colorectal cancer **CALD GROUP (OTHER):** Vietnamese (African American, Hispanic)	n=662 81% female, mean age 50.0yrs (SD:16.0yrs), 27% Vietnamese (n=181)	**INTERVENTION:** Forum Theatre (FT) – education through performance. Performances present a core conflict and allow audience members to intervene and propose solutions. In-language. Each troupe was led by a community health worker specifically	**OUTCOME MEASURE:** Knowledge and intention to obtain colorectal cancer (CRC) and cervical cancer (CXC) screening in the next 6 months. **RESULTS:** (pre vs post) Likelihood of seeking CRC or CxC screening in next 6 months: 55% vs 75%, p<.05. Knowledge (post intervention): CRC/CxC preventable: All: 87.9%;	**BRIEF SUMMARY:** The intervention showed improvements in knowledge regarding cervical and colon cancer, and showed an increase in cervical and colon cancer screening intention **LIMITATIONS:** No measure of screening rates

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		SETTING: Community		trained to be a FT facilitator. **CONTROL:** none	Vietnamese: 95.2% (highest of 3 subgroups, group differences p<.05); CRC and CxC not always symptoms: All: 53.5%; Vietnamese: 53.0% (highest of 3 subgroups, group differences p<.05); CRC correct age: All: 77.7%; Vietnamese: 92.0% (highest of 3 subgroups, group differences p<.05); CxC correct age: All: 81.7%, Vietnamese: 82.1% (second of 3 subgroups, group differences p<.05)	(only intention to screen); no control group
Sun 2015	Randomised controlled trial Level II 8/13	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	All (n=132): mean age 55yrs (SD 8.3yrs) Gain group (intervention) (n=66): mean age 55yrs (SD 7.97yrs)	**INTERVENTION:** Breast cancer brochure with messages framed as a 'gain', 2 week follow-up call **COMPARATOR:** Breast cancer brochure with messages framed as a 'loss', 2 week follow-up call	**OUTCOME MEASURE:** Mammogram screening at 2 months post intervention **RESULTS:** (Post intervention) Mammogram screening: All: 32.8%. Women who received a matched message (e.g., gain-framed if they had a positive decisional balance or loss-framed if they had a negative decisional balance) were ~6 times	**BRIEF SUMMARY:** The intervention improved mammogram screening in those eligible for screening. Screening was higher among those who received a framed message that matched their decisional balance (e.g., gain

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			Loss group (comparator) (n=66): mean age 55yrs (SD 8.77yrs)		more likely to have had a mammogram at the 2-month follow-up than women who received a mismatched message. Screened at 2 months: Matched message: 35.7%; Mis-matched message: 19.4%. Negative-decisional balance: loss message: 36.1% vs gain message 15.6%, (p=.056); Positive-decisional message: loss message: 23.3% vs gain message 35.3%, (p=.30)	message and positive decisional balance) **LIMITATIONS:** Sample was originally 143, but 11 excluded as they were either younger than 40 or had received a mammogram in the past year and thus ineligible for a mammogram. Short follow-up period
Temminghoff 2020	Pre- post-test Level IV 8/9	**COUNTRY:** Australia **CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Arabic, Chinese (general population, Greek	Interviews: Arabic n=14; Mandarin n=15 Community education sessions: Arabic n=720;	**INTERVENTION:** Various activities implemented over a 12-month project period in the aim to extend the reach of the national Bowel Cancer Screening. 1. Communication strategy and resources to support	**OUTCOME MEASURE:** Awareness and understanding of the bowel cancer screening pathway. Self-efficacy to navigate the bowel cancer screening pathway. Intention to complete the at-home bowel screening test. These three measures were used as proxy for NBCSP participation. 12-month project period	**BRIEF SUMMARY:** The intervention resulted in an increase in returned FOBT kits, improved knowledge and awareness of bowel cancer and screening methods **LIMITATIONS:** Uses proxy measures to assess effectiveness. Data

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		and Italian speakers) **SETTING:** Community	Mandarin n=470 WeChat survey: Mandarin n=60	community education efforts; 2. Media engagement (radio, social media, websites, newspapers); 3. In-language education sessions; 4. Promotional material (however these resources were not evaluated) **CONTROL:** none	**RESULTS:** Kits returned: Crude number (%) increase 2017-2018: Arabic 687 (33.7%), Mandarin 2,315 (26.4%) Crude number (%) increase 2018-2019: Arabic 518 (19%), Mandarin 426 (5.8%). Education sessions: understanding and awareness of bowel cancer (post-test): Mandarin: 98%, Arabic: 99%. Confident to complete bowel screening kit: Mandarin: 97%, Arabic: 98%. Intention to do bowel kit when next receive: Mandarin 90%, Arabic 94%. One Arabic community organisation supported 21 people individually to call the NBCSP to order a kit (11/21 completed the bowel kit) Media campaigns (Pre vs post survey): Awareness of the NBCSP. Mandarin: 73% vs 92%. Intention to screen: Mandarin: 79% vs 98%. Importance of completing for self:	analysis not fully reported/described. Only those people who disclosed preferred language were included in the data analyses

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					Mandarin: 91% vs 90%. Importance of completing for friends and family: Mandarin: 89% vs 98%	
Tu 2014	Non-randomised experimental study (cross-sectional data at two time points) Level III-2 8/9	**COUNTRY:** United States **CANCER TYPE:** Colorectal cancer **CALD GROUP (OTHER):** Vietnamese **SETTING:** Community	Intervention: Baseline: n=1,061, 67% female, 75% aged 50-64yrs. Follow-up: n=1,260, 65% female, 78% aged 50-64yrs Control: Baseline: n=514, 68% female, 75% aged 50-64yrs. Follow-up: n=746, 69%	**INTERVENTION:** Medical assistants disseminate in-language educational materials (DVD and pamphlet) to patients **CONTROL**: Usual care: health educators disseminate educational materials (translated into Vietnamese) to patients	**OUTCOME MEASURE:** CRC screening adherence rates at the intervention vs control clinics **RESULTS:** CRC screening adherence (intervention vs control) baseline: 42% vs 38%, post-test: 45% vs 38% Change in screening (pre vs post): Control 0% OR 1.30 (0.95, 1.77), Intervention +3% OR 1.85 (1.44, 2.53). Control vs Intervention: 1.42 (0.95, 2.15) ns Non-adherence (baseline vs follow-up): Control: 34.5% vs Intervention 47.3% OR 1.70 (1.05, 2.75, p=.03)	**BRIEF SUMMARY:** The intervention resulted in a small increase in colorectal cancer screening adherence but not significantly higher than the control. The intervention significantly improved screening adherence in non-compliant patients **LIMITATIONS:** DVD intervention now dated as a delivery mechanism due to advances in technology and popularity of internet streaming services

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
			female, 75% aged 50-64yrs.			
Vora 2017	Post-test Level IV 1/9	**COUNTRY:** United States **CANCER TYPE:** Colorectal cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community health centre	n=1,662, 69.5% female, mean age 57yrs (range 38-76), 96.1% non-English-speaking, 98.9% Chinese	**INTERVENTION:** Patient Navigation program Patient navigators: trained to provided education and patient navigation. Provided with ongoing support/ education via webinars, meetings and conference calls. Patients: non-compliant patients contacted by patient navigators. Provided education, and patient navigation support in-language **CONTROL:** none	**OUTCOME MEASURE:** CRC screening rates **RESULTS:** CRC screening: increased 7% since the PN program began, from 57% in 2011 to 64% in 2013 Screening: 76% completed (65.8% completed a faecal test only, 23.1% completed colonoscopy only, and 11.1% completed both)	**BRIEF SUMMARY:** The intervention was effective at increasing screening rates **LIMITATIONS:** No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Wang 2014	Pre-post-test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Colorectal cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	n=60. 61.7% female, mean age 62.4yrs (SD: 6.5)	**INTERVENTION:** Education provided by Traditional Chinese medicine (TCM) providers TCM: provided with 1 x 4 hour training and recruited participants. Patients: TCM provided 90-minute small-group education session in-language supported by flipchart **CONTROL:** none	**OUTCOME MEASURE:** Changes in knowledge, attitudes, and behaviours pre-test and 3 months post-test **RESULTS:** (pre vs post) Knowledge: ever heard of CRC 52.6% to 79.0%, p<.001; heard of colon polyps 64.9% to 84.2%, p<.001. heard of any CRC screening test: 80.7% to 93.0%, p<.001. Correct start age: 54.3% to 66.7%, p<.001; Correct understanding of screening intervals: FOBT (annual) 36.8% to 59.7%, p<.001; sigmoidoscopy (every 5 years) 24.6% to 42.1%, p<.001; colonoscopy (every 10 years) 14.0% to 40.4%, p<.001 CRC Screening: ever: 71.9% to 82.5%, p<.001. up to date: 70.2% to 79.0%, p=.04	**BRIEF SUMMARY:** The intervention improved knowledge of colorectal cancer and associated screening, and increased screening adherence **LIMITATIONS:** 3 participants (5%) did not complete the post test. Their data was excluded from the analysis (complete case analysis). No control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Wang 2018A	Post-test Level IV 7/10	**COUNTRY:** United States **CANCER TYPE:** Colorectal cancer **CALD GROUP (OTHER):** Chinese, Vietnamese (Filipino, Indian, Korean) **SETTING:** Community (Asian grocery stores)	n=131. Not specifically measured: predominantly women	**INTERVENTION:** Student educators engaged shoppers in brief discussions about five CRC screening comics **CONTROL:** none	**OUTCOME MEASURE:** Comic message, acceptability and useability **RESULTS:** 7-8/10 shoppers approached agreed to view the comics. Shoppers spent 7- 15 min interacting with the educators as they evaluated/scored the five comics. Motivating FIT screening: the comics scored a cumulative average of 6.83 (1= "very unlikely", 10= "very likely") Individual comic scores: Comic 1 (5.81), Comic 2 (6.53), Comic 3 (8.08), Comic 4 (6.71), and Comic 5 (7.02)	**BRIEF SUMMARY:** The intervention appeared to motivate viewers to undertake FIT **LIMITATIONS:** Qualitative analysis; comics written in English; no control group; results aggregated
Wang 2018B	Randomised controlled trial, Level II 12/13	**COUNTRY:** United States **CANCER TYPE:** Bowel cancer	Chinese American physicians (n=25): (intervention	**INTERVENTION:** Chinese-American physician focused intervention.	**OUTCOME MEASURE:** CRC knowledge and screening rates, physical community quality, pre-post (12 month) intervention	**BRIEF SUMMARY:** The intervention improved knowledge and showed small albeit non-significant increases in CRC

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
		CALD GROUP (OTHER): Chinese **SETTING:** Health care	n=13 vs control n=12) Chinese patients (n=479): 50% male, 74% aged 50-64 years. Intervention (n=246): 52% male, 76% aged 50-64 years. Control (n=233): 47% male, 72% aged 50-64 years	Physicians: printed communication guide, 2 x 45 minute in-office training sessions (with 2 simulated patients experiences); auxiliary material (e.g. desk-style flip chart), printed patient resources. Chinese and English **CONTROL:** usual care plus printed patient resources	**RESULTS:** (Intervention vs control: intention to treat analysis) Screening rates: 24.4% vs 17.7%, ns. Post hoc analyses, intervention patients who perceived better communication were more likely to be screened than those who did not (OR = 1.09, 95% CI: 1.03,1.15), this association was not apparent in the control arm. Screening: the intervention had small, non-significant effects in increasing CRC screening rates. Physician communication appeared to explain intervention efficacy (Intervention vs control: complete cases analysis) knowledge**:** intervention had greater improvement in knowledge (mean change Δ = .98 on a 0–4 scale, SD = .89) and perceived communication quality (Δ = 1.56 on a 4-point scale, SD = 6.81) from baseline to follow-up than patients in the control arm	screening rates. Physician communication impacted intervention efficacy regarding screening **LIMITATIONS:** Some baseline differences in physician recommended for screening and prior CRC screening with sig higher prevalence among control group

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
					(Δ = .68, SD = .88 and Δ = −.63, SD = 6.9; both t-test, p < .01)	
Wu 2014	Pre-post-test Level IV 7/9	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Vietnamese (Philippines, India) **SETTING:** Community	All (n=166, 141 completed): 100% women, mean age 50yrs (SD 12.4, range 30-84yrs), 45% Vietnamese. Vietnamese (n=64):100% women aged over 40yrs	**INTERVENTION:** 1 x 1hr group education session **CONTROL:** none	**OUTCOME MEASURE:** Knowledge of breast cancer risk factors and screening frequency, beliefs toward susceptibility/risk, self-efficacy, and intentions for screening. Baseline and post-test **RESULTS:** (pre- vs post) Knowledge: risk of developing: 2.57 vs 5.46, t = –11.97, p<0.05; mammogram frequency: 3.57 vs 3.40, t=0.85, p=ns; breast self-exam frequency: 33% vs 66%, X2=23.60, p<.05; CBE frequency: 28% vs 52%, X2=7.81, p<.001. Knowledge of free mammogram program: 10% vs 60%. Efficacy of performing breast self-exam: 46.1 vs 73.4, t=-8.43, p< .001. Intention to screen (in 6 months): CBE: 94%; mammogram: 91%	**BRIEF SUMMARY:** The intervention appeared to improve knowledge and screening intention **LIMITATIONS:** Did not look at long term effects of the intervention. Intention to screen may not translate to actual screening. No control group. Results aggregated

First author, year	Study design, evidence level and JBI score	Research focus	Sample size and demographics	Intervention	Outcome measure and results	Brief summary and limitations
Wu 2015	Randomised controlled trial, Level II 10/13	**COUNTRY:** United States **CANCER TYPE:** Breast cancer **CALD GROUP (OTHER):** Chinese **SETTING:** Community	All (n=193): 74% aged 41-65yrs, mean age 54.6yrs (SD 9.6, range 41-81yrs) Intervention: n=96 Control: n=97	**INTERVENTION:** Individually tailored telephone counselling (uniquely applicable to the person, based upon an initial assessment) **CONTROL:** Pamphlet on breast health and mammography	**OUTCOME MEASURE:** knowledge, attitudes/beliefs, self-efficacy). Pre and post (4 months) intervention **RESULTS:** Mammogram (post intervention): intervention: 40%, control 33% ($\chi(1) = 1.81$, p = ns). Sub-analyses: 65+: Intervention: 51%, control 25%, sig difference	**BRIEF SUMMARY:** Overall, the intervention arm did not show improvements in screening above the control arm (however both showed improvements). When age is considered, the intervention significantly improved screening adherence among those aged over 65+ years. **LIMITATIONS:** Analysis based on complete cases (more participants dropped out of the control group than the intervention group)

Appendix 5—Joanna Briggs Institute critical appraisal tools checklists and associated assessment

Systematic Reviews and Research Syntheses[14]

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	☐	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	☐	☐	☐	☐
3.	Was the search strategy appropriate?	☐	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	☐	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	☐	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	☐	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	☐	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	☐	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	☐	☐	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	☐	☐	☐	☐
11.	Were the specific directives for new research appropriate?	☐	☐	☐	☐

Randomized Controlled Trials[15]

	Yes	No	Unclear	Not applicable
1. Was true randomization used for assignment of participants to treatment groups?	☐	☐	☐	☐
2. Was allocation to treatment groups concealed?	☐	☐	☐	☐
3. Were treatment groups similar at the baseline?	☐	☐	☐	☐
4. Were participants blind to treatment assignment?	☐	☐	☐	☐
5. Were those delivering treatment blind to treatment assignment?	☐	☐	☐	☐
6. Were outcomes assessors blind to treatment assignment?	☐	☐	☐	☐
7. Were treatment groups treated identically other than the intervention of interest?	☐	☐	☐	☐
8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	☐	☐	☐	☐
9. Were participants analyzed in the groups to which they were randomized?	☐	☐	☐	☐
10. Were outcomes measured in the same way for treatment groups?	☐	☐	☐	☐
11. Were outcomes measured in a reliable way?	☐	☐	☐	☐
12. Was appropriate statistical analysis used?	☐	☐	☐	☐
13. Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	☐	☐	☐	☐

Quasi-experimental studies[16]

	Yes	No	Unclear	Not applicable
1. Is it clear in the study what is the 'cause' and what is the 'effect' (i.e., there is no confusion about which variable comes first)?	☐	☐	☐	☐
2. Were the participants included in any comparisons similar?	☐	☐	☐	☐
3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	☐	☐	☐	☐
4. Was there a control group?	☐	☐	☐	☐
5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?	☐	☐	☐	☐
6. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	☐	☐	☐	☐
7. Were the outcomes of participants included in any comparisons measured in the same way?	☐	☐	☐	☐
8. Were outcomes measured in a reliable way?	☐	☐	☐	☐
9. Was appropriate statistical analysis used?	☐	☐	☐	☐

Qualitative Research[17]

	Yes	No	Unclear	Not applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	☐	☐	☐	☐
2. Is there congruity between the research methodology and the research question or objectives?	☐	☐	☐	☐
3. Is there congruity between the research methodology and the methods used to collect data?	☐	☐	☐	☐
4. Is there congruity between the research methodology and the representation and analysis of data?	☐	☐	☐	☐
5. Is there congruity between the research methodology and the interpretation of results?	☐	☐	☐	☐
6. Is there a statement locating the researcher culturally or theoretically?	☐	☐	☐	☐
7. Is the influence of the researcher on the research, and vice- versa, addressed?	☐	☐	☐	☐
8. Are participants, and their voices, adequately represented?	☐	☐	☐	☐
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	☐	☐	☐	☐
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	☐	☐	☐	☐

Table A5.1 — JBI critical appraisal checklist by study type: Question 1[1] studies

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Systematic review / Synthesis (maximum score of 11)														
NSW Health 2020	N	U	U	Y	U	U	U	U	N	Y	Y			3
Randomised Controlled Trails (maximum score of 13)														
Tong 2018	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	9
Zhao 2019	Y	N	U	U	N	N	Y	Y	Y	Y	Y	Y	Y	8
Quasi-experimental studies (maximum score of 9)														
Chan 2022	Y	Y	N	N	Y	N	na	Y	Y					5
Chang 2013	Y	Y	Y	N	Y	N	Y	Y	Y					6
Chen 2021	Y	Y	N	N	Y	Y	Y	Y	Y					7
Cummins 2015	Y	U	N	N	Y	Y	Y	Y	Y					6
El-Haddad 2020	Y	Y	Y	N	Y	N	U	U	U					4
Haddad 2013	Y	Y	Y	N	Y	Y	Y	Y	U					7
Haddad 2017	Y	Y	Y	N	Y	Y	Y	Y	Y					8
Hua 2015	Y	Y	Y	N	Y	U	U	U	U					4
Macnamara 2019	Y	na	na	N	na	N	na	N	N					1
Poureslami 2020	Y	Y	Y	Y	Y	U	Y	Y	Y					8
Tat 2015	Y	na	na	N	N	na	na	Y	Y					3
Tsoh 2015	Y	Y	Y	N	Y	Y	Y	Y	Y					8
Unknown	Y	Y	Y	N	Y	N	U	Y	Y					6

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Zhou 2015	Y	N	Y	Y	Y	N	Y	Y	Y					7
Qualitative Studies (maximum score of 10)														
Peterson 2018	Y	Y	Y	Y	Y	U	N	Y	Y	Y				8
Saw 2018	Y	Y	Y	Y	Y	N	N	Y	Y	Y				8

JBI = Joanna Briggs Institute; Y = Yes; N = No; U = Unclear; na = Not Appliable.

The numbers relate to the question numbering in the JBI critical appraisal tool for the relevant study design.

[1] *Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?*

Table A5.2 — JBI critical appraisal checklist by study type: Question 2[1] Studies

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Systematic review / Synthesis (maximum score of 11)														
Chan 2015	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y			10
Fang 2020	N	Y	Y	Y	U	U	U	U	N	Y	Y			5
Hu 2020	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			11
Jang 2021	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y			10
Nightingale 2020	Y	Y	Y	Y	Y	U	U	Y	N	Y	Y			8
NSW Health 2020	N	U	U	Y	U	U	U	U	N	Y	Y			3
Randomised Controlled Trails (maximum score of 13)														
Beauchamp 2020	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	11
Fang 2019	U	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	N	7
Fung 2018	Y	U	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	8
Lee 2014	Y	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	8
Lee-Lin 2015A	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	10
Lee-Lin 2015B	Y	Y	N	N	N	N	Y	N	Y	Y	Y	Y	Y	8
Ma 2015	U	N	Y	N	N	N	Y	N	Y	Y	Y	Y	Y	7
Nguyen 2014	Y	U	U	N	N	N	Y	N	Y	Y	Y	Y	Y	7
Nguyen 2015	U	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	9
Nguyen 2017	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	11
Sun 2015	Y	U	Y	N	N	N	Y	Y	Y	Y	Y	Y	U	8

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
Wang 2018B	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	12
Wu 2015	Y	Y	Y	Y	N	N	Y	U	Y	Y	Y	Y	Y	10
Quasi-experimental studies (maximum score of 9)														
Andersson 2021	Y	Y	Y	N	N	U	Y	U	U					4
Berger 2017	Y	Y	Y	N	Y	N	Y	Y	Y					7
Brooks 2015	Y	na	na	N	na	na	na	Y	Y					3
Cullerton 2016	Y	Y	Y	N	Y	N	Y	Y	Y					7
Fernández-Esquer 2020	Y	Y	Y	N	Y	N	Y	Y	Y					7
Gauss 2013	Y	Y	Y	N	Y	U	Y	Y	Y					7
Gondek 2015	Y	Y	Y	N	Y	U	Y	Y	Y					7
Kim 2018	Y	Y	Y	N	Y	Y	Y	Y	Y					8
Kwok 2016	Y	Y	Y	N	Y	Y	Y	Y	Y					8
Lee 2018	Y	Y	Y	N	N	U	Y	Y	Y					6
Lee-Lin 2013	Y	Y	Y	N	Y	N	Y	Y	Y					7
Li 2020	Y	Y	Y	N	Y	Y	U	U	U					5
Lofti-Jam 2021	Y	na	na	N	na	na	na	Y	Y					3
Ministry of Health 2014	Y	Y	Y	N	Y	Y	Y	Y	Y					8
Ministry of Health 2016	Y	Y	Y	N	Y	Y	Y	Y	Y					8
Nguyen-Truong 2017	Y	Y	Y	N	Y	Y	Y	Y	Y					8

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	Score
NSW Government: Cancer Institute	Y	na	na	N	na	na	na	Y	Y					3
Padela 2019	Y	Y	Y	N	Y	N	Y	Y	Y					7
Percac-Lima 2013	Y	Y	Y	Y	na	na	Y	Y	Y					7
Raines Milenkov 2020	Y	Y	Y	N	na	na	Y	Y	Y					6
Rustveld 2013	Y	Y	Y	N	N	Y	Y	Y	Y					7
Temminghoff 2020	Y	Y	Y	Y	na	Y	Y	Y	Y					8
Tu 2014	Y	N	Y	Y	Y	Y	Y	Y	Y					8
Vora 2017	Y	na	na	N	na	na	na	U	U					1
Wang 2014	Y	Y	Y	N	Y	N	Y	Y	Y					7
Wu 2014	Y	Y	Y	N	Y	N	Y	Y	Y					7
Qualitative Studies (maximum score of 10)														
Crawford 2015	Y	Y	Y	Y	Y	N	N	Y	Y	Y				8
Duong 2021	Y	Y	Y	Y	Y	N	N	Y	U	Y				7
Gao 2016	Y	Y	Y	Y	Y	N	N	Y	Y	Y				8
Wang 2018A	Y	Y	Y	Y	Y	Y	N	N	N	Y				7

JBI = Joanna Briggs Institute; Y = Yes; N = No; U = Unclear; na = Not Appliable.

The numbers relate to the question numbering in the JBI critical appraisal tool for the relevant study design.

[1] *Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?*

Appendix 6— Intervention components

Table A6.1 — Components included in tobacco cessation-related interventions

Intervention component	Study	Description	Other component(s)	Brief summary of results
Written information	Chan 2022	Factsheets (English and Arabic)	Visual information; Media campaign; Education sessions	The intervention appeared to change awareness of the harms of waterpipe smoking but not knowledge of services or intention to reduce. Although there were improvements in knowledge of the links of waterpipe smoking to cancer and damage to body, the increase was not statistically significant.
	Cummins 2015	Self-help material[3]	Counselling (ASQ), NRT[4]	The intervention showed modest quit attempts and abstinence rates. Quit attempts were significantly higher in the state-specific trial where NRT was provided to the majority of participants.
	El-Haddad 2020	Information sheets, FAQs, smoking cessation information; suite of factsheets	Education session; Media campaign; Visual information; Written information; Branded merchandise	The intervention improved awareness of the messages regarding the harms of Shisha. The intervention did not appear to change knowledge, attitudes, or intention to reduce/ quit Shisha use.
	Haddad 2013	Counselling, cessation workbooks (5 stages of quitting smoking, information and homework for each stage). Written	Counselling; Telephone follow-up	The intervention predominately reduced tobacco use and led to cessation in some cases

Intervention component	Study	Description	Other component(s)	Brief summary of results
		guide about the study stages (five stage Arabic smoking cessation)		
	Haddad 2017	Self-help workbook – addressed 4 stages (contemplation, preparation, action, maintenance). Contained homework.	NRT, counselling	The intervention appeared to assist cessation, reduce the number of cigarettes used per day and per week, and reduce daily smoking prevalence.
	Macnamara 2019	Posters, information flyers, links to the Quitline and iCanQuit websites	Media campaign; Other (Competition)	The intervention did not show much improvement in cessation.
	Peterson 2018	16 graphic threat messages were created (images and associated texts: 4 related to current messaging on US cigarette packages; 4 health warnings implemented in other countries; 8 developed by the research team that highlighted health costs to one's family, financial costs incurred by smoking, and stigmatization of smokers in the US). 8 text only messages focussed on quitting (2 directed participants to the Asian-language Quitline; 6 provided specific quitting tips)	Mobile messaging; Visual information	The intervention appeared to improve intention to stop smoking.

Intervention component	Study	Description	Other component(s)	Brief summary of results
	Poureslami 2020	Take-home education materials (pamphlets, booklets)	Counselling; Visual information; Involve family/friend	The intervention appeared to reduce tobacco use (including no use).
	Saw 2018	Information on in-language smoking cessation resources (including the California Smokers' Helpline), education booklet, biochemical feedback (report) of smoke exposure for both smokers and non-smokers at 3 months (results included tailored motivation messages)	Education sessions; Branded merchandise; Telephone follow-up (moderate intensity group); Involve family member	Overall, the intervention increased knowledge, reduced tobacco use and increased cessation.
	Tat 2015	A brochure (English, Vietnamese, Korean and Chinese) to guide discussions in the education session	Education session	The intervention improved knowledge of support options to help quit smoking.
	Tong 2018[5]	Moderate intensity: a laboratory report of their baseline smoke exposure	Education session; Telephone follow-up (moderate intensity group); Involve family member; Branded merchandise;	Both brief intensity and moderate intensity interventions were effective at reducing tobacco use and increasing quit rates. [5]
	Tsoh 2015	Flipchart used during education sessions.	Family involvement, education	The intervention appeared to improve abstinence rates, knowledge, use of quitting

Intervention component	Study	Description	Other component(s)	Brief summary of results
			session, telephone follow-up;	resources, self-efficacy to quit, and intention to quit.
	Zhao 2019	Health information, quitting tips, information about ASQ	Visual information (one intervention arm only); Mobile messaging	Overall, the intervention resulted in reduced expired air CO levels (i.e., changed behaviour), and improved attitudes towards quitting. There did not appear any significant differences in smoking behaviour across the intervention conditions employed. The use of graphics plus text health messages was more effective at increasing positive quitting attitudes than text message only.
	Zhou 2015	Posters, newsletters, fact sheets	Education sessions; Visual information Media campaign; Other (Audio information)	The intervention showed significant reductions in smoking prevalence over the 5-year timeframe.
Education sessions	Chan 2022	Community Worker - information sessions	Visual information; Written information; Media campaign	The intervention appeared to change awareness of the harms of waterpipe smoking but not knowledge of services or intention to reduce. Although there were improvements in knowledge of the links of waterpipe smoking to cancer and damage to body, the increase was not statistically significant.

Intervention component	Study	Description	Other component(s)	Brief summary of results
	Chang 2013	Group session	Counselling; Other (Acupuncture)[2]	Some support for intervention to increase quit rates. Effectiveness of intervention in reducing use unclear (results compared to NRT only group).
	El-Haddad 2020	Community Workers - information sessions; online training module	Media campaign; Visual information; Written information; Branded merchandise	The intervention improved awareness of the messages regarding the harms of Shisha. The intervention did not appear to change knowledge, attitudes, or intention to reduce/ quit Shisha use.
	Hua 2015	Part of the 12-week smoking cessation support group -education and advice regarding quitting, and information about the Chinese Quitline	Media campaign; NRT; Other (Quit support group; Peer experience)	The intervention improved tobacco cessation or resulted in a reduction in use.
	Saw 2018	Brief intensity cessation classes, Moderate intensity: cessation classes, plus two group education sessions in pairs facilitated by a health educator	Written information; Branded merchandise; Telephone follow-up (moderate intensity group); Involve family member	Overall, the intervention increased knowledge, reduced tobacco use and increased cessation.
	Tat 2015	In person explanation of the risks of first- and second-hand tobacco exposure, how to access the California Smokers' Helpline.	Written information	The intervention improved knowledge of support options to help quit smoking.

Intervention component	Study	Description	Other component(s)	Brief summary of results
	Tong 2018[5]	Moderate intensity: 2 group sessions, Brief intensity - 1 group session on tobacco cessation resources.	Written information (moderate intensity group); Telephone follow-up (moderate intensity group); Involve family member; Branded merchandise;	Both brief intensity and moderate intensity interventions were effective at reducing tobacco use and increasing quit rates. [5]
	Tsoh 2015	Provided information regarding quit resources (ASQ, NRT, physician assistance)	Family involvement, written information; telephone follow-up;	The intervention appeared to improve abstinence rates, knowledge, use of quitting resources, self-efficacy to quit, and intention to quit.
	Unknown	Community Worker - training module. Research to practice online forum		The intervention appeared to improve knowledge and confidence to assist Community Workers to talk to clients about Shisha. Many Community Workers had applied their learnings from the intervention in conversations with clients. (Note: Although other components were included in the intervention, only the learning module was assessed in this study).
	Zhou 2015	Classes, seminars, health-focussed field trips, workshops	Written information; Visual information;	The intervention showed significant reductions in

Intervention component	Study	Description	Other component(s)	Brief summary of results
			Media campaign; Other (Audio information)	smoking prevalence over the 5-year timeframe.
Visual information	Chan 2022	Videos, memes, graphics (English and Arabic)	Visual information; Written information; Media campaign; Education sessions	The intervention appeared to change awareness of the harms of waterpipe smoking but not knowledge of services or intention to reduce. Although there were improvements in knowledge of the links of waterpipe smoking to cancer and damage to body, the increase was not statistically significant.
	El-Haddad 2020	Videos for multiple platforms.	Education session; Media campaign; Visual information; Written information; Branded merchandise	The intervention improved awareness of the messages regarding the harms of Shisha. The intervention did not appear to change knowledge, attitudes, or intention to reduce/ quit Shisha use.
	Peterson 2018	16 graphic threat messages were created (images and associated texts: 4 related to current messaging on US cigarette packages; 4 health warnings implemented in other countries; 8 developed by the research team that highlighted health costs to one's family, financial costs incurred by smoking, and stigmatization of smokers in the US).	Mobile messaging; Written information	The intervention appeared to improve intention to stop smoking.

Intervention component	Study	Description	Other component(s)	Brief summary of results
	Poureslami 2020	Take-home education materials (DVD)	Counselling; Written information; involve family/friend	The intervention appeared to reduce tobacco use (including no use).
	Zhao 2019	Graphic images (one intervention arm only)	Written information; Mobile messaging	Overall, the intervention resulted in reduced expired air CO levels (i.e., changed behaviour), and improved attitudes towards quitting. There did not appear any significant differences in smoking behaviour across the intervention conditions employed. The use of graphics plus text health messages was more effective at increasing positive quitting attitudes than text message only.
	Zhou 2015	Visual material for tv.	Education sessions; Written material information; Media campaign; Other (Audio information)	The intervention showed significant reductions in smoking prevalence over the 5-year timeframe.
Counselling	Chang 2013	Individual, in person counselling sessions	Education sessions; Other (Acupuncture) [2]	Some support for intervention to increase quit rates. Effectiveness of intervention in reducing use unclear (results compared to NRT only group).
	Chen 2021	Asian Speaking Quitline	NRT[1]	The intervention showed improvements in quit rate. Increase was significantly higher in those who used NRT.

Intervention component	Study	Description	Other component(s)	Brief summary of results
	Cummins 2015	Asian Speaking Quitline	Written material[3]; NRT[4]	The intervention showed modest quit attempts and abstinence rates. Quit attempts were significantly higher in the state-specific trial where NRT was provided to the majority of participants.
	Haddad 2013	6 group counselling sessions (50 min, bi-monthly).	Written information; Telephone follow-up	The intervention predominately reduced tobacco use and led to cessation in some cases
	Haddad 2017	Telephone counselling – 4 x 30-minute sessions in Arabic.	NRT, Written information	The intervention appeared to assist cessation, reduce the number of cigarettes used per day and per week, and reduce daily smoking prevalence.
	Poureslami 2020	4x 60 minute in-person counselling sessions which could be attended by a family or friend for social support.	Written information; Visual information; Involve family/friend	The intervention appeared to reduce tobacco use (including no use).
Media campaign	Chan 2022	Campaign video, a large collection of social media content (video clips, memes graphics) advertised through campaign's website and social media accounts (Facebook, Instagram and YouTube). Local media coverage (English and Arabic speaking media; TV, radio and online).	Education sessions; Visual information; Written information	The intervention appeared to change awareness of the harms of waterpipe smoking but not knowledge of services or intention to reduce. Although there were improvements in knowledge of the links of waterpipe smoking to cancer and damage to body, the increase was not statistically significant.
	El-Haddad 2020	Videos, social media clips, advertisements (appeared	Education session; Visual	The intervention improved awareness of the messages

Intervention component	Study	Description	Other component(s)	Brief summary of results
		on multiple media and social media platforms (Facebook, Instagram, SBS Arabic SBS World News, ABC; Shisha No Thanks website, iCanQuit website). Social media accounts (Facebook, Instagram, YouTube); radio ads	information; Written information; Branded merchandise	regarding the harms of Shisha. The intervention did not appear to change knowledge, attitudes, or intention to reduce/ quit Shisha use.
	Hua 2015	'Your quit journey' media campaign (newspaper and radio - prompt audience to call the Chinese Quitline). An ex-smoker from a participating restaurant was a spokesperson and shared their quit journey	Education session; NRT; Other (Quit support group; Peer experience)	The intervention improved tobacco cessation or resulted in a reduction in use.
	Macnamara 2019	The Quit and Win competition was promoted through media messages ('quit buddy')	Written information; Other (Competition)	The intervention did not show much improvement in cessation.
	Zhou 2015	Visual and audio material: tv and radio	Education sessions; Written information; Visual information; Other (Audio information)	The intervention showed significant reductions in smoking prevalence over the 5-year timeframe.
Involve family member / friend	Poureslami 2020	Family / friend could attend counselling sessions for social support.	Counselling; written information; visual information	The intervention appeared to reduce tobacco use (including no use).
	Saw 2018	Non-smoker family members attends education	Written information;	Overall, the intervention increased knowledge, reduced

Intervention component	Study	Description	Other component(s)	Brief summary of results
		sessions and receives report on their second-hand smoke exposure.	Education sessions; Branded merchandise; Telephone follow-up (moderate intensity group)	tobacco use and increased cessation.
	Tong 2018[5]	Non-smoker family members attends education sessions and receives report on their second-hand smoke exposure.	Education session; Written information (moderate intensity group); Telephone follow -up (moderate intensity group); Branded merchandise;	Both brief intensity and moderate intensity interventions were effective at reducing tobacco use and increasing quit rates. [5]
	Tsoh 2015	One family member supports smoker and attends education sessions	Written information; education session; telephone follow-up;	The intervention appeared to improve abstinence rates, knowledge, use of quitting resources, self-efficacy to quit, and intention to quit.
NRT	Chen 2021	Offered to National trial[1]	Counselling (ASQ)	The intervention showed improvements in quit rate. Increase was significantly higher in those who used NRT.
	Cummins 2015	Offered to state-specific trial[4]	Counselling (ASQ), Written material[3]	The intervention showed modest quit attempts and abstinence rates. Quit

Intervention component	Study	Description	Other component(s)	Brief summary of results
				attempts were significantly higher in the state-specific trial where NRT was provided to the majority of participants.
	Haddad 2017	NRT given at baseline. NRT provided free of charge for 8 weeks if requested (two weeks supply at a time)	Written information; counselling	The intervention appeared to assist cessation, reduce the number of cigarettes used per day and per week, and reduce daily smoking prevalence.
	Hua 2015	Free NRT	Education session; Media campaign; Other (Quit support group; Peer experience)	The intervention improved tobacco cessation or resulted in a reduction in use.
Telephone follow-up	Haddad 2013	Booster/follow-up phone calls - during weeks 10, 11 and 12.	Counselling; Written information	The intervention predominately reduced tobacco use and led to cessation in some cases
	Saw 2018	Moderate intensity -Three follow-up personal calls (without family member).	Written information; Education sessions; Branded merchandise; Involve family member	Overall, the intervention increased knowledge, reduced tobacco use and increased cessation.
	Tong 2018[5]	Moderate intensity -3 follow up calls over 6 months.	Education session; Written information (moderate intensity group); Telephone follow-up	Both brief intensity and moderate intensity interventions were effective at reducing tobacco use and increasing quit rates. [5]

Intervention component	Study	Description	Other component(s)	Brief summary of results
			(moderate intensity group); Branded merchandise;	
	Tsoh 2015	Phoned smoker (family member not included)	Written information; education session; Involve family member;	The intervention appeared to improve abstinence rates, knowledge, use of quitting resources, self-efficacy to quit, and intention to quit.
Branded merchandise	El-Haddad 2020	Promotional merchandise (banners, cubes, phone holders, reusable coffee cups, t-shirts, tote bags)	Education session; Media campaign; Visual information; Written information	The intervention improved awareness of the messages regarding the harms of Shisha. The intervention did not appear to change knowledge, attitudes, or intention to reduce/ quit Shisha use.
	Saw 2018	Magnet with a no-smoking graphic	Written information; Education sessions; Telephone follow-up (moderate intensity group); Involve family member	Overall, the intervention increased knowledge, reduced tobacco use and increased cessation.
	Tong 2018[5]	Magnet with scheduling information	Education session; Written information (moderate intensity group); Telephone	Both brief intensity and moderate intensity interventions were effective at reducing tobacco use and increasing quit rates. [5]

Intervention component	Study	Description	Other component(s)	Brief summary of results
			follow-up (moderate intensity group); Involve family member	
Mobile messaging	Peterson 2018	An mHealth tobacco cessation intervention using MMS (graphic) mobile phone technology. 16 graphic threat messages and 8 text only messages.	Written information; Visual information	The intervention appeared to improve intention to stop smoking.
	Zhao 2019	30 messages (in pairs, separated by two minutes) were sent over 4 weeks Health-related messages were either graphic plus text or text-only. Quit-related messages were either about an Asian-language Quitline or culturally tailored tips for quitting	Written information; Visual information (one intervention arm only)	Overall, the intervention resulted in reduced expired air CO levels (i.e., changed behaviour), and improved attitudes towards quitting. There did not appear any significant differences in smoking behaviour across the intervention conditions employed. The use of graphics plus text health messages was more effective at increasing positive quitting attitudes than text message only.
Other	Chang 2013	**Acupuncture** Up to six needles and last at least 15 minutes.	Counselling, Education sessions [2]	Some support for intervention to increase quit rates. Effectiveness of intervention in reducing use unclear (results compared to NRT only group, high loss to follow-up).
	Hua 2015	**Quit support group** 12-week smoking cessation support group held at their restaurant. Weekly cessation support (education and advice	Education session; Media campaign; NRT, Other (Peer experience)	The intervention improved tobacco cessation or resulted in a reduction in use.

Intervention component	Study	Description	Other component(s)	Brief summary of results
		regarding quitting). Each week, participants carbon monoxide levels were assessed via a Co2 smokerlyzer		
	Hua 2015	**Peer experience** As part of the 'Your quit journey' media campaign, an ex-smoker from a participating restaurant was a spokesperson and shared their quit journey.	Education session; Media campaign; NRT, Other (Quit support group)	The intervention improved tobacco cessation or resulted in a reduction in use.
	Macnamara 2019	**Competition** A Quit and Win competition - offered a prize (3-night spa holiday to Moree in NSW) to the value of $500 to the winner who could demonstrate successful quitting after 3 months.	Media campaign; Written information	The intervention did not show much improvement in cessation.
	Zhou 2015	**Audio information** CDs, audiotapes	Education sessions; Written material; Media campaign	The intervention showed significant reductions in smoking prevalence over the 5-year timeframe.

[1] NRT offered in national wave, not efficacy trial which may explain some differences in results.

[2] NRT offered in one intervention arm however results could be reported with its exclusion

[3] Participants could choose to receive self-help material. No results are reported on this aspect and it's unclear whether the counselling data also includes participants who chose to receive self-help material.

[4] NRT offered to most participants in state-specific trial, not efficacy trial. Colorado, Hawaii, New York, Texas received free NRT. Only Los Angeles County, Medicaid (California) King County (Washington) eligible for free NRT.

[5] NRT not included as an intervention component, however able to use if sourced themselves.

Table A6.2 — Quality assessment summary (level of evidence and critical appraisal) by intervention component: Q1 studies

Intervention component	NHRMC level of evidence			Joanna Briggs Institute Critical Appraisal Tools – Range of scores		
	2	3	4	Randomized Controlled Trial (score out of 13)	Quasi-experimental (score out of 9)	Qualitative Research (score out of 10)
Written information	1	3	10	2 (8-9)	10 (1-8)	2 (8)
Education session	1	2	7	1 (9)	8 (3-8)	1 (8)
Visual information	-	3	3	1 (8)	4 (4-8)	1 (8)
Counselling	-	2	4	-	6 (6-8)	-
Media Campaign	-	1	4	-	5 (1-7)	-
Involving family member or friend	1	1	2	1 (9)	2 (8)	1 (8)
Nicotine replacement therapy	-	-	4	-	4 (4-8)	-
Telephone follow-up	1	-	3	1 (9)	2 (7-8)	1 (8)
Branded merchandise	1	-	2	1 (9)	1 (4)	1 (8)
Mobile messaging	-	1	1	1 (8)	1 (7)	-
Acupuncture	-	1	-	-	1 (6)	-
Quit support group	-	-	1	-	1 (4)	-
Peer experience	-	-	1	-	1 (4)	-
Competition	-	-	1	-	1 (1)	-
Audio information	-	1	-	-	1 (7)	-

Table A6.3 — Components included in breast/bowel/cervical cancer screening-related interventions

Intervention component	Study	Description of intervention component	Other components	Brief summary of results
Education sessions	Andersson 2021	Online community sessions (recoded and available online)	Written information, Media campaign	The intervention did not increase participation in screening by Arabic speaking participants, (however COVID-19 may have impacted results).
	Berger 2017	In-person workshop with peer leader and peer health worker, preferred language	Peer / community health worker; Peer experience; Written information	The intervention was effective in increasing knowledge in areas where knowledge was low to start with.
	Crawford 2015	Women's health sessions on healthy lifestyles, prevention and screening services.	Peer health worker; Patient navigation	The intervention appeared to improve screening knowledge and screening rates in targeted CALD groups.
	Cullerton 2016	Separate education programs were provided for each of the 3 cancers. Information addressed the specific cancer, their symptoms and their risk factors.	Visual information	The intervention appeared to improve knowledge of bowel and breast cancer but not cervical cancer knowledge and a small change in attitude towards screening. There was an increase in intention to screen for bowel cancer.
	Duong 2021	For family health advocate: attended 1 x 1hr in person training session so they could initiate group chat	Other (Family group chat); Visual information; Written information	The intervention appeared to increase participants knowledge of screening and increased intention to screen. Action was taken to make appointments for screening. No measure of

		Family members: provided with information via family group chat.		whether screening rates increased
	Fang 2019	Intervention: A 1x 2hr educational program. Content included cervical cancer education that addressed risks, beliefs and benefits about screening, addressed social and cultural norms regarding screening Control: A 1x 2hr educational program delivered by a bilingual community health educator on general health topics, including information about cancer screening.	Written information	The intervention arm showed improvements in knowledge and perceived benefit of screening scores, and a reduction in perceived barriers to screening. For the same factors, there were no changes for the control group. Both groups showed improvements in self-efficacy with the increase significantly higher in the intervention group. The intervention did not alter participants perceived susceptibility or severity.
	Fernández-Esquer 2020	Brief in person education sessions to encourage women to participate in breast and cervical cancer screening.	Written information; Patient navigation	Patient navigation increased pap-test screening adherence in non-compliant women compared to non-compliant women who did not choose to receive patient navigation. Acceptance of patient navigation did not significantly increase mammogram screening above those who did not use patient navigation.
	Fung 2018	Intervention: 1 x 1hr cancer screening and prevention education seminar to address knowledge of common cancers in Chinese populations, risk factors, screenings, self-efficacy, intention		The intervention showed only slight improvements in some cancer knowledge areas above control. The intervention showed improvements in pap test and colon screening, but these were not significantly

		Control: 1 x 1hr cancer research in the community seminar (to education on and increase willingness to donate biospecimens for cancer research)		higher than control at post-test.
	Gauss 2013	Home-based education session in preferred language.	Peer / community health worker; Other (Kin Keeper)	The intervention reduced Arab participants' perception of the pap test being painful immediately following the intervention (post-test 1), however pain perception increased to similar levels by post-test 2 but still significantly lower than baseline for Arab participants. Almost all participants reported a goal of continuing yearly pap tests immediately following the intervention.
	Gondek 2015	1 x 60–90-minute breast health education session (breast cancer statistics, risk factors, myths surrounding breast cancer, signs and symptoms of breast cancer, and methods of breast cancer early detection. Delivered in multiple languages using interpreters. A breast cancer survivor gave their story. A female physician was present to answer questions.	Peer experience; Patient navigation; Opportunity to be screened; Anatomical models	The intervention improved participants knowledge of breast cancer and screening, and improved screening rates, particularly among those never previously screened
	Kim 2018	PowerPoint presentation on CRC screening, CRC prevalence, myths, risk factors, types of CRC screening	Opportunity to be screened; Written information; Other (Racial / ethnicity and	Regardless of racial/ethnicity and language of the presentation, the education session changed beliefs regarding CRC screening. Participants who attended

			language concordance)	presentations delivered by a person of Chinese ethnicity and in English were significantly more likely to return a completed FOBT.
	Kwok 2016	1 x 35–40-minute PowerPoint presentation (basic biomedical messages, addressed cultural misconceptions and myths about breast and cervical cancer, information about how/where to attend mammography and pap smear testing). Chinese language.	Written information; Visual information; Other (Branded merchandise)	The intervention increased knowledge, beliefs and awareness of breast and cervical cancer and associated screening. Intention to screen increased.
	Lee 2018	Education program to improve knowledge and attitude on breast cancer. 2-hour session per week for 4 weeks. Week 1: Introduce Ontario Healthcare System, Week 2: The link between eating behaviours and breast cancer, Week 3: Breast cancer prevention and screening, and Week 4: Focus group discussion.		The intervention significantly improved participants' breast cancer screening knowledge and breast cancer screening attitude
	Lee-Lin 2013	Group teaching tailored to the participants' stage of readiness	Counselling	The intervention resulted in an increase in mammogram screening among those who were not compliant with mammogram screening. Limited improvements in knowledge/beliefs.
	Lee-Lin 2015A	Intervention: In-person group education session, accompanied by PowerPoint slides, which covered topics:	Counselling (intervention); Written information;	Both the intervention and control increased mammogram screening completion at 12 months.

		breast cancer incidence and risk factors; particular risks for breast cancer in Asian women; the process of getting a mammogram; the benefits of mammogram; and how to overcome general and cultural barriers to obtaining mammograms.	Patient navigation (intervention)	Mammography completion was significantly higher in the intervention than control at 3, 6 and 12 months.
	Lee-Lin 2015B	Intervention: - in-person group education session, accompanied by PowerPoint slides, which covered topics: breast cancer incidence and risk factors; particular risks for breast cancer in Asian women; the process of getting a mammogram; the benefits of mammogram; and how to overcome general and cultural barriers to obtaining mammograms.	Counselling (intervention); Written information; Patient navigation (intervention)	The intervention improved knowledge and beliefs regarding breast cancer
	Li 2020	A 1-hr Family Health History (FHH)- based CRC prevention workshop. The workshop consisted of four modules (what is CRC, how to collect FHH of CRC, how to assess CRC risk based on FHH, how to prevent CRC)	Consultation; Patient navigation; Opportunity to be screened	The intervention showed some improvements in the expected direction regarding attitudes, self-efficacy and intention. However, the significance was not detected in all instances, possibly due to small sample size (pilot study).
	Lofti-Jam 2021	Community education sessions provided information about the importance of bowel screening, along with instructions and support on how to complete the bowel kit when it arrived in the mail.	Written information; Opportunity to be screened	The intervention improved knowledge, confidence to complete the FOBT kit, and intention to complete the kit.

	Ma 2015	Intervention Small group education sessions run by community health educators. Topics included female body, cervical cancer, risks of cervical cancer nationally and in the Vietnamese population, and procedures for Pap testing).	Peer / community health worker (intervention); Visual information (intervention); Written information; Patient navigation (intervention)	The intervention showed improvements in cervical cancer screening and intention to screen
	Nguyen 2014	Intervention: 2.5hr education session	Written information	The intervention increased participants knowledge, improved attitudes and screening behaviour regarding breast cancer. The intervention did not improve attitude and screening behaviour regarding pap tests.
	Nguyen 2015	Intervention: Lay health workers (LHWs) led 2 education sessions about CRC screening. Control: LHWs led 2 sessions on healthy eating and physical activity	Peer / community health worker	The intervention showed improvements in CRC screening above the control. Both the intervention and control showed improvements in knowledge, however knowledge among the intervention group increased significantly more than the control group.
	Nguyen 2017	Intervention: Lay health worker taught participants about CRC.	Peer / community health worker (intervention); Education session (intervention); Written information	Both the intervention and group increased their bowel cancer knowledge and screening behaviour. However, improvements were significantly higher in the intervention group.

	Nguyen-Truong 2017	1 x 1hr interactive and educational group session with a Microsoft PowerPoint presentation. Topics included rates of breast cancer incidence and mortality, breast cancer risk factors, how to obtain a mammogram, perceived benefits of obtaining a mammogram, and how to overcome perceived barriers (common and cultural) to obtaining a mammogram.	Written information; Visual information; Peer experience; Counselling; Patient navigation	The intervention improved knowledge, and change attitudes and beliefs about mammography. The intervention improved mammogram screening adherence
	NSW Government: Cancer Institute	Multiple community and health worker targeted training sessions held	Written information	The intervention appeared to result in high understanding of bowel screening, confidence to perform the test, and intention to screen.
	Padela 2019	2 x half day group workshops with guest lectures (female peers, religious scholars, health experts), facilitated group discussions on breast cancer screening guidelines and procedures, religious dimensions of health, and access to healthcare	Peer experience; Peer / community health worker	The intervention increased knowledge and had some improvements in mammography screening.
	Percac-Lima 2013	Patient navigators: attended 6 x 2-hour breast care training sessions. Patient navigators (from each population) learned how to educate patients about breast health, explore patient's barriers to screening, provide logistical and emotional support to overcome those barriers, and how to help women obtain	Patient navigation; Written information	The intervention increased mammogram screening in refugee populations and to levels similar to those seen among community peers.

		screening and diagnostic mammograms when needed. Patients: Navigators educated patients about preventive care and the importance of routine mammograms.		
	Raines Milenkov 2020	Community health workers: each CHW received training in cancer prevention, causes and treatment, preventive screenings, overall health and wellness, health care systems, case management procedures, data collection, medical interpretation and related topics as part of their initial training and throughout the duration of the community project. Refugees: Community health workers provided refugees with cancer prevention education. Education sessions were conducted in 30 different languages and occurred in both individual and group settings. Each education was adapted for the targeted community with regards to language, culture, learning styles and literacy levels.	Peer / community health worker; Visual information; Opportunity to be screened; Patient navigation; Anatomical models	The intervention increased rates of cervical, breast and colon cancer screening, however the increase was not significant for colon cancer. High screening completion occurred among those who had never previously been screened for cervical, breast or colon cancer.
	Temminghoff 2020	Community education sessions/workshops or one-on-one support programs. Education sessions were delivered in-language or translated from English and focused on understanding bowel cancer and the importance of screening,	Media campaign; Opportunity to be screened; Branded merchandise	The intervention resulted in an increase in returned FOBT kits, improved knowledge and awareness of bowel cancer and screening methods

		instructions on how to complete the bowel kit and providing culturally appropriate resources to support people to navigate the bowel cancer screening pathway.		
	Vora 2017	Patient navigators: participated in training sessions on CRC screening and patient navigation. They were provided with ongoing support and continuing education opportunities to improve their skills and knowledge through webinars, meetings and conference calls. Patients: Patient navigators contacted non-compliant patients and provided education. Barriers to screening were discussed. Patients were educated on different methods of CRC screening. Patients were able to communicate their questions and express their concerns about CRC screening without experiencing language barriers.	Patient navigation	The intervention was effective at increasing screening rates.
	Wang 2014	Traditional Chinese medicine (TCM) providers completed a 4-hour training. Patients: TCM providers conduct a 90-minute small-group education session in either Cantonese or Mandarin with participants	Written material; Other (Traditional Chinese medicine providers)	The intervention improved knowledge of colorectal cancer and associated screening, and increased screening adherence.

		using a flipchart developed for the study		
	Wang 2018B	Intervention: Physicians: 2 x 45 minute in-office training sessions (with 2 simulated patients experiences) to enhance physicians' efficacy in communicating CRC screening with patents.	Written information	The intervention improved knowledge and showed small albeit non-significant increases in CRC screening rates. Physician communication impacted intervention efficacy regarding screening.
	Wu 2014	1 x 1hr group educational presentation on: 1. early detection of breast cancer and promotion of breast health; 2. benefits and access to breast cancer screening (i.e., clinical breast exam and mammogram); 3. effective strategies for reducing barriers and increasing self-efficacy for adherence; 4. skills for performing breast self-examination; and 5. availability of clinical breast exams and information on MI-BCCCP. Participants were encouraged to share their personal cancer and screening experiences		The intervention appeared to improve knowledge and screening intention.
Written information	Beauchamp 2020	Intervention 1: translated reminder letters Control 1: English-language letters only (usual care)	Telephone contact (Intervention 2)	The translated reminder letters had similar effect to screening bookings as the non-translated reminder letters. The telephone intervention significantly increased booked screening appointments compared to usual care (no phone call).

	Berger 2017	Written handouts and Komen shower card and stickers, preferred language	Education sessions; Peer / community health worker; Peer experience;	The intervention was effective in increasing knowledge in areas where knowledge was low to start with.
	Brooks 2015	Print and online material (translated into Arabic, Mandarin, Cantonese, Italian, Greek, Croatian, Macedonian and Vietnamese). Supported by public relations materials including brochures, posters and flyers.	Media campaign	The intervention increased awareness of the program to CALD communities however not to the same level as non-CALD women. Whether the intervention changed knowledge and behaviour regarding screening was unable to be measured due to small sample size of CALD participants.
	Duong 2021	For family health advocate to use in education session: Message template Weblinks, infographics	Education session, Other (Family group chat); Visual information	The intervention appeared to increase participants knowledge of screening and increased intention to screen. Action was taken to make appointments for screening. No measure of whether screening rates increased
	Fang 2019	Intervention: Written information on cervical cancer screening, and where to obtain low-cost or free screening Control: Written information on health promotion material	Education session	The intervention arm showed improvements in knowledge and perceived benefit of screening scores, and a reduction in perceived barriers to screening. For the same factors, there were no changes for the control group. Both groups showed improvements in self-efficacy with the increase significantly higher in the intervention group. The intervention did not alter

				participants perceived susceptibility or severity.
	Fernández-Esquer 2020	cancer screening brochures (beliefs, knowledge and barriers to cancer and associated screening)	Education sessions; Patient navigation	Patient navigation increased pap-test screening adherence in non-compliant women compared to non-compliant women who did not choose to receive patient navigation. Acceptance of patient navigation did not significantly increase mammogram screening above those who did not use patient navigation.
	Gao 2016	Gardasil vaccine education flyers		The intervention improved participants knowledge of cervical cancer, HPV infection and vaccination.
	Kim 2018	PowerPoint presentation slides to support education session.	Education session; Opportunity to be screened; Other (Racial / ethnicity and language concordance);	Regardless of racial/ethnicity and language of the presentation, the education session changed beliefs regarding CRC screening. Participants who attended presentations delivered by a person of Chinese ethnicity and in English were significantly more likely to return a completed FOBT.
	Kwok 2016	PowerPoint presentation slides. Take-home information kit (information booklet, calendar containing reminders about dates of mammography and pap smear testing), contact	Education session; Written information; Visual information; Other	The intervention increased knowledge, beliefs and awareness of breast and cervical cancer and associated screening. Intention to screen increased.

		details for appointment bookings. Chinese language.	(Branded merchandise)	
	Lee 2014	Control: Mailed out a Vietnamese-language print brochure developed by the American Cancer Society to promote CRC screening	Peer experience (intervention); Visual information (intervention)	CRC screening behaviour, knowledge and attitudes increased in both groups (DVD vs printed material) but there were no significant differences across groups. Both methods were therefore effective.
	Lee-Lin 2015A	Intervention: PowerPoint presentation slides to support education session Control: Chinese version of the two-sided colour mammogram informational brochure developed by the National Cancer Institute	Education session (intervention); Counselling (intervention); Patient navigation (intervention)	Both the intervention and control increased mammogram screening completion at 12 months. Mammography completion was significantly higher in the intervention than control at 3, 6 and 12 months.
	Lee-Lin 2015B	Intervention: PowerPoint presentation slides to support education session Control: Chinese version of the two-sided colour mammogram informational brochure developed by the National Cancer Institute	Education session (intervention); Counselling (intervention); Patient navigation (intervention)	The intervention improved knowledge and beliefs regarding breast cancer
	Lofti-Jam 2021	Written in-language resources were provided as were referrals for further support if needed.	Education session; Opportunity to be screened	The intervention improved knowledge, confidence to complete the FOBT kit, and intention to complete the kit.
	Ma 2015	Intervention Multimedia cervical cancer education materials in Vietnamese language.	Peer / community health worker (intervention); Education	The intervention showed improvements in cervical cancer screening and intention to screen

		Control: Included information from federal agencies and community-based organizations (translated into Vietnamese). The information covered general health and mentioned routine health exam such as an annual general health exam (but did not specifically mention a Pap test).	session (intervention); Visual information (intervention); Patient navigation (intervention)	
	Ministry of Health 2016	1. Pre-invitation: letter sent 4 weeks before the invitation to advise people about the program, they would receive a formal invitation and iFOBT kit, detailed booklet (to make an informed decision). 2. Invitation: sent 4 weeks after the pre-invitation letter. Contained a leaflet (to help make informed decision), the iFOBT, consent form, freepost envelope to send completed iFOBT. 3. Reminder letter: sent to those who had not returned the iFOBT within 4 weeks to encourage completion.	Telephone (or in person) reminder; Opportunity to be screened	The intervention improved completion of iFOBT screening among Asian participants. Completion rates however still significantly lower than other population groups.
	Nguyen 2014	Intervention: Flip charts, take home booklets on breast and cervical cancer and information of where Pap testing is offered to non-insured/low-income populations. (Material available in English and Vietnamese) Control: printed materials (available in English and Vietnamese) on health-	Education session (intervention)	The intervention increased participants knowledge, improved attitudes and screening behaviour regarding breast cancer. The intervention did not improve attitude and screening behaviour regarding pap tests.

		related information that was not related to breast or cervical cancer topics (e.g., good nutrition, high blood pressure, smoking, and exercise.)		
	Nguyen 2017	Intervention and control: in-language brochure.	Peer / community health worker (intervention); Education session (intervention);	Both the intervention and group increased their bowel cancer knowledge and screening behaviour. However, improvements were significantly higher in the intervention group.
	Nguyen-Truong 2017	Microsoft PowerPoint presentation slides to support the education session.	Education session; Visual information; Peer experience; Counselling; Patient navigation	The intervention improved knowledge, and change attitudes and beliefs about mammography. The intervention improved mammogram screening adherence
	NSW Government: Cancer Institute	Multilingual 'Bowel Health and Screening' Flipchart and Facilitator Manual resources (9 languages),	Education session	The intervention appeared to result in high understanding of bowel screening, confidence to perform the test, and intention to screen.
	Percac-Lima 2013	Patients received information about the program and 29 educational handouts via mail	Education session; Patient navigation	The intervention increased mammogram screening in refugee populations and to levels similar to those seen among community peers.
	Sun 2015	Intervention: 2-page brochure about breast cancer screening with messages framed as a 'gain' (e.g., "By having mammograms, you have the opportunity to find breast cancer that is too		The intervention improved mammogram screening in those eligible for screening. Screening was higher among those who received a framed message that matched their decisional balance (e.g., gain

		small for you or your doctor to feel"). Comparator: 2-page brochure about breast cancer screening with messages framed as a 'loss' (e.g., "By not having mammograms, you may lose the opportunity to find breast cancer that is too small for you or your doctor to feel")		message and positive decisional balance).
	Tu 2014	Intervention: information pamphlet) (translated into Vietnamese) Control: educational materials (translated into Vietnamese).	Visual information (intervention); Other (Patient contact (intervention))	The intervention resulted in a small increase in colorectal cancer screening adherence but not significantly higher than the control. The intervention significantly improved screening adherence in non-compliant patients.
	Wang 2014	Flipchart - included culturally appropriate information on healthy lifestyle, colorectal cancer, and CRC screening from a perspective that integrates TCM and Western medicine. Supported the education session.	Education session; Other (Traditional medicine providers)	The intervention improved knowledge of colorectal cancer and associated screening, and increased screening adherence.
	Wang 2018B	Intervention: Printed communication guide, desk-style flip chart summarizing key points from the guide, FOBT instruction sheet for patients, local free/low-cost screening information sheet. Control: local free/low-cost screening information sheet.	Education session (intervention);	The intervention improved knowledge and showed small albeit non-significant increases in CRC screening rates. Physician communication impacted intervention efficacy regarding screening.

	Wu 2015	Control: A mammography pamphlet on breast health developed by the National Cancer Institute. The NCI brochure explains the procedure of mammography and the importance of early detection through mammography.	Counselling (intervention)	Overall, the intervention arm did not show improvements in screening above the control arm (however both showed improvements). When age is considered, the intervention significantly improved screening adherence among those aged over 65+ years.
Patient navigation	Crawford 2015	Booked screening appointments, arranging transport, giving reminder calls, going with them to screening and follow-up, and also helped them access other health care and community services unrelated to screening	Peer / community health worker; Education sessions	Intervention appeared to improve screening knowledge and screening rates in targeted CALD groups.
	Fernández-Esquer 2020	Provided to non-adherent (age appropriate) participants	Written information; Education sessions.	Patient navigation increased pap-test screening adherence in non-compliant women compared to non-compliant women who did not choose to receive patient navigation. Acceptance of patient navigation did not significantly increase mammogram screening above those who did not use patient navigation.
	Gondek 2015	Age-appropriate (age 40 years or older) non-compliant women were contacted by phone after the program and offered one-on-one navigation assistance in completing breast cancer screening (e.g., financial	Education session; Peer experience; Opportunity to be screened; Anatomical models	The intervention improved participants knowledge of breast cancer and screening, and improved screening rates, particularly among those never previously screened

		assistance with CBEs and mammograms).		
	Lee-Lin 2015A	Intervention: if needed (e.g., set up the appointment, provided a translator to attend service, paid the cost if person uninsured)	Education session (intervention); Counselling (intervention); Written information	Both the intervention and control increased mammogram screening completion at 12 months. Mammography completion was significantly higher in the intervention than control at 3, 6 and 12 months.
	Lee-Lin 2015B	Intervention: if needed (e.g., set up the appointment, provided a translator to attend service, paid the cost if person uninsured)	Education session (intervention); Counselling (intervention); Written information	The intervention improved knowledge and beliefs regarding breast cancer
	Li 2020	(If needed), including health insurance enrolment	Education session; Counselling; Opportunity to be screened	The intervention showed some improvements in the expected direction regarding attitudes, self-efficacy and intention. However, the significance was not detected in all instances, possibly due to small sample size (pilot study).
	Ma 2015	Intervention Community health educators provide patient navigation (e.g., language, appointment scheduling and transportation assistance); referral to Pap-test sites; and six-month screening reminders.	Peer / community health worker (intervention); Education session (intervention); Visual information (intervention); Written information;	The intervention showed improvements in cervical cancer screening and intention to screen

	Nguyen-Truong 2017	Assistance to overcome barriers: e.g., arrange appointment for them if language an issue	Education session; Written information; Visual information; Peer experience; Counselling;	The intervention improved knowledge, and change attitudes and beliefs about mammography. The intervention improved mammogram screening adherence
	Percac-Lima 2013	Tailoring their interventions to each individual patient's needs, the patient navigators helped to schedule appointments, make reminder calls, arrange transportation, resolve insurance issues and even accompany patients to their appointments if they were afraid or felt they were unable to complete the mammogram appointment on their own.	Education session; Written information	The intervention increased mammogram screening in refugee populations and to levels similar to those seen among community peers.
	Raines Milenkov 2020	Community health workers assisted participants with health insurance applications, scheduling appointments, arranging for transportation to and from cancer screening sites, coordinating interpretation services, and helping navigate screen positives to diagnostic screenings for follow-up and treatment.	Education session; Peer / community health worker; visual information; Opportunity to be screened; Anatomical models	The intervention increased rates of cervical, breast and colon cancer screening, however the increase was not significant for colon cancer. High screening completion occurred among those who had never previously been screened for cervical, breast or colon cancer.
	Vora 2017	Assisting patients through the continuum of care, from initiation of screening to completion of follow-up e.g., assist with making an appointment, accompanied patients to colonoscopy	Education session	The intervention was effective at increasing screening rates.

		appointments and provided interpretation during registration at the front desk as needed		
Visual information	Cullerton 2016	pictorial images to support education sessions	Education sessions;	The intervention appeared to improve knowledge of bowel and breast cancer but not cervical cancer knowledge and a small change in attitude towards screening. There was an increase in intention to screen for bowel cancer.
	Duong 2021	Infographics, Videos	Education session; Other (Family group chat); Written information	The intervention appeared to increase participants knowledge of screening and increased intention to screen. Action was taken to make appointments for screening. No measure of whether screening rates increased
	Kwok 2016	PowerPoint presentation slides enabled information in graphic format.	Education session; Written information; Other (Branded merchandise)	The intervention increased knowledge, beliefs and awareness of breast and cervical cancer and associated screening. Intention to screen increased.
	Lee 2014	Intervention: Mailed out a 20-minute educational video (DVD) in Vietnamese on bowel screening that covered three content areas: (1) general CRC information, including anatomy, risk factors, screening options, screening guidelines, importance of early detection; (2) step-by-step video demonstration of a	Peer experience (Intervention); Written information (control)	CRC screening behaviour, knowledge and attitudes increased in both groups (DVD vs printed material) but there were no significant differences across groups. Both methods were therefore effective.

		colonoscopy; (3) narratives from the Vietnamese community describing screening experience or CRC survivorship stories		
	Ma 2015	Intervention Visual aids to support education session included pictures of Vietnamese women and doctors. Multimedia cervical cancer education materials in Vietnamese language; client-physician communication via videotaping.	Peer / community health worker (intervention); Education session (intervention); Written information; Patient navigation (intervention)	The intervention showed improvements in cervical cancer screening and intention to screen
	Nguyen-Truong 2017	The PowerPoint material included graphics	Education session; Written information; Peer experience; Counselling; Patient navigation	The intervention improved knowledge, and change attitudes and beliefs about mammography. The intervention improved mammogram screening adherence
	Raines Milenkov 2020	Community health workers: Videos were all used in training. Refugees: Education tools including videos.	Education session; Peer / community health worker; Written information; Visual information; Opportunity to be screened; Patient navigation; Anatomical models	The intervention increased rates of cervical, breast and colon cancer screening, however the increase was not significant for colon cancer. High screening completion occurred among those who had never previously been screened for cervical, breast or colon cancer.

	Tu 2014	Intervention: provided with an informative DVD	Visual information (intervention); Written information; Other (Patient contact) (intervention);	The intervention resulted in a small increase in colorectal cancer screening adherence but not significantly higher than the control. The intervention significantly improved screening adherence in non-compliant patients.
	Wang 2018A	Set of 5 different comics about CRC screening were developed using values common to Asian communities such as importance of extended families and enjoyment of comics. The comics were used to generate discussions about CRC screening.		The intervention appeared to motivate viewers to undertake FIT.
Peer / community health worker	Berger 2017	Peer health worker	Education sessions; Peer experience; Written information	The workshop was effective in increasing knowledge in areas where knowledge was low to start with.
	Crawford 2015	Peer health educators used social networks to promote outreach	Education sessions; Patient navigation	Intervention appeared to improve screening knowledge and screening rates in targeted CALD groups.
	Gauss 2013	Community health worker engages with kin-keeper family.	Education session; Other (Kin Keeper)	The intervention reduced Arab participants' perception of the pap test being painful immediately following the intervention (post-test 1), however pain perception increased to similar levels by post-test 2 but still significantly lower than baseline for Arab participants. Almost all

				participants reported a goal of continuing yearly pap tests immediately following the intervention.
	Ma 2015	Intervention Community health educators run education session, provide patient navigation, and provided six-month screening reminders	Education session (intervention); Visual information (intervention); Written information; Patient navigation (intervention)	The intervention showed improvements in cervical cancer screening and intention to screen
	Nguyen 2015	Lay health workers delivered education session	Education session	The intervention showed improvements in CRC screening above the control. Both the intervention and control showed improvements in knowledge, however knowledge among the intervention group increased significantly more than the control group.
	Nguyen 2017	Intervention: Lay health worker provided education to participants	Education session (intervention); Written information	Both the intervention and group increased their bowel cancer knowledge and screening behaviour. However, improvements were significantly higher in the intervention group.
	Padela 2019	Guest lecture at the education session included health experts	Education session; Peer experience	The intervention increased knowledge and had some improvements in mammography screening.

	Raines Milenkov 2020	Provided the training, navigated patients.	Education session; visual information; Opportunity to be screened; Patient navigation; Anatomical models	The intervention increased rates of cervical, breast and colon cancer screening, however the increase was not significant for colon cancer. High screening completion occurred among those who had never previously been screened for cervical, breast or colon cancer.
	Rustveld 2013	Each troupe was led by a community health worker specifically trained to be a FT facilitator.	Other (Forum theatre)	The intervention showed improvements in knowledge regarding cervical and colon cancer, and showed an increase in cervical and colon cancer screening intention.
Opportunity to be screened	Gondek 2015	Age-appropriate (age 40 years or older) non-compliant women were invited to use a mobile mammography unit. Use of the mobile unit allowed arrangement of mammograms for women who lacked transportation. On-site interpreters at the mobile van were provided to aid the patient in understanding the procedure and obtaining informed consent.	Education session; Peer experience; Patient navigation; Anatomical models	The intervention improved participants knowledge of breast cancer and screening, and improved screening rates, particularly among those never previously screened
	Kim 2018	Offered a free FOBT test to take home.	Education sessions; Written information; Other (Racial / ethnicity and language concordance);	Regardless of racial/ethnicity and language of the presentation, the education session changed beliefs regarding CRC screening. Participants who attended presentations delivered by a person of Chinese ethnicity and in English

			were significantly more likely to return a completed FOBT.
Li 2020	Received free FOBT screening.	Education session; Counselling; Patient navigation.	The intervention showed some improvements in the expected direction regarding attitudes, self-efficacy and intention. However, the significance was not detected in all instances, possibly due to small sample size (pilot study).
Lofti-Jam 2021	Bowel kit delivered via the mail	Education session; Written information	The intervention improved knowledge, confidence to complete the FOBT kit, and intention to complete the kit.
Ministry of Health 2016	Receive iFOBT kit and freepost envelope to return completed kit	Telephone reminder; Written information	The intervention improved completion of iFOBT screening among Asian participants. Completion rates however still significantly lower than other population groups.
Raines Milenkov 2020	Those eligible were given opportunity to participate in breast, cervical, and/or colon cancer screening	Education session; Peer / community health worker; Visual information; Patient navigation; Anatomical models	The intervention increased rates of cervical, breast and colon cancer screening, however the increase was not significant for colon cancer. High screening completion occurred among those who had never previously been screened for cervical, breast or colon cancer.
Temminghoff 2020	Bowel kit delivered via the mail	Education session; Media campaign;	The intervention resulted in an increase in returned FOBT kits, improved knowledge and awareness

			Branded merchandise	of bowel cancer and screening methods
Counselling	Lee-Lin 2013	Individual telephone counselling sessions within 10 days of education session	Education sessions;	The intervention resulted in an increase in mammogram screening among those who were not compliant with mammogram screening. Limited improvements in knowledge/beliefs.
	Lee-Lin 2015A	Within 10 days, individual telephone counselling follow-up session occurred - to help participants overcome barriers relating to cost, fear/concern over the procedure, transportation, language, child care, and health care access	Education session (intervention); Patient navigation (intervention); Written information	Both the intervention and control increased mammogram screening completion at 12 months. Mammography completion was significantly higher in the intervention than control at 3, 6 and 12 months.
	Lee-Lin 2015B	Within 10 days, individual telephone counselling follow-up session occurred - to help participants overcome barriers relating to cost, fear/concern over the procedure, transportation, language, child care, and health care access	Education session (intervention); Patient navigation (intervention); Written information	The intervention improved knowledge and beliefs regarding breast cancer
	Li 2020	Follow-up individualised phone consultation 2 months after the education session.	Education session; Patient navigation; Opportunity to be screened	The intervention showed some improvements in the expected direction regarding attitudes, self-efficacy and intention. However, the significance was not detected in all instances, possibly due to small sample size (pilot study).

	Nguyen-Truong 2017	Individual counselling session 10 days after the education session to identify barriers to mammography and action taken to address (telephone or in person). Most participants received more than one counselling session (1-4, one hour in length).	Education session; Written information; Visual information; Peer experience; Counselling; Patient navigation	The intervention improved knowledge, and change attitudes and beliefs about mammography. The intervention improved mammogram screening adherence
	Wu 2015	Intervention: Individually tailored telephone counselling. Individually tailored interventions deliver messages based on unique characteristics derived from an individual assessment that are unique to that person and are considered personally applicable.	Written information (control)	Overall, the intervention arm did not show improvements in screening above the control arm (however both showed improvements). When age is considered, the intervention significantly improved screening adherence among those aged over 65+ years.
Peer experience	Berger 2017	Tells personal story of breast cancer and their breast-health based experience	Education sessions; Peer / community health worker; Written information	The workshop was effective in increasing knowledge in areas where knowledge was low to start with.
	Gondek 2015	During the education session, a breast cancer survivor gave their story.	Education session; Patient navigation; Opportunity to be screened; Anatomical models	The intervention improved participants knowledge of breast cancer and screening, and improved screening rates, particularly among those never previously screened
	Lee 2014	Intervention: Screening experience or survivorship stories from the Vietnamese	Visual information (intervention); Written	CRC screening behaviour, knowledge and attitudes increased in both groups (DVD vs printed material) but there were no

		community (included in video)	information (control)	significant differences across groups. Both methods were therefore effective.
	Nguyen-Truong 2017	Breast cancer survivor story/testimonial included in the education session.	Education session; Written information; Visual information; Counselling; Patient navigation	The intervention improved knowledge, and changed attitudes and beliefs about mammography. The intervention improved mammogram screening adherence
	Padela 2019	Guest lecture at the education session included female peers	Education session; Peer / community health worker	The intervention increased knowledge and had some improvements in mammography screening.
Media campaigns	Andersson 2021	Community engagement though newspaper and radio ads	Education session	The intervention did not increase participation in screening by Arabic speaking participants, (however COVID-19 may have impacted results).
	Brooks 2015	Radio campaign	Written information	The intervention increased awareness of the program to CALD communities however not to the same level as non-CALD women. Whether the intervention changed knowledge and behaviour regarding screening was unable to be measured due to small sample size of CALD participants.

	Temminghoff 2020	Media strategy to support community education efforts. Media engagement included: radio ads, Facebook ads (Arabic community only), YouTube ads (Arabic community only), newspaper articles, WeChat messages (Mandarin community only).	Education session; Opportunity to be screened; Branded merchandise	The intervention resulted in an increase in returned FOBT kits, improved knowledge and awareness of bowel cancer and screening methods
Telephone reminders	Beauchamp 2020	Intervention 2: Reminder telephone calls in their preferred language	Written information (Intervention 1 and Control 1)	The translated reminder letters had similar effect to screening bookings as the non-translated reminder letters. The telephone intervention significantly increased booked screening appointments compared to usual care (no phone call).
	Ministry of Health 2016	Phone or face-to-face contact: if no test had been received after 4 weeks from the reminder, Māori, Pacific and Asian people were followed up by phone or face-to-face (talked about the BSP, the test kit, and sought to address concerns).	Written information Opportunity to be screened	The intervention improved completion of iFOBT screening among Asian participants. Completion rates however still significantly lower than other population groups.
Anatomical models	Gondek 2015	Interactive breast models were used in the education session so participants could feel the difference between a healthy breast vs benign and malignant tumour.	Education session; Peer experience; Patient navigation; Opportunity to be screened	The intervention improved participants knowledge of breast cancer and screening, and improved screening rates, particularly among those never previously screened

	Raines Milenkov 2020	Community health workers: anatomical models were used in training. Refugees: Education tools included anatomical models.	Education session; Peer / community health worker; Written information; Visual information; Opportunity to be screened; Patient navigation	The intervention increased rates of cervical, breast and colon cancer screening, however the increase was not significant for colon cancer. High screening completion occurred among those who had never previously been screened for cervical, breast or colon cancer.
Branded merchandise	Kwok 2016	Fridge magnet, coffee mug with program logo.	Education session; Written information; Visual information.	The intervention increased knowledge, beliefs and awareness of breast and cervical cancer and associated screening. Intention to screen increased.
	Temminghoff 2020	Playing cards and tote bags	Education session; Media campaign; Opportunity to be screened; Branded merchandise	The intervention resulted in an increase in returned FOBT kits, improved knowledge and awareness of bowel cancer and screening methods
Other	Duong 2021	**Family group chat:** Online, social media group chat led by family health advocate	Education sessions; Written information; Visual information	The intervention appeared to increase participants knowledge of screening and increased intention to screen. Action was taken to make appointments for screening. No measure of whether screening rates increased

	Gauss 2013	**Kin Keeper:** Home-based intervention that includes all adult female family members.	Education session; Peer / community health worker;	The intervention reduced Arab participants' perception of the pap test being painful immediately following the intervention (post-test 1), however pain perception increased to similar levels by post-test 2 but still significantly lower than baseline for Arab participants. Almost all participants reported a goal of continuing yearly pap tests immediately following the intervention.
	Kim 2018	**Racial/ethnicity and language concordance** Three presentation groups where the racial/ethnic and language concordance of the presenter was assessed: 1. Chinese/Chinese 2. Chinese/English 3. White/English	Education sessions; Opportunity to be screened; Written information	Regardless of racial/ethnicity and language of the presentation, the education session changed beliefs regarding CRC screening. Participants who attended presentations delivered by a person of Chinese ethnicity and in English were significantly more likely to return a completed FOBT.
	Rustveld 2013	**Forum Theatre (FT)** continued dialogue and communication between actors and audience members throughout performances. Performances present a core conflict and allow audience members to intervene and propose solutions	Peer / community health worker;	The intervention showed improvements in knowledge regarding cervical and colon cancer, and showed an increase in cervical and colon cancer screening intention.

	Tu 2014	**Patient contact:** Intervention: Medical assistants disseminate educational materials to patients. Control: Usual care: health educators disseminate educational materials (translated into Vietnamese) to patients.	Visual information (intervention); Written information	The intervention resulted in a small increase in colorectal cancer screening adherence but not significantly higher than the control. The intervention significantly improved screening adherence in non-compliant patients.
	Wang 2014	**Traditional medicine providers:** traditional Chinese medicine providers recruited clients and people from their social networks, conduct small-group education sessions.	Education session; Written material	The intervention improved knowledge of colorectal cancer and associated screening, and increased screening adherence.

Table A6.4 — Quality assessment summary (level of evidence and critical appraisal) by intervention component: Q2 studies

Intervention component	**Level of evidence**			**Joanna Briggs Institute Critical Appraisal Tools – Range of scores**		
	2	**3**	**4**	**Randomized Controlled Trial (score out of 13)**	**Quasi-experimental (score out of 9)**	**Qualitative Research (score out of 10)**
Education session	9	4	19	9 (7-12)	21 (1-8)	2 (7-8)
Written information	11	4	10	11 (7-12)	12 (3-8)	2 (7-8)
Patient navigation	3	1	7	3 (7-10)	7 (1-8)	1 (8)
Visual information	2	1	6	2 (7-8)	5 (6-8)	2 (7)
Peer or community health worker	3	-	6	3 (7-11)	5 (6-7)	1 (8)

Intervention component	Level of evidence			Joanna Briggs Institute Critical Appraisal Tools – Range of scores		
Opportunity to be screened	-	1	6	-	7 (3-8)	-
Counselling	3	-	3	3 (8-10)	3 (5-8)	-
Peer experience	1	-	4	1 (8)	4 (7-8)	-
Media campaigns	0	1	2	-	3 (3-8)	-
Telephone reminders	1	-	1	1 (11)	1 (8)	-
Anatomical models	-	-	2	-	2 (6-7)	-
Branded merchandise	-	-	2	-	2 (8)	-
Forum theatre	-	-	1	-	1 (7)	-
Family group chat	-	-	1	-	-	1 (7)
Kin keeper	-	-	1	-	1 (7)	-
Patient contact	-	1	-	-	1 (8)	-
Racal/ethnicity and language concordance	-	1	-	-	1 (8)	-
Traditional medicine providers	-	-	1	-	1 (7)	-

Appendix 7—Cultural considerations

Table A7.1—Cultural considerations addressed in relation to intervention design, resource development, recruitment method, and intervention applied – Q1[1] studies

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed
Chan 2022	Arab	• Co-design • Community partnership • Community engagement	• Arab community events • Website • Social media • Local media	• Unspecified: “respectful towards the community and culturally appropriate” • Cultural association of waterpipe smoking • Language barriers

Chang 2013	Chinese (non-Chinese)		• Chinese local media
			• Community clinics
				• Unspecified:
				  ○ “Culturally tailored”
				  ○ “modified to reflect the racial/ethnic groups health beliefs, norms, values and common cultural experiences”
				• Cultural acceptance of non-traditional services (acupuncture)
				• Language barriers

Chen 2021	Chinese, Vietnamese (Korean)	• Community partnership	• Asian language media	• Stigma associated with counselling (seen as a mental health service) • Language barriers

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed
				• Geographic/access barriers • Culturally tailored counselling protocol (NB: “culturally tailored” = tailored generally to ‘Asian culture’ not specific to Chinese, Vietnamese or Korean)

Cummins 2015	Chinese, Vietnamese (Korean)			• Unspecified:
				  ○ Culturally tailored
				  ○ Tailored to individual’s culture and needs
				• Language barriers
				• Geographic/access barriers
				• Cultural norm/acceptability of smoking in their home country

El-Haddad 2020	Arab	• Co-design
		• Community partnership
		• Community engagement
			• Social media
			• Website
			• ‘Everyday’ people used in videos (opposed to celebrities)
				• Unspecified:
				  ○ ‘Culturally informed and respectful’
				  ○ ‘Culturally appropriate and acceptable’
				• Cultural/social norm/acceptability of waterpipe smoking (Shisha strongly embedded in Arab (Lebanese) culture) (socialisation, relaxation, supported by family)
				• Terminology (used ‘Shisha’ as most broadly accepted term in target group)
				• Language barriers

Haddad 2013	Arab	• Community engagement	• Excluded women due to culture: “Arabic culture discourages	• Islamic and Arabic cultural values • Cultural/social norms of tobacco to show hospitality/maturity • Language barriers

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed
			women from participating in such events” • Islamic Centre	• Religious orientation • Reliance on extended family • Defined gender roles and taboos • Traditional beliefs and practices • Note: Feedback from participants mentioned difficulty of quitting while fasting for Ramadan
Haddad 2017	Arab	• Community engagement	• Mosques, churches, community festivals, Middle Eastern grocery stores	• Cultural/social norms/acceptability of Arab men to use tobacco • Socially marginalized in health care • Arab values and cultural beliefs (male perspective) • Male provider (long working hours prevent participation in cessation classes) • Intense tobacco marketing / use in home country • Stereotypes (stemming from terrorist attacks / geopolitical unrest) • Language barriers • Religious orientation/practice • Reliance on the extended family • Defined gender roles and taboos • Social and family concerns
Hua 2015	Chinese	• Community partnership	• Restaurants • Chinese newspaper, radio	• Language barriers • Note: Some uncomfortable with group settings, prefer telephone for privacy/shame

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed
Macnamara 2019	Chinese	• Community partnership • Community engagement	• Social media • Media advertising • Chinese newspapers • Community events	• Collectivist culture • Language barriers • Note: Quitline answered by English response before interpreter connected – led to hang-ups
NSW Health 2020	various	Various programs: • Co-design • Community engagement • Community partnership	• Social media	• Health literacy • Stigma • Language barriers • Tobacco-connected to cultural practices
Peterson 2018	Chinese	• Community engagement • Community-based participatory research	• Local ethnic newspapers • Grocery stores, churches, cultural events • Social media	• Health literacy • Language barriers • Cultural insensitivities • Stigmatisation of smoking for women, but not men • Socially acceptable to smoke for men • Acculturation • Access barriers • Collectivist culture • Language barriers

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed
Poureslami 2020	Chinese	• Community-based participatory research • Community engagement	• Community organisations serving immigrants • Social media	• Access barriers • Gender cultural norms and practices (stigmatises female smoking, normalises male smoking) • Language barriers • Coping with immigration-related stress • Reduced social support • Traditional Chinese values • Socialisation element of sharing cigarettes (respect) • Help-seeking is stigmatised • Cultural sensitivity/safety
Saw 2018	Chinese	• Community partnership • Community engagement	• Clinic serving high Chinese immigrant population	• Social norms regarding smoking in home country • Community respect for spokespeople • Collectivist cultural • Timing with cultural events (Lunar New Year) • Traditional patriarchal hierarchy • Importance of family harmony and social support • Language barrier • “Saving face”, reducing shame • Cultural norm of in-person meetings to receive health information and build trust

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed

Tat 2015	Chinese, Vietnamese (Korean)	• Community partnership	• Asian grocery stores	• Language barriers
				• Unspecified:
				  ○ "Socio-behavioural cultural insights"
				  ○ "A culturally aligned manner"

Tong 2018	Chinese	• Co-design
		• Community-based participatory research
		• Community partnership
			• Community-based clinics and organisations
			• English as a second language classes
			• Chinese media
				• Collectivist culture
				• Language barriers
				• Unspecified:
				  ○ "Culturally acceptable"
				  ○ Chinese specific smoking behaviour
				• Beliefs about health harms, susceptibility

Tsoh 2015	Chinese, Vietnamese			• Social acceptability of male smoking • Collectivist culture / social network • Language barriers

Unknown	Arab, Chinese, Vietnamese (other CALD)	• Community engagement
		• Community partnership
		• Co-design
			• Social media
			• Arabic community radio stations
			• Existing networks
			• Newsletters
				• Language barriers
				• Unspecified:
				  ○ "Culturally informed and respectful"
				  ○ "Culturally appropriate and acceptable"
				  ○ "Respectful of cultural identities and practices"

Zhao 2019	Chinese (Korean)	• Community engagement	• Social and religious events	• Language barriers • Social and cultural influence/pressure regarding tobacco use

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed
		• Community partnership	• Local ethnic newspapers • Social media	• Gender differences in use • Social acceptability of tobacco use among men • Access barriers • Health literacy • Collectivist culture (importance of family) • Culturally tailored quitting tips (included using sunflower seeds, a popular Asian snack, to fight craving and publicly announcing one's quitting to reduce offers of cigarettes from friends, a common practice in China and Korea). • Use of imageries characteristic of East Asian cultures • Popularity of phones with MMS technology among immigrant populations • 'Threat/risk' to culturally valued constructs (e.g., family) • Use of culturally specific symbolism • Generationally specific cultural norms
Zhou 2015	Vietnamese (Cambodian, other)	• Community partnership • Community engagement	• Local radio/tv • Stores, restaurants, churches, temples, community events	• Social and cultural norm for male smoking • Targeted by tobacco industry in their promotion strategies • Culture in smoking policy context • Culture interacting with other health factors (e.g., education) • Language barriers • Access barriers • Unspecified: ○ "Culturally tailored"

First author, year,	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD specific recruitment method	Cultural considerations addressed
				○ “Non-discriminatory and culturally competent health education”. ○ “Cultural and social factors” ○ “Culturally sensitive interventions ... tailored for minorities and diverse segments of communities” ○ “Recognise cultural influences”

[1] *Question 1: What smoking cessation interventions have been proven effective in reducing or preventing smoking among culturally and linguistically diverse communities?*

Table A7.2— Cultural considerations addressed in relation to intervention design, resource development, recruitment method, and intervention applied – Q2[1] studies

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
Andersson 2021	Arabic (South Asian, all Australians)	• Community engagement	• Radio/tv/newspaper advertising in Arabic • Social media	• Unspecified: "Tailored engagement activities"
Beauchamp 2020	Arabic (Italian)	• Co-design • Community engagement		• Language barriers • Health literacy • "Tailor existing processes to be more culturally appropriate" • "Translation and cultural tailoring of the invitation message"
Berger 2017	Chinese, Vietnamese (Hispanic, Korean, Caucasian, and Native American)	• Community partnership • Community engagement		• Cultural shame, embarrassment or feeling of alienation (not sharing a diagnosis) • Lack of trust in the Western medical system • Balance between personal and cultural beliefs and the Western medical system • Language barriers • Utilised experience and cultural knowledge in training Asian American peer health educators
Brooks 2015	Arabic, Chinese, Vietnamese (all		Mainstream approach: • Newspaper/magazines • Radio	• "In addition to the campaign materials for the general population specific materials for culturally and linguistically diverse (CALD) groups were created" • Language barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
	Australians, Aboriginal and Torres Strait Islander, other CALD)		• Washrooms	• Note: Very little cultural adaptation done in this campaign

Crawford 2015	Arabic, Chinese, Vietnamese (South Asian)	• Community partnership
		• Participatory action research
			• Telephone invite by bilingual speaker	• Language barriers
				• Transport barriers
				• Access barriers
				• Navigation barriers
				• The cultural belief of modesty - preference for female health care provider
				• Female peer health educator:
				  ○ Addressed cultural/language barriers (as from the same culture)
				  ○ Knew about women's sociocultural context, gender-related feelings of apprehension and worry related to screening.
				  ○ Created a bridge between community and health services
				  ○ Their presence provided a culturally safe environment
				• Respect, trust, understanding, confidentiality
				• Focus groups conducted for each distinct cultural community (native language)

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				• Settings where women felt most comfortable: immigrant women's centres, community organizations, libraries • Government perceived to value/care for immigrant women's health (not perceived to be a priority in their origin country) • Preventative health care unfamiliar in native country
Cullerton 2016	Arabic, Vietnamese (Bosnian, South Asian, Samoan and Pacific Island, Sudanese, Spanish-speaking)	• Community partnership • Community engagement	• Multicultural Health Workers – recruited participants through their own networks using a range of recruitment techniques that were culturally appropriate	• Culturally-tailored education program • Culturally-appropriate information • Language barriers • Health literacy • Access barriers • Navigation barriers (transport) • Social support • Cultural and religious practices; embarrassment, stigma and fear • Delivered in culturally sensitive and safe community settings • Cultural sensitivities to screening • Pictorial images relevant to the target community • Gender concerns - All Multicultural Health Workers were female • Men were not excluded from breast and cervical screening sessions • Preventative health care unfamiliar in native country • The fatalistic approach to cancer (held by many CALD members)

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
Duong 2021	Vietnamese	• Co-design	• Family health advocate (FHA) – recruited via email (University database) • FHA - recruited family members	• Social media family group chats - resonate with their family culture, tailor to the family's needs • Language barriers • Access barriers • Trusted source • Cultural grounding - acknowledges the role of culture in health behaviours. • Resonate with how the target audience ascribes meaning, in this case Vietnamese families' own meanings, messages, and identities as it relates to cancer screenings. • A culturally tailored research website • Reframed cancer statistics, tailored to be relevant for Vietnamese families e.g. addressing that feeling healthy does not replace screening • Cultural norms/etiquette – e.g. weekly conversations started by "Bác có khỏe không?" ("Are you healthy?" or "How are you doing?") • Launched during the Vietnamese Lunar New Year (Tết) - cultural cue and conversation starter about being healthy in the new year • Group chat – easier/more comfortable to process the cancer screening messages than face-to-face • Taboo topic of cancer and cancer prevention

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				• Preventive care may not be normative in Vietnamese culture
Fang 2019	Vietnamese	• Community partnership • Community engagement	• Community organisations	• Language barriers • Access barriers • Navigation barriers • Gender concerns (discomfort with screening performed by a stranger/male) • Social norms about screening and preventive health behaviours • Partner uncomfortable with them being screened by a male doctor • Community organisation – venue for program delivery, serve important social function
Fernández-Esquer 2020	Vietnamese	• Community partnership • Community engagement	• Salons (approached during 'off-peak' times)	• A culturally-informed and venue-based (worksite) outreach program • Cultural/work-related barriers • Language barriers • Health literacy • Culturally-based attitudes about sexuality that discourage cancer screening (particularly for single women) • Navigation barriers • Access barriers • Personal needs low priority • Cultural concerns about modesty

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				• Vietnamese outreach team - shared language and cultural values
Fung 2018	Chinese	• Community partnership • Community-based participatory research approach	• Health education outreach events	• Language barriers • Gender - seminar conducted by a female Cantonese-speaking physician
Gao 2016	Chinese		• University group email	• Cervical cancer linked to stigma and sexually transmitted infections • Concern about suitability of western drugs for Asians • Access barriers • Language barriers • HPV vaccines not available in mainland China • Chinese culture - regarding how Chinese women view HPV vaccination (particularly young, unmarried women) • Views regarding sexual infidelity - serious negative psychological effects and breakups of intimate relationships • Culturally appropriate • Chinese international students experienced many types of acculturation related stresses such as academic concerns, language difficulties, lack of social support, poor social integration, difficulties in adjusting to new foods or cultural

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				values, perceived discrimination, homesickness or psychological syndromes while living and studying in the United States • Erroneous belief that the causes of cervical cancer are abortion and miscarriage • Rely heavily on informal sources such as Chinese-based social media platforms and personal social networks for information on sexually transmitted infections • Sexual cultures and behaviours are perceived differently between Chinese international students born in the 1990s and 1980s.
Gauss 2013	Arab (Latinos and Black)	• Community partnership	• Community health workers recruit women from their caseload. The recruited women then recruit their female adult family members.	• Access barriers • Language barriers • Focus on anticipated pain as a barrier to cervical screening • Delivered in participants' home • Muslim women - feel threatened by the American healthcare system's broad screening guidelines because they lack sensitivity towards Islamic values and customs • Female family network
Gondek 2015	Arabic (immigrant /	• Community partnership	• Resettlement site (where English as a	• Access barriers (including transport) • Delivered during ESL classes to minimise barriers to attendance • Language barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
	refugee, various)		second language classes are held) • Community canvasing	• Preventative care perception • Navigation barriers • Cultural beliefs, fear of diagnosis, modesty, and religious concerns • Culturally tailored to the target populations • Gender - Each event, restricted to only female attendees, included a breast cancer survivor as a speaker, and a female physician was also present to answer questions • On-site interpreters at the mobile van - to aid the patient in understanding the procedure and obtaining informed consent • Delivered in community settings • Notes: Study finding: lower uptake among CALD groups may be due to “patriarchal family structure among Muslim and Middle Eastern cultures in which women rely on their husbands or male relatives for decision-making regarding medical care and/or women subordinating their individual health needs to family needs. Additional educational tailoring or program design revisions may be important for addressing the needs, understanding, and cultural values of women emigrating from the Middle East.”
Kim 2018	Chinese	• Community partnership	• Community-based organisation	• Race/ethnicity concordance between patient and providers • Language barriers • Access barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
			(homemaker employees)	• Gender barriers – recruited women only • "Culturally tailored presentation" • Considered "cultural differences" • Health literacy • Likert response scale reduced from 5 to 3 points as older immigrants with low literacy are unfamiliar with • Physicians - respected figure in the Chinese culture (all male)
Kwok 2016	Chinese	• Community engagement	• Chinese organisations (churches, community centres) • Local Chinese newspaper	• "Culturally sensitive and linguistically appropriate" • Culturally "tailored" intervention • Preventative health care low priority in native country • Language barriers • Navigation barriers • Access barriers • Certain culturally based norms, beliefs, and values hamper the uptake of breast/cervical cancer screening e.g. according to Chinese cultural beliefs, negative thinking creates negative outcomes, therefore undergoing mammography increases their chances of developing the disease. Cultural beliefs of "fate" and "destiny" which nothing can avert so screening futile • Commonly held belief ○ breast cancer is a disease specific to Western women and that they are therefore immune to it, and screening is unnecessary

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				○ promiscuity is the cause of cervical cancer, having a Pap smear test implies that a woman has been unfaithful and is therefore to be avoided • Addressed cultural misconceptions and myths about breast and cervical cancer • The message “early detection saves lives” was promoted as being as important as any Chinese traditional beliefs • Delivered in Chinese organizational venues (familiar, easily accessible) • Program run after the Chinese new year - recognized the belief that talking about disease/death before/during the festival seasons will lead to bad luck during the entire year • Pink colour theme = femininity and harmony in Chinese culture • Images of Chinese women and culturally relevant graphics - to convey a feeling of enjoyment and a happy and healthy life • Paying special attention to breast health is not a cultural norm among Chinese women, and they do not find the concept appealing • Fatalistic view of cancer common among Chinese women – presentations acknowledged traditional Chinese preventive health beliefs before emphasizing the importance of early detection

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				• Preventive health orientation is not deeply rooted in the traditional Chinese health paradigm, which focuses on health maintenance rather than disease detection
Lee 2014	Vietnamese	• Community-based participatory research approach • Community partnership • Community engagement	• Vietnamese Social Services of Minnesota's Cancer Program participants were contacted via phone (bilingual) to recruit to present study	• Unspecified: "culturally tailored, linguistically appropriate" • Language barriers
Lee 2018	Chinese			• Culturally appropriate • Language barriers • Transportation barriers • Modesty and embarrassment
Lee-Lin 2013	Chinese	• Community partnership • Community engagement	• Asian community organisations	• Focussed on one CALD group due to their distinct language, culture, and health beliefs • Culturally responsive and culturally acceptable/appropriate • Incorporates cultural beliefs of Chinese American women • "Cultural barriers" • Language barriers • Access barriers • Navigation barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				• Face-to-face: more culturally appropriate (compared to print materials where no opportunity to ask questions/discuss issues) • Culturally relevant/appropriate language, graphics (e.g., pictures of older and younger Chinese American women and Asian landscapes), colours and content, sensitive to cultural issues (embarrassment, non-Western views of health and medicine) • Women from this culture often happy to participate in health education and may have associated the education entirely with the trusted agency • Offered lunch: the presenter ate with participants, able to interact with each other. The social aspect of such gatherings, the offering of food, in a familiar and trusted environment are very attractive to Chinese immigrant women • Reliance on family for assistance • Healthcare providers cannot expect to change someone's culture. Instead, leverage cultural beliefs to optimize intervention effect • Efforts to improve knowledge/awareness, and address beliefs must be culturally grounded in such ways as to give credence to the norm while also confronting the underlying misconception/myth. Can be achieved in the healthcare setting by maintaining awareness that immigrants may think/feel differently, and by asking about such beliefs respectfully

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
Lee-Lin 2015A	Chinese, Vietnamese	• Community partnership • Community engagement	• Asian community organisations	• Consideration of distinct language, culture, and health beliefs across CALD groups • Cultural beliefs related to breast cancer and screening • Social isolation • Access barriers • Navigation • Language barriers • Immigrants more likely to have diverse cultural beliefs about health and health behaviour • Emphasized taking care of oneself now so they can take care of one's family later. The concept of family is important to Chinese immigrant women • Culturally relevant graphics (older/younger Chinese women, Asian landscapes) • Interactions are especially important for educating and clearing up misconceptions among minority populations • Topics included… how to overcome general and cultural barriers to obtaining mammograms • Efforts to improve knowledge/awareness, and address beliefs must be culturally grounded while also confronting the underlying cultural misconceptions/myths. Can be achieved in the health care setting by maintaining awareness that immigrants may think/feel differently, and by asking about such beliefs and answering their misunderstanding respectfully

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
Lee-Lin 2015B	Chinese	• Community partnership • Community engagement	• Asian community organisations	• Cultural barriers to mammography: crisis orientation, modesty, use of Eastern medicine, reliance on others • View themselves as less susceptible to breast cancer than European American women • Immigrants more likely to have diverse cultural beliefs about health and health behaviour • Emphasized caring for self, so one can care for her family later • Culturally relevant graphics (older/younger Chinese women, Asian landscapes), and dialogs between a Chinese grandmother, mother, and daughter • Topics included… how to overcome general and cultural barriers to obtaining mammograms • Access barriers • Navigation barriers • Language barriers • Cultural barriers were the beliefs and myths associated with culture that serve as obstacles to completing a mammogram • Efforts to improve knowledge/awareness, and address beliefs must be culturally grounded while confronting the underlying cultural myths/misconceptions
Li 2020	Chinese	• Community-based participatory research	• Community events • Chinese organisations and churches	• "Culturally and linguistically appropriate" • Language barriers • Access barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
		• Community partnership	• Senior living communities • Chinese nesletters/newspapers • Radio/local tv • Social media • Personal networks	• Navigation barriers • Collectivist culture (emphasizes mutuality, cohesion, and the larger good (e.g., families or communities)) • Note: Web-based platform was abandoned because community partners advised that the Chinese community in the targeted region might have limited access to computers and low computer literacy. Consequently, traditional formats (e.g., face-to-face workshops and personalized phone calls) were adopted
Lofti-Jam 2021	**CANCER TYPE:** Bowel cancer **CALD GROUP (OTHER):** Vietnamese (South Asian (Tamil) and Aboriginal)	• Community partnership • Community engagement	• In-language media outlets (print, radio, social media) • Community organisations	• Language barriers • Referrals for further support if needed
Ma 2015	Vietnamese	• Community-based participatory research	• Community organisations	• Culturally appropriate • Language barriers • Culturally relevant visual aids

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
		• Community partnership • Community engagement		• Sociocultural barriers • Navigation barriers • Access barriers • Cultural images (Vietnamese women and doctors), visual aids and themes appealing to Vietnamese women • Note: Trust, mutual respect, and commitments are foundational elements to engage the community partners in projects

Ministry of Health 2014	Asian (Māori, Pacific, other)		• Local telephone directories (targeting surnames/areas with high CALD population to boost sample)	• Did not make cultural considerations in pilot but discussed considerations for next phase:
				  ○ Laissez faire attitude of what will be will be
				  ○ Particular focus is needed to address concerns about embarrassment, inconvenience, mess and pain
				  ○ Asking people about cancer and screening for cancer is not something they would necessarily expect, be used to and/or be comfortable with discussing over the telephone

Ministry of Health 2016	Asian (Māori, Pacific, other)	• Community partnership	• Posted letters • Community newspapers • Presentations in community settings, churches, workplaces	• Round 2: greater focus on cultural safety • Community awareness raising (CAR) coordinators (Māori, Pacific and Asian people) followed up non-responders by phone or face-to-face • Language barriers • Health literacy

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				• Pre-assessments: checking for cultural, mobility or transport problems, • Appointment letter: included details of culturally appropriate support available • Interpreter organised for the day of the procedure • Screening programme operates in a cultural context that makes sense to participants • Cultural beliefs: faecal taboos, embarrassment. Culturally unacceptable to post completed iFOBT kit so offered option to drop off at a collection centre • Note: community leadership at the governance level is needed to ensure that the design, funding and implementation of the programme are informed by expert cultural and clinical advice, and a real-time cultural lens is applied to monitoring of the results of the programme at the governance level
Nguyen 2014	Vietnamese	• Community-based participatory research approach • Community engagement • Community partnership	• Faith-based sites (Vietnamese church, Buddhist temple)	• Culturally tailored strategies • Material culturally appropriate, valid, easy to understand, respectful • Access barriers • Language barriers • Potential moderating roles of cultural variables on the intervention's effects

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				○ Ethnic identity: awareness and knowledge of one's ethnic membership combined with values and attitudes shared by other members of one's ethnic group ○ Collectivism: view the self as an interdependent being. People are seen within the family structure rather than as independent and autonomous individuals. People are expected to subordinate personal interests to those of the family or collective whole and to fulfil their duties to this larger unit. Because women in such cultures are expected to be primary caretakers of home, children, and husband, cultural values may influence these women's motivation for maintaining health • Suc Khoe La Quan Trong Hon Sac Dep! (Health is Better than Beauty!), a Vietnamese proverb which describes the value placed on one's health • Participants were given a Vietnamese meal before intervention/control condition commenced • Stigmatization of cancer (misperceptions of cause of cervical cancer) • Cultural taboos of strangers touching women's bodies (screening process) • Fatalistic beliefs of cancer diagnoses

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
Nguyen 2015	Vietnamese	• Community-based interventions • Community partnership	• Lay health workers – used existing social networks (same gender)	• Lay health workers (LHWs) –already established relationships, trust, and social/cultural norms • Language barriers • Images of Vietnamese models obtaining CRC screening tests and other images • Access barriers • "Delivered in culturally appropriate way" • Connect directly to the target audience by using their vernacular, colloquial, and idiomatic expressions.

Nguyen 2017	Chinese	• Community-based participatory research approach
		• Community partnership
		• Community engagement
			• Lay Health workers recruited via:
			  ○ Chinese TV, radio, newspapers
			  ○ Community organisations
			• Lay health workers – used existing social networks
				• Language barriers
				• Cultural beliefs.
				• Culturally appropriate graphics with simple text
				• Literacy
				• Collectivist culture
				• Included both never screened and ever screened - to influence screening behaviours of others in their group
				• Access barriers

Nguyen-Truong 2017	Vietnamese	• Community partnership	• Local Asian American community-based organization	• Targeted cultural and health belief messages • Belief - Searching for problems invites them, no need if no symptoms (need a compelling reason to seek medical help)

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
			• Vietnamese community • Community health workers recruited from senior group gatherings, caseload, prior relationships	• Cultural barriers: crisis orientation, modesty, rely on others, use of Eastern/Asian medicine • Graphics that were culturally relevant (e.g., Asian landscapes), multigenerational images of Vietnamese women (e.g., photograph of a conversation among a grandmother, mother, and daughter). Some of the brighter colours, as well as font style and size, were adjusted to increase readability of Vietnamese alpha characters and accent symbols • How to overcome perceived barriers (common and cultural) to obtaining a mammogram • focused on translating language and culturally relevant content • The language and cultural context of Vietnamese American women who immigrated to the United States during the Vietnam War, versus those who immigrated long after the Vietnam War, were considered • Use simple phrasing, which reflects the modern Vietnamese language given the targeted study sample • Language barriers • The teaching sessions took place at an Asian American community-based organization located within walking distance of public transportation routes • Food, as a form of hospitality, was provided during the interactive group teaching • Access/navigation barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
NSW Government: Cancer Institute	Vietnamese (immigrant /refugee)	• Co-design • Community partnership		• Language barriers • Stakeholders - strong understanding of and strong links to the local communities they work in. Provide tailored bowel screening support directly to multicultural communities • Cultural/health literacy level acceptability and usability of the resources
NSW Health 2020	Multiple CALD groups	Various programs: • Co-design • Community engagement	• In-language media outlets (e.g. radio)	• Negotiating different cultures' notions of cancer • Ensure mainstream services meet the needs of people from culturally diverse backgrounds • Language barriers • Health literacy • Leadership in culturally inclusive practices
Padela 2019	Arabic (South Asian)	• Community-based participatory research	• Mosque (worship sessions) and social community events	• Tailored messages to Islamic beliefs and values • Beliefs (fatalistic beliefs, God's control of disease) • Cultural norms (modesty concerns, religious duty to care for one's body) • Mosque-based educational intervention targeting Muslim women • 3R approach to tailored message design: o Reframing—introducing a new way of thinking about the barrier belief that is consonant with obtaining a mammogram,

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				○ Reprioritizing—introducing a new religiously-inflected facilitative belief that coheres with obtaining a mammogram and reinforcing this belief through repetition ○ Reforming—confronting the barrier belief directly by uncovering its logical flaws or highlighting its theological inaccuracies ○ e.g. the fatalistic belief that "It is by Allah's will that I am sick or cured and I can do nothing to change my fate therefore getting a mammogram is of no benefit" was addressed with messages by using reprioritizing and reforming techniques. The reprioritization message highlighted that Muslims have a stewardship responsibility to care for the body and that human actions are judged irrespective of their ultimate outcome. The reforming message highlighted that human actions, such as prayer, can effect one's fate • Ethnically and religiously concordant female peers/religious scholars/health experts were identified to participate in the intervention workshops • Leveraging cultural, religious, and social values towards screening (compared to viewing as barriers)
Percac-Lima 2013	Arabic (Somali,	• Community partnership	• Community health centre patients were	• Access/navigation barriers • Language barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
	Serbo-Croatian (Bosnian))	• Community engagement	sent a letter. Follow-up call (or in-person) by bilingual patient navigators	• Linguistically and culturally tailored • Racial discrimination • Literacy • Embarrassment and fear of cancer diagnosis • Patient navigators - same culture/language background. Sharing similar experiences of war and relocation may help develop trusting relationships and enable patients to overcome fears/perceived barriers to screening • Support during screening
Raines Milenkov 2020	Arabic (Myanmar, Central Africa, Bhutan, Somalia, Other)		• Community health workers were recommended by community leaders • CHW - recruited during religious, community, education events, and in community locations where resettlement agencies initially resettle refugees; used own social networks	• Preventive health practice/services non-existent in native country • Cultural barriers, fear of procedures, history of trauma • Culturally and linguistically appropriate • Culturally appropriate cancer prevention educations • Language barriers • Each education was adapted for the targeted community with regards to language, culture, learning styles and literacy levels. • Navigation barriers • Access barriers • Language barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
			and encouraged 'word of mouth' recruitment • CHW used recruitment methods they felt were effective in their cultures	
Rustveld 2013	Vietnamese (African American, Hispanic)	• Community partnership • Community engagement	• Churches, community centres, schools	• Troupes represented their respective communities • Language barriers • Considers community attitudes/cultural beliefs about cancer screening and prevention • FT performance - shows audience how demographic/psychosocial/cultural/ structural barriers can prevent individuals/families from accessing cancer prevention/treatment services • Content was accurate, up to date, relevant, and culturally and linguistically appropriate • Developed skills for addressing cancer screening barriers/myths, and how to address these issues with community members • FT is informal and entertaining - which may lessen traditional discomfort or embarrassment associated with sharing personal experiences about CRC

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
Sun 2015	Chinese	• Community engagement		• Culturally appropriate message framing • Language barriers • Literacy • Print intervention - many different spoken Chinese dialects share a common written language • Linguistic strategy for enhancing cultural appropriateness – written English and simplified and traditional Chinese and providing resources that could be accessed in Chinese • Culturally specific barriers e.g cultural modesty - may feel embarrassed if a male technician performs the mammography – a picture in the brochure portrayed a female technician for the examination • Perceived low risk for breast cancer – given odds of being diagnosed with breast cancer as women age, increased risk after moving to the USA • Access barriers related to language - information related to Initiatives where staff can speak Chinese and make appointments
Temminghoff 2020	Arabic, Chinese (general population, Greek and	• Co-design • Community partnership • Community engagement	• Arabic and Mandarin communities: social media, radio and newspaper	• Using humorous messaging with Arabic communities • Community champions to discuss sensitive topics • Culturally safe and accessible way • Cultural barriers and stigma around cancer diagnosis • Language barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention

	Italian speakers)			• Navigation barriers
				• Culturally appropriate resources
				• Tailored education sessions provided by trusted community organisations
				• Grants program - Adopting a community led model where community organisations have greater control over the activities they design/deliver boosts the capacity/sense of ownership of the organisation and ensures culturally safe and effective activities are developed
				• Notes:
				  ○ Community bi-lingual educators facilitating the session allowed strong trust and rapport to be built but lacked in-depth knowledge of bowel cancer (reverse true when Cancer Council expert delivered the session)
				  ○ Organisations found entrenched cultural beliefs were a significant barrier when educating people about bowel cancer screening. Attitudinal change is difficult and takes a long time thus highlighting the importance of continued community education and a strong desire to keep partnering with Cancer Council to achieve this

Tu 2014	Vietnamese	• Community partnership	• Community health centre patients	• Traditional health beliefs • Cultural and linguistic congruence between patient and medical assistance

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
				• Only a slight adaptation for the migrant client population
Vora 2017	Chinese	• Community partnership	• Patients – contacted by patient navigators via phone	• Patient navigators –personal and culturally appropriate support, familiar with culturally influenced behaviours and attitudes, build rapport. Cultural sensitivity and linguistic competence helped patients feel more comfortable, relieve any anxieties or fears • Language barriers • Access/navigation barriers • Necessary even when people are asymptomatic.

Wang 2014	Chinese	• Community partnership	• Traditional Chinese medicine providers recruited clients and others from their personal and professional social networks	• Cultural norm of using traditional Chinese medicine
				• Traditional Chinese medicine providers
				  ○ community-based channel to convey culturally appropriate CRC screening information
				  ○ have health message credibility, readily accessible,
				  ○ embody the cultural/linguistic characteristics of the community they serve
				  ○ integrates traditional Chinese medicine and Western medicine
				• Language barriers

Wang 2018A	Chinese, Vietnamese (Filipino,	• Community partnership	• Asian grocery store	• Cultural acceptable - Asian grocery store-based education
				• Both cultural and socioeconomic barriers:
				  ○ Hesitancy to discuss health concerns in a non-native tongue
				  ○ Varying levels of English proficiency / health literacy

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
	Indian, Korean)			○ Anxiety and fear of invasive procedures, ○ Absence of early warning symptoms ○ Focus on the larger needs of the family over one self • Comics: ○ Culturally-aligned, educational, eye-catching images, minimal text ○ Accessible to diverse literacy levels, highly informative ○ Visual images help overcome language barriers and content sensitivity ○ Make complex content more readily understandable. ○ Comic appeal - anticipated to help overcome cultural barriers to screening ○ Humour about colorectal cancer was anticipated to add lightness, while reducing the heaviness of cancer discussions and unesthetic aspects ○ Placed great value on the family unit - the comics relate to the community's everyday family and social life. The central characters of the comics were involved in simple, family-oriented situations ○ Comics stimulate all members of API families to discuss colorectal cancer
Wang 2018B	Chinese	• Community partnership	• Physicians – telephone directories,	• Language barriers

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
			Asian community cancer networks, social events for Chinese physicians, referrals from physicians/community partners • Patients – called (bilingual) or from waiting room	• Traditional practices - only seeing doctors when symptomatic, perceived low risk • Chinese-American primary care physicians - incorporated any culturally relevant messages needed to address patients' concerns about CRC screening. o e.g. traditional Chinese self-care views ("I pay close attention to my diet and exercise regularly. I have no problems with my colon, so I don't need screening.") - respond "You can continue following traditional Chinese principles of healthcare. We should screen to confirm that you have taken good care of yourself. Early stage colon cancer doesn't have any symptoms. When someone feels something is wrong, it often means that a disease has progressed to a later stage and only palliative treatment is available." o Concerned about the cost/burden to family ("The test is too expensive and too troublesome. I cannot add more burden to my children. They are already paying rent for me") – respond "I know we Chinese like to be independent, but your children probably prefer that you are making sure you are healthy. You can think of cancer screening as a way to prevent real trouble for you and your family. I can help you find a low cost test in your area."

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
Wu 2014	Vietnamese (Philippines, India)	• Community partnership	• Local community, ethnic social groups, religious associations • Ethnic grocery stores, restaurants, beauty salons • Local ethnic celebration events • Snow ball recruitment	• Culturally appropriate/sensitive content to address cultural beliefs/barriers • Language barriers • Access barriers • Lower priority for disease prevention in native country. • Culturally sensitive strategies • Tailored to the unique cultural needs of this target population. Understanding minority women's cultural beliefs/values/personal life experiences • Modesty • Emphasized early detection and staying healthy to care for her family • Discussing risks complex. Must consider cultural values/beliefs specific to group

Wu 2015	Chinese	• Community engagement	• Community events and meetings
			• local English as Second Language classes
			• Radio
			• Chinese organisations, community centres, local ethnic grocery
				• Culturally appropriate
				• Individually-tailored counselling - addressed
				  ○ Ethnicity
				  ○ Attitudes
				  ○ Misconceptions about the risks of breast cancer
				  ○ Barriers toward breast cancer screening
				  ○ Cultural beliefs
				  ○ Modesty concerns

First author, year	CALD group(s)	CALD group involvement in intervention design and/or resource development	CALD-specific recruitment method	Cultural considerations addressed in intervention
			stores, restaurants, beauty salons, and churches/temple	○ e.g. if a woman identified her personal barriers as not being comfortable with a male practitioner during mammography screening and doesn't know where to go for a mammogram, specific messages were provided to her addressing facilities staffed by female professionals and the locations of mammography screening facilities. • Language barriers

[1] *Question 2: What screening interventions have proven effective in increasing participation in population cancer screening programs among culturally and linguistically diverse populations?*

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