SaxInstitute

Rapid Evidence Check

Culturally appropriate, accessible healthy eating and active living programs for Aboriginal people

A Rapid Evidence Check produced by the Sax Institute for the NSW Ministry of Health—October 2024

Throughout this document, the term “Aboriginal” is used in preference to “Aboriginal and Torres Strait Islander”, recognising that Aboriginal people are the original inhabitants of NSW.

A Rapid Evidence Check produced by the Sax Institute for the NSW Ministry of Health.
October 2024.

This report was prepared by: Eileen Goldberg, Cathelijne van Kemenade, Alex Schiavuzzi, George Economidis, Eleanor Wilson, Scott Winch, Alice Knight.

October 2024

Enquiries regarding this report may be directed to the:

Director
Evidence and Evaluation Services
Sax Institute
www.saxinstitute.org.au
evidence@saxinstitute.org.au

Suggested Citation:

Eileen Goldberg, Cathelijne van Kemenade, Alex Schiavuzzi, George Economidis, Eleanor Wilson, Scott Winch, Alice Knight. Culturally appropriate, accessible healthy eating and active living programs for Aboriginal people: a Rapid Evidence Check prepared by the Sax Institute (www.saxinstitute.org.au) for the NSW Ministry of Health, 2024. doi:10.57022/yumz9382

Disclaimer:

This Rapid Evidence Check was produced using the Evidence Check methodology in response to specific questions from the commissioning agency.

It is not necessarily a comprehensive review of all literature relating to the topic area. It was current at the time of production (but not necessarily at the time of publication). It is reproduced for general information and third parties rely upon it at their own risk.

Contents

Acronyms 3

Key concepts and definitions 4

Executive summary 6

Background 6
Aim 6
Summary of methods 6
Key findings 7
Conclusion 8

Background 9

Aim & Methods 11

Aim 11
Methods 11

Findings 15

Characteristics of included studies 16
Program implementation characteristics 16
Outcomes reported in intervention studies 23
Program enablers of participation 25
Program barriers to participation 28

Discussion 30

Limitations 31
Conclusion 32

Appendices 33

Appendix 1 — Search strategy 33
Appendix 2 – Search Strings 34
Appendix 3 – Data Extraction Tables 36

References 71

Acronyms

Acronym	Description
ACCHS	Aboriginal Community Controlled Health Service
BMI	Body Mass Index
CPH	Centre for Population Health
ECEC	Early Childhood Education and Care
HEAL	Healthy Eating and Active Living
NHMRC	National Health and Medical Research Council
SR	Systematic Review
SEWB	Social and emotional wellbeing
T2DM	Type 2 diabetes
6MWT	6-minute walk test

Key concepts and definitions

Concept	Definition
Barriers to participation	• Stigma • Trauma • A lack of digital inclusion • Location • Non-Aboriginal staff delivery • Culturally inappropriate design/delivery
Effective	A meaningful and statistically significant change in outcome
Enablers of participation	Processes and outcomes as described by the study authors that have enabled Aboriginal participation in a program, for example: • Program and resources co-designed with community, or community-led • Alignment with holistic views and perspectives of health/ healthy eating (e.g. strengths-based) • Programs can be easily accessed, (e.g. location, online delivery, internet access) • Cultural appropriateness (e.g. available, affordable, appropriate and acceptable)
Healthy eating and active living programs	Refers to planned initiatives that have been implemented and are designed to improve health and wellbeing among individuals, families and communities, and prevent chronic disease through balanced nutrition and regular physical activity. Changes in physical activity and/or dietary habits may be a primary or secondary outcome.
Implementation characteristics	• Mode of delivery: face-to-face (individual, family or other group, community), online, interactive apps/website, virtual, phone • Adoption: the proportion of individuals or communities that took up a particular program • Dose: program duration, number of sessions • Resources and infrastructure: resources: delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training • Maintenance: the extent to which a program becomes a part of routine practice within an organisation or a community setting.

Concept	Definition
Outcome domain	An outcome domain is a classification tool for grouping outcomes that provide information relating to the same, or similar, concept (e.g., nutrition, diet, health eating).

Executive summary

Background

The NSW Healthy Eating and Active Living (HEAL) Strategy 2022-2032 aims to reduce obesity in NSW, Australia over a 10-year period, with key targets focused on reducing childhood obesity by 5% and reversing obesity trends in adults by 2030. A priority focus is on Aboriginal communities, who experience disproportionate health inequities due to various historical, social, and environmental factors.

The Centre for Population Health (CPH) delivers a range of programs aimed at promoting healthy lifestyles, particularly for Aboriginal people, including the Knockout Health Challenge, Aboriginal Go4Fun, and the Get Healthy Service. To enhance the effectiveness of these programs, CPH has undertaken a review, highlighting gaps in understanding the needs of Aboriginal people, especially those who have not engaged with current services.

To better serve Aboriginal communities, CPH seeks to redesign or develop new HEAL prevention initiatives, using evidence-based strategies that are culturally appropriate, effective and enable Aboriginal participation. To this end, the CPH commissioned the Sax Institute to conduct this rapid Evidence Check. Findings will also inform future consumer research efforts if necessary.

Aim

This Rapid Evidence Check aims to identify healthy eating and active living programs that have been shown to be effective at improving Australian Aboriginal people's healthy eating, physical activity, health and social and emotional wellbeing (SEWB) outcomes, describe their implementation characteristics, and program features that enable or are a barrier to Aboriginal people's participation.

Summary of methods

This Rapid Evidence Check was conducted over a 6-week period to provide timely, evidence-based insights for decision-making. The review followed a structured, step-by-step process: conducting a comprehensive search, deduplicating results, screening studies using predetermined eligibility criteria, and providing narrative syntheses of eligible studies. The search focused on peer-reviewed literature published since 2015, and included both intervention studies assessing program effectiveness and non-intervention studies exploring enablers or barriers to participation in health, eating and active living (HEAL) programs for Australian Aboriginal communities. The search excluded grey literature. Using Polyglot Search (an artificial intelligence tool that supports the development of search

strategies and consistency of search terms across academic databases) a search strategy was developed.[1] Five electronic databases were searched: Medline, PsycInfo, CINAHL, Cochrane Library, and Web of Science. Study selection involved independent screening by reviewers with substantial agreement (κ=0.80), and any discrepancies were resolved through discussion. Peer-reviewed intervention studies were included if they had been published since 2015 and described original research from an intervention study (defined as levels II to IV on the National Health and Medical Research Council (NHMRC) levels of evidence hierarchy). Data extraction was categorised based on study type to systematically capture relevant information.

Key findings

The programs primarily aimed to improve health outcomes related to chronic disease prevention, lifestyle or behaviour change, and social and emotional wellbeing. Each program was committed to cultural relevance, typically developed through community-driven approaches that aligned with the specific needs and preferences of Aboriginal populations.[2, 3] Of the 21 included studies, 11 were intervention studies and 10 were non-intervention studies. Of the intervention studies, one study was a randomised controlled trial and the remaining 10 used a pre-post study design. Of the 10 non-intervention studies, seven were qualitative studies that collected data via yarning circles, interviews, focus groups or observations. Two studies used mixed methods, and one was a descriptive study. Five studies reported on outcomes for Aboriginal children or young people. Two were conducted in a regional school setting[2, 3], one in a regional after-school care setting[4], one in a metropolitan community setting[5], and one in a remote early childhood education setting.[6] Sixteen studies reported on outcomes for Aboriginal adults and were delivered in a community setting. Five studies were conducted in both metropolitan and regional areas.[2, 3, 7-13] Two studies were conducted in a metropolitan area[14, 15], two were conducted in a regional area[16, 17], one study was conducted in a rural and regional area[18], and two were conducted in a remote area.[19, 20]

Intervention studies reported on a range of outcomes of interest that related to the outcome domains of physical activity, healthy eating, SEWB and physical health. No studies reported outcomes across all four domains. Two studies reported outcomes across three domains (physical activity, healthy eating, SEWB, and physical activity, healthy eating, physical health respectively).[9, 13] Five studies reported on two domains[2, 10, 15, 17, 21], three studies reported on one domain[5, 6, 16], and one study reported program retention and this has been reported in the section describing the enablers of program participation section and Table 3.[3] Of the intervention studies that reported on the effectiveness of HEAL programs, the *Get Healthy Service*, was found to be the most effective program across multiple outcome domains.[13] This program reported statistically significant improvements in physical activity, healthy eating, and physical health outcomes, including reductions in BMI, weight, and waist circumference. Its combined focus on improving both diet and physical activity outcomes and the fact that, as a telephone-based coaching service, it was widely accessible to a range of participants regardless of their location, are likely important factors which contributed to its effectiveness

Across all programs described in the reviewed studies, the consistent enablers of participation were co-design with Aboriginal communities, cultural safety, flexibility, social connectivity, and accessible practical supports. By far the most important enabler of participation was involvement of Aboriginal community members and elders in the co-design and implementation of a program. Creating culturally

safe environments was also reported in all studies as being an essential enabler of participation, with programs achieving this through provision of cultural competence training for non-Aboriginal staff, embedding traditional values, particularly in relation to taking a holistic and communal approach rather than an individualistic approach, by using group-based delivery modes, and incorporating culturally relevant activities such as yarning circles. Similarly, programs that featured activities or an environment that fostered social connectivity were consistently found to have better engagement and participation.

The key barriers to participation in HEAL programs included limited community and family involvement, cultural misalignment, logistical challenges, and stigma. For programs that target young people, low parental and community engagement was found to impact participation. The most significant barrier to participation was cultural misalignment, specifically, programs that did not prioritise Aboriginal values struggled to engage participants. Similarly, programs that focused on what were perceived to be 'mainstream health outcomes', such as weight loss or a reduction in BMI, or that did not include a holistic approach to health and wellbeing, also experienced barriers to participation. The time commitment involved in programs, and rigid scheduling and routines, were also reported as barriers to participation, as was the shame or stigma of exercising alone and not as part of a group.

Conclusion

This Rapid Evidence Check provides important insights for developing and refining HEAL programs for Aboriginal populations. The findings emphasise that programs co-designed by Aboriginal communities and fostering cultural safety, community involvement and leadership, and practical support mechanisms yield the most effective outcomes in physical activity, healthy eating, social and emotional wellbeing (SEWB), and physical health. By integrating these program features, health programs were found to more accessible and culturally relevant, which in turn, increased participation.

Background

The NSW Healthy Eating and Active Living (HEAL) Strategy 2022-2032 is a 10-year framework with the primary goal of reducing obesity in NSW. The two main overarching targets in the strategy are:

1. Reducing overweight and obesity in children and young people (by 5% by 2030)
2. Stopping the rise and reversing the trend of obesity in adults by 2030.

Aboriginal people are a priority population in the HEAL strategy due to the disproportionate prevalence of chronic diseases in this population.[22] The causes of health inequities are complex and include a range of historical, social, cultural, political, and environmental factors. Key recommendations outlined in the HEAL strategy include strengthening partnerships with Aboriginal community-controlled organisations to enhance lifestyle programs and service delivery and reviewing existing initiatives for and with the Aboriginal community to improve areas of health.

CPH delivers a range of HEAL programs to the NSW population, including those intended for Aboriginal people. These include:

- *Knockout Health Challenge*: A community-led healthy lifestyle program for Aboriginal communities across NSW. The challenge aims to close the gap in Aboriginal health outcomes by targeting holistic health issues as identified by each community, such as social and emotional wellbeing, connection to country and culture, physical activity, and healthy eating.
- *Aboriginal Go4Fun*: A community-based healthy lifestyle program for Aboriginal children aged 7-13 and their families, delivered in partnership with local Aboriginal organisations. It supports behaviour change around healthy eating and physical activity for children and their parents/carers.
- *Get Healthy Service*: An evidence-based, free telephone and online health coaching service available to people over 16 years. Aboriginal health coaches support participants in making sustainable lifestyle changes to improve health outcomes and reduce the risk of chronic disease.
- Other: community-based HEAL initiatives that do not specifically target Aboriginal people, including early childhood programs, programs for older adults, and school programs.

To better serve Aboriginal people and thus increase participation in HEAL programs delivered by NSW Health, CPH is examining its interventions to assess their acceptability and effectiveness for Aboriginal people. A phase of program reflection was undertaken between 2020-2022 to assess the effectiveness and sustainability of current HEAL initiatives in key settings and at key life stages. The suite of HEAL prevention programs for Aboriginal people was reviewed separately from mainstream HEAL programs to allow Aboriginal people to be considered independently as a population, to ensure appropriate Indigenous methodologies and ethics, and to allow for culturally appropriate and safe engagement. The program reflection identified a gap in CPH's understanding of the needs of Aboriginal people across the life course. CPH has also completed extensive research with Aboriginal people who have engaged with its programs. However, there is a gap in its understanding of the needs of Aboriginal people who have not engaged with CPH programs.

To support the redesign of existing NSW HEAL programs and/or to develop new approaches, CPH is interested in the evidence from the literature on what program features have been effective in supporting Aboriginal people's participation in prevention programs.

Aim & Methods

Aim

This Rapid Evidence Check aims to identify healthy eating and active living programs that have been shown to be effective at improving Australian Aboriginal people's healthy eating, physical activity, health and SEWB outcomes, describe their implementation characteristics, and program features that enable or are a barrier to Aboriginal people's participation.

Methods

We developed parameters around the scope of the search for this Rapid Evidence Check in consultation with CPH. We employed a rapid review methodology which is ideal for when there is a need to strike a balance between delivering reliable information in a short timeframe to inform timely decision-making. This rapid review was prepared over a 6-week period. Our step-by-step process is summarised below and expanded on in more detail in the relevant sections of this report.

Step-by-step process:

1. Perform a comprehensive search
2. Deduplicate the search results
3. Screen results using eligibility criteria agreed on *a priori*
4. Provide narrative syntheses from eligible studies based on the available peer-reviewed literature.

To ensure this review included information about the effectiveness of programs and program features that improved participation, the search strategy was designed to capture studies reporting on outcomes (intervention studies) and studies reporting on enablers or barriers to participation (non-intervention studies). Given the rapid nature of this Rapid Evidence Check, grey literature was not included.

Eligibility criteria

Peer-reviewed intervention studies were included if they had been published since 2015, described original research from an intervention study (defined as levels II to IV on the NHMRC evidence hierarchy), and reported on the effectiveness of a HEAL program in regard to healthy eating, physical activity, physical health, or SEWB (see Table 2 for outcomes of interest by domains). Peer-reviewed, non-intervention studies were included if they described enablers or barriers to Aboriginal people's participation in HEAL programs. Furthermore, only studies that described programs designed for Australian Aboriginal people or communities that were delivered in non-clinical or commercial settings

(i.e. a community store) were included. Where more than one study reported on the same program, only the most recent study was included.

Search strategy

Using Polyglot Search (an artificial intelligence tool that supports the development of search strategies and consistency of search terms across academic databases) a search strategy was developed to locate peer-reviewed published studies. We undertook an initial limited search of PubMed to identify relevant articles on this topic. The terminology contained in the titles and abstract of relevant articles and the related subject headings and index terms used to describe the articles were used to develop a full search strategy for PubMed. The search strategy, including all identified keywords and index terms, was then adapted for each included database and/or information source using Polyglot.[1] Appendix 1 provides a detailed overview of the search strategy, and Appendix 2 provides the full search strings for each database. The databases searched included PubMed, MEDLINE (Ovid), PsychInfo (Ovid), CINAHL (EBSCO), Cochrane Library, and Web of Science. These searches were conducted on 14 August 2024.

Study selection and screening

Following the search, we collated and uploaded the studies into Covidence (Cochrane technology platform). Duplicate records were identified and removed. Two out of three reviewers (CK, EW, AS) independently screened the titles and abstracts of all studies for assessment against the eligibility criteria specified above. Then, a proportion (46%, n=39) of the full reports of potentially eligible studies were independently screened by two reviewers (CK, AS) against the eligibility criteria. The reasons for the exclusion of studies that were screened at this stage were recorded. Cohen's Kappa showed substantial agreement between the reviewers with $\kappa = 0.80$. The remaining studies (n=46) were independently screened by one reviewer (CK, EW, or AS) and then independently checked by a second reviewer (AK). Any disagreements arising between the reviewers at each stage of the selection process were resolved through discussion or with an additional reviewer.

Data extraction

Three data extraction tables were developed to support the identification of relevant information from identified studies. Data was extracted according to whether the study was an intervention study or non-intervention study. Table 1 below summarises the information that was prioritised for extraction in these tables. The completed data extraction tables are available in Appendix 3.

Table 1. Information included in the data extraction tables in Appendix 3

Extraction table	Information extracted
Table 3.1: Characteristics of included studies	First author, publication year, study aim, sample and setting, the physical activity, healthy eating, SEWB and health outcomes programs targeted and whether they achieved a statistically significant change in these outcomes.*
Table 3.2: Program implementation characteristics	First author, publication year, program aim/objective, a brief program description including mode of delivery, adoption, duration, no./of sessions (where reported), critical resources, including delivery personnel, incentives, equipment or infrastructure, guidelines or processes and staff training.
Table 3.3: Program features that enable or are barriers to participation	Enablers, including Aboriginal co-design, integration of holistic views or perspectives of health, cultural appropriateness, practical strategies for enhancing accessibility or participation, community involvement, and any barriers to participation.

Given the range of different HEAL outcomes reported in the literature, to guide the extraction process, the authors developed a classification tool (Table 2) that grouped outcomes of interest into four different outcome domains: physical activity, healthy eating, SEWB or physical health. An outcome domain is a classification tool for grouping outcomes that provide information relating to the same, or similar, concept (e.g., nutrition, diet, health eating).

Table 2. Outcomes of interest classified by outcome domain

Outcome domain	Example outcomes of interest
Healthy eating outcomes	• Improved food literacy • Improved diet • Improved nutrition • Improved health eating habits • Reductions in consumption of junk food • Reductions in consumption of sugary drinks
Physical activity outcomes	• Reduced sedentary behaviour • Reduced screen time • Increased physical activity • Increased ability to walk a certain distance

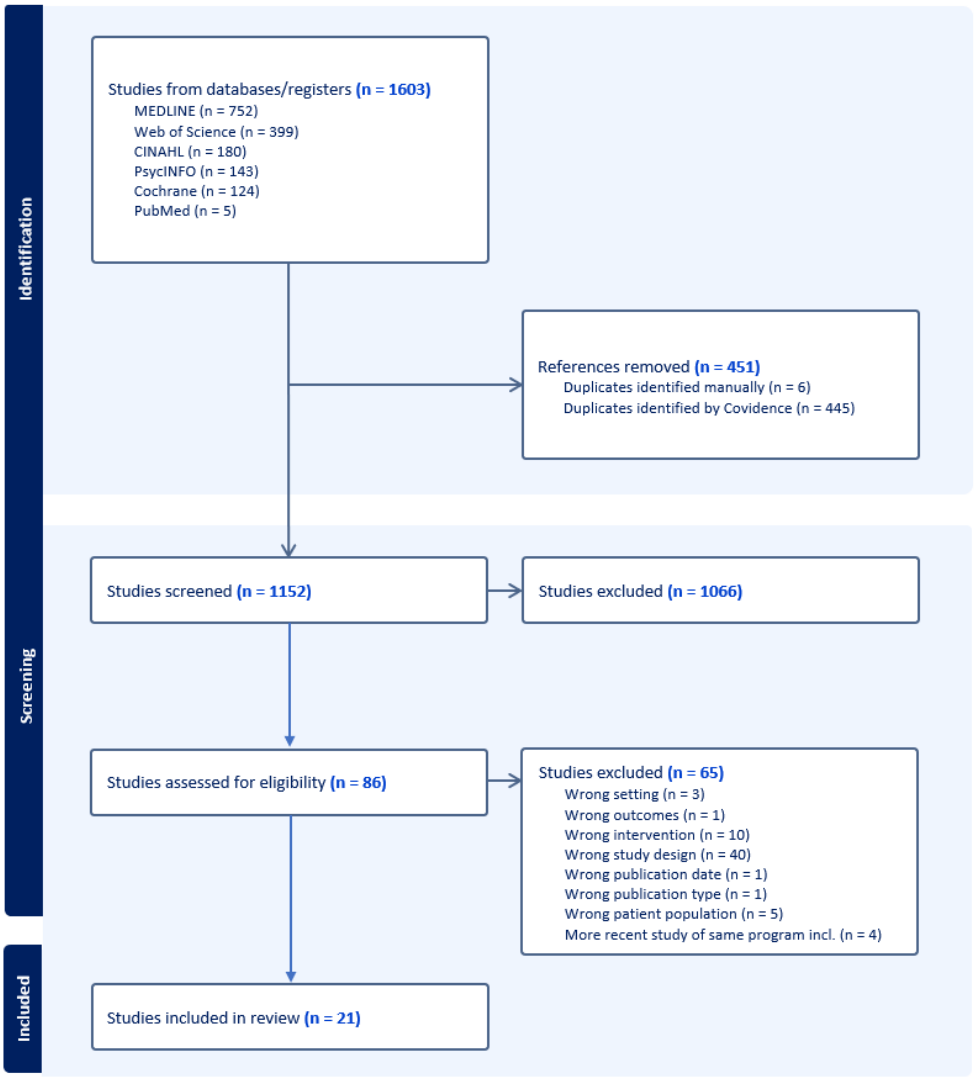
* To avoid over-interpreting poor-quality evidence, only outcomes of intervention studies were extracted, although information about the study design of the non-intervention studies was included in Table 1 for comprehensiveness.

Outcome domain	Example outcomes of interest
Physical health outcomes	• Improved general physical health • Improved disease-specific outcomes (e.g., diabetes) • Reduced alcohol and other drug use • Reduced smoking/vaping • Improved sleep • Reduced stress levels • Improved biomedical markers (e.g. reduced weight, BMI, blood pressure)
Social and Emotional Wellbeing outcomes	SEWB outcomes could include improvements: • Self-esteem and confidence • Mental health • Behavioural and emotional strength • Ability to respond well to adversity • Motivation, increased sense of hope • Positive outlook on life/mindset, can-do attitude • Sense of empowerment • Resilience and coping skills/strategies • Social connectivity • Overall quality of life • Quality of relationships – family, community • Cultural knowledge, awareness and inclusiveness • Connection to culture • Connection to Country • Intergenerational trauma and opportunities for healing • Advocacy for self and others • Role modelling for others

Findings

In total, we identified 1603 studies in the database search. After removing duplicates, we screened the titles and abstracts of 1152 studies. Of these, we screened the full text of 86 studies. Sixty-five were excluded for: having an ineligible study design (n=40); describing an ineligible intervention (n=10); investigating an ineligible patient population (n=5); reporting on the outcomes of a program where there was a more recent study included (n=4); they were delivered in the wrong setting (n=3); being an ineligible publication type (n=1); they investigated ineligible outcomes (n=1), or were published prior to the review period (n=1). 21 studies met the inclusion criteria and were included in this review. The PRISMA flow diagram in Figure 1 summarises the search and selection process.

Figure 1. PRISMA flow diagram



Characteristics of included studies

A summary of the characteristics of the included studies is provided below. This information is further detailed in Appendix 3.

Study design

Of the 21 included studies, 11 were intervention studies and 10 were non-intervention studies. Of the intervention studies, one study was a randomised controlled trial and the remaining 10 used a pre-post study design. Of the 10 non-intervention studies, seven were qualitative studies that collected data via yarning circles, interviews, focus groups or observations. Two studies used mixed methods, and one was a descriptive study.

Sample/setting

Five studies reported on outcomes for Aboriginal children or young people. Two were conducted in a regional school setting[21,23], one in a regional after-school care setting[4], one in a metropolitan community setting[5], and one in a remote early childhood education setting.[6]

Sixteen studies reported on outcomes for Aboriginal adults and were delivered in a community setting. Five studies were conducted in both metropolitan and regional areas.[2, 3, 7-13] Two studies were conducted in a metropolitan area[14, 15]; two studies were conducted in a regional area[16, 17]; one study was conducted in a rural and regional area[18]; and two were conducted in a remote area.[19, 20]

The studies reviewed involved a range of sample sizes and differing target populations. The studies involving children and young people included the *Yantiin Kalabara* program with 293 primary school students[21], the *Strong Culture, Healthy Lifestyles* afterschool program with 111 children[4], the *Learning, Eating, Active Play and Sleep* program with 63 participants[6], and the Crowe study with 40 children.[23] For the studies involving adult populations, the *Ironbark* physical activity program engaged 23 Elders[2, 7], *1 Deadly Step* involved 297 survey respondents.[8] Larger studies included two NSW Health state-wide initiatives, the *Get Healthy Service* with 1,462 Aboriginal participants[13] and the *Knockout Health Challenge* with 3,107 participants.[3] In addition, the *B.strong* program reached 1,131 health staff[9], *FOODcents* which included 875 participants[10] and the *Work It Out* program with 406 participants.[15] Smaller studies included *Maboo Wirriya, Be Healthy* program with 32 participants[19], *Spring into Shape* with 24[11], *HipHop2SToP* with 8 participants[12], and the *DTEXT* pilot with 20 participants.[17]

Program implementation characteristics

The programs described in Appendix 3 had a variety of objectives, including long-term health benefits for Aboriginal and Torres Strait Islander communities by targeting chronic disease prevention, lifestyle improvements, and emotional wellbeing, all grounded in cultural relevance and community-driven approaches.

Mode of delivery: The programs reviewed were delivered through a variety of methods, designed to meet the unique needs of Aboriginal communities. Eleven of the programs were group-based, fostering interaction and community engagement [2-4, 6, 8, 10, 11, 15, 16, 19, 20], while four programs incorporated workshops or educational sessions to enhance learning and participation.[6, 9, 10, 15] Three programs utilised online or virtual delivery platforms to increase accessibility, particularly in remote or isolated areas.[9, 12, 17] One program, the *Get Healthy Service*, provided telephone-based coaching with personalised lifestyle advice through a series of 10 calls[13], while another, the *DTEXT* program, delivered health-promoting text messages to participants.[17]

The mode of delivery varied across programs, tailored to the specific context and audience. For example, school-based programs like *Yantiin Kalabara* were delivered through interactive classroom sessions, ensuring the content was engaging for younger participants.[21] Community-based programs were common, such as the *Knockout Health Challenge*, which included group fitness training, cooking workshops, and monthly weigh-ins to promote healthy lifestyles in a supportive team environment.[24] Similarly, the *Ironbark program* for Aboriginal Elders featured weekly or fortnightly group exercise sessions combined with yarning circles to encourage physical activity and social connection.[2, 7]

Programs targeting health professionals, such as *B.strong,* combined in-person workshops with online modules to build capacity in delivering lifestyle interventions.[9] Digital platforms were also utilised in interventions like *HipHop2SToP*, which used video and online resources to engage youth during the COVID-19 pandemic.[12] Group sessions were a common feature in many programs, incorporating both physical and educational components, as seen in the *Work It Out* program, which aimed to improve chronic disease management through exercise and education[15], and the *Learning, Eating, Active Play and Sleep* program, which targeted early childhood nutrition and physical activity.[6]

These diverse delivery methods reflect the flexible and culturally sensitive approaches necessary to engage Aboriginal communities in health-promoting behaviours. Whether through in-person, digital, or telephone-based interventions, the programs were designed to accommodate the specific challenges and needs of Aboriginal populations, enhancing participation and outcomes.

Adoption: Studies in this review did not consistently report on the adoption of programs, defined as the proportion of individuals or communities that took up a particular program. Babic et al. (2023) reported that the *Yantiin Kalabara* program was successfully implemented in five targeted primary schools in the Hunter Region, NSW Australia.[21] The *1 Deadly Step* chronic disease screening program reached 6% of the target population at nine events. Stanley et al. (2024) reported that in the *Strong Culture, Healthy Lifestyles* project, the co-designed afterschool cultural program was adopted by three Aboriginal communities from the South Coast region of NSW, on Yuin country, who community Elders and leaders identified for the study.[4] At the completion of the program, 92.5% of children who were enrolled in the program were retained. Similarly, a 90% program completion rate was reported in the *DTEXT* study.[17]

Dose: The timeframe and intensity for program delivery varied significantly. The minimum dose reported is a single 2-hour session, as seen in the *FOODcents* program[10] while the maximum dose reported is the *Ironbark* program, which ran weekly or fortnightly over 24 months.[2, 7] Most commonly, programs tended to have a duration of several weeks to a few months, with sessions occurring multiple times per week. For example, the *Work It Out program* involved two sessions per week over 12-week cycles[15], and the sports-based exercise program by Mendham et al. (2015) ran 2-3 times per week for 12 weeks.[16] This pattern of frequent, short-duration sessions over a few months was typical across many of the programs.

Resources and infrastructure: Most programs included structured content such as education modules[3, 21, 25, 26], pamphlets, posters, guidebooks[10, 26, 27], and mass media advertisements.[28-30] Innovative methods like digital tools and apps were also used to deliver educational content.[8, 9] Hands-on learning was emphasised through practical sessions and workshops, including cooking classes[28, 31-33], physical activity sessions supervised by professionals[15], community-led activities like running groups and sports[18, 20], as well as demonstrations and consultations with health professionals.[8, 15] Programs frequently incorporated cultural elements to ensure relevance, engagement and accessibility within Aboriginal communities, integrating traditional practices such as yarning circles and storytelling to create culturally safe spaces for participants.[2, 34, 35] Many programs provided supplementary resources and tools to enhance participation and engagement, such as exercise equipment and sports gear[18, 36, 37], health coaching and motivational support[13, 17, 38], and digital apps to monitor health metrics or deliver educational content.[8] Importantly, programs depended on key personnel, including Aboriginal health workers, dietitians, exercise physiologists, and community leaders.[2-6, 9, 10, 13, 15, 17, 21] Facilitator training, materials, and support were pivotal to ensuring the delivery was aligned with community needs and the sustainability of these programs.[3, 6, 9, 10, 21]

Maintenance: Studies in this review did not consistently report on the maintenance of programs, defined as the extent to which a program becomes a part of routine practice within an organisation or a community setting. Most studies acknowledged the need for longer-term implementation and evaluation, along with sustained community partnerships to ensure sustainability. Peiris et al. (2019) highlighted that the sustainability of the *1 Deadly Step* program was hampered by limited funding and resources, with implementation relying on in-kind support from local organisations.[8] Murtha et al. (2021) suggested that to better promote program sustainability, that appropriate language and innovative technologies catering for varying literacy levels were explored, and that future evaluations ensured they engaged participants in a culturally safe manner and minimised participant burden wherever possibile.[6]

A detailed description of each program can be found in Table 3.

Table 3. Description of programs

Name	Description
1 Deadly Step	The *1 Deadly Step* program aimed to engage Aboriginal communities in the screening and management of chronic diseases.[8] This community-based initiative leveraged sporting platforms, particularly rugby league events, and cultural ambassadors to enhance the prevention and management of chronic diseases. The program involved screening participants for chronic conditions, providing referrals, and ensuring follow-up care. Delivered through community rugby league events, the program ran annually. The study involved 297 survey respondents and 21 interviews. While critical resources were not explicitly described in the study, the success of the program relied on the use of community sports platforms and the involvement of cultural ambassadors to promote health engagement.[8]
B.strong	The *B.strong* program aimed to build the capacity and confidence of health professionals in delivering brief interventions targeting lifestyle factors that

Name	Description
	contribute to chronic illness, such as smoking cessation, nutrition, and physical activity.[9] The program provided training to 1,131 Aboriginal Health Workers and other health professionals, using the stages-of-change model and motivational interviewing techniques. It was delivered through a combination of group workshops, online modules, and written resources. The program included a one-day in-person workshop and six two-hour online modules. Critical resources for the program included workshop venues, an online platform, practitioner and client training materials, and trained personnel to facilitate the sessions.[9]
DTEXT	The intervention conducted by Waller (2023) aimed to enhance health outcomes by facilitating behaviour change through culturally appropriate text messaging interventions.[17] This program, known as *DTEXT*, targeted the improvement of lifestyle behaviours related to nutrition, physical activity, and smoking among Aboriginal individuals who were either at risk of or living with chronic diseases. The delivery mode consisted of individual text messages sent daily during the first three months, followed by a frequency of four messages per week for the subsequent three months. Key resources integral to the implementation of this program included mobile phones and a dedicated text message platform to ensure effective communication and engagement with participants.[17]
FOODcents	The *FOODcents* program aimed to improve nutrition knowledge, boost confidence in purchasing healthy foods, and promote better dietary behaviours among disadvantaged populations, including Aboriginal participants.[10] This flexible nutrition education program sought to increase the intake of fruits, vegetables, and cereals while reducing the consumption of foods high in sugar, fat, and salt and improving food expenditure on a limited budget. Delivered to 875 participants, 169 of whom identified as Aboriginal, by a consortium of three non-government organisations, the program was offered in group settings, either as a single two-hour session on a specific topic or as a series of 2-8 sessions. Critical resources were not described in the study.[10]
Get Healthy Service	The *Get Healthy Service* aimed to reduce chronic disease risk factors by providing culturally tailored lifestyle advice and coaching to Aboriginal adults.[13] This free, telephone-based service supported adults in NSW to make sustained improvements in healthy eating, physical activity, alcohol reduction, and weight management. Participants received coaching calls and resources over a six-month period, with a total of 10 calls. Critical resources for the program included trained coaches and the telephone service infrastructure used to deliver the intervention.[13]
HipHop2SToP	The *HipHop2SToP* program sought to raise awareness about environmental health and skin infections.[12] This intervention involved the creation of a community-led health promotion hip-hop music video. Young people from four

Name	Description
	Dampier Peninsula communities participated in producing the video, which aimed to promote healthy skin and living practices. The program was implemented during the COVID-19 pandemic and was adapted to be delivered through video and online platforms rather than face-to-face. Critical resources for the program included guidance from the Woombooriny Amboon Angarriiya Partnership Initiative Community Navigators, access to digital technology such as Microsoft Teams for 'digital yarning', and virtual after-school workshops led by a local hip-hop artist in Broome, with two additional hip-hop artists from Melbourne joining via Zoom.[12]
Indigenous Marathon Program	The *Indigenous Marathon Program* led by Macniven (2018) aimed to increase opportunities for Aboriginal people to participate in physical activity.[20] This not-for-profit program leveraged running and local role models to promote healthy lifestyles within Indigenous communities. Delivered in a group setting on an annual basis, participants in the program undertook vocational courses in health, fitness, and running coaching. They were also encouraged to establish and coordinate Aboriginal running groups and local fun runs within their communities. Critical resources included access to vocational training and the infrastructure needed to support community-based running activities.[20]
Ironbark	The *Ironbark* physical activity program aimed to improve the physical, mental, and social wellbeing of Aboriginal Elders through culturally appropriate physical activity and community engagement.[2, 7] This community-based program featured exercise sessions and yarning circles, with a focus on fall prevention and enhancing overall health. The program was delivered by Aboriginal health workers and health professionals. Each session included a yarning circle and a one-hour exercise session, with the program running weekly or fortnightly over a 24-month period. Critical resources included exercise spaces, hand-outs, music, participant diaries, audio-recording devices, and trained facilitators, including Aboriginal health workers and project officers.[2, 7]
Knockout Health Challenge	The Knockout Health Challenge aimed to increase fruit and vegetable intake, promote healthy lifestyle practices, and support weight loss among Aboriginal Australians aged 16 years and older.[24] This community-based, state-wide program featured a team weight loss competition that included group fitness training, gym sessions, cooking workshops, weekly team meetings, monthly weigh-ins, and visits to healthcare providers. Participants also had the option to join the NSW Get Healthy Information and Coaching Service, a free telephone service led by qualified health coaches. Ongoing support was provided via social media, educational resources, and financial assistance. The program ran twice a year for 10-12 weeks. Community team leaders, who were responsible for program delivery, received dedicated training to facilitate the activities.[24]

Name	Description
Learning, Eating, Active Play and Sleep	The *Learning, Eating, Active Play and Sleep* program aimed to increase the knowledge and confidence of Early Childhood Education and Care (ECEC) educators regarding nutrition and physical activity, while supporting the implementation of these practices in remote Aboriginal communities.[6] The program was adapted and implemented in Cape York, Queensland, engaging 63 participants from 24 ECEC services. It was delivered through group workshops and online modules, with a one-day in-person workshop followed by two online modules, providing ongoing support to participants. Critical resources included training materials, participant workbooks, catering for the sessions, and facilitators to guide the program delivery.[6]
Maboo Wirriya, Be Healthy	The main objective of the *Maboo Wirriya, Be Healthy* program was to prevent diabetes in young Aboriginal people.[19] The program included an educational component based on the US Diabetes Prevention Program and practical group activities, such as exercise to music. Delivered to 32 participants in a group setting, the program consisted of eight sessions, each lasting 30 minutes, with a combination of education and physical exercise. Critical resources for this initiative include facilitators, participant resources, music for the exercise sessions, and tablet devices to support program deliv[13]ery and engagement.[19]
Physical activity program	Sushames et al. (2017) aimed to explore perceived barriers and enablers to attending a physical activity program.[18] The program aimed to improve health outcomes through a community-tailored intervention for Aboriginal Australians with chronic diseases or those at risk of chronic disease, particularly in rural and regional settings. The program was delivered in a group format, consisting of four 1-hour sessions per week over an eight-week period. Critical resources required for the successful implementation of the program include trained facilitators to guide participants through the physical activities.[18]
Sports-based exercise program	The sports-based exercise program reported in Mendham, 2015 aimed to reduce risk factors for type 2 diabetes in Aboriginal Australian men through a sports-based exercise intervention.[16] The program was delivered in groups, and sports-specific exercise training sessions were facilitated by an Aboriginal Medical Centre and Men's group. 33 participants attended 2-3 sessions per week over a 12-week period. Critical resources for the program included exercise equipment, designated exercise spaces, and trained facilitators to guide the sessions.[16]
Spring into Shape	The *Spring into Shape* program aimed to improve the wellbeing of Aboriginal adults who have or are at risk of chronic conditions such as type 2 diabetes, cardiovascular disease, or mental illnesses like depression and anxiety.[11] This community-driven program includes both exercise and nutrition components, led by an Aboriginal Health Worker. It is delivered in a group setting, consisting of three 1-hour physical activity sessions and one cooking/nutrition session per week

Name	Description
	over a 20-week period. Critical resources for the program included access to a gym and kitchen facilities, a trained facilitator, transportation for participants, and fruit and vegetable vouchers to support healthy eating.[11]
Strong Culture, Healthy Lifestyles	The *Strong Culture, Healthy Lifestyles* program aimed to enhance health and educational outcomes for Aboriginal children by fostering cultural connectedness.[4] This participatory, community-based afterschool program, was delivered to 111 Aboriginal children and their siblings by two local Aboriginal mentors, one male and one female. The program operated in a group setting with two 2-hour sessions per week over a 10-week period. Critical resources included facilitators, access to facilities such as primary schools, Aboriginal Child and Family Centres, and Aboriginal community spaces. Additionally, transportation to areas of cultural significance and the provision of food were essential to the program's delivery and success.[4]
UHELP	The *UHELP* program's primary objective was to enhance the social and emotional wellbeing of young Aboriginal people aged 11-21.[5] The group-based program comprises weekly sessions over a four-week period, each lasting two hours, which included one hour of instructional content and one hour dedicated to physical activities such as touch football, relays, and traditional Indigenous games. Additionally, participants were provided with a nutritious meal and relevant nutritional advice to promote healthy eating habits. Critical resources for the successful delivery of this program included trained facilitators, incentives for participant engagement, and the necessary equipment or infrastructure to support the physical activities and meal provision.[5]
Work It Out	The *Work It Out* program aimed to improve physical functioning, general wellbeing, and chronic disease self-management knowledge and behaviours among urban Aboriginal people with or at risk of chronic disease.[15] This holistic program featured both group and individual sessions held at community health centres, combining education and exercise components. This holistic program featured both group and individual sessions held at community health centres, combining education and exercise components. 406 participants attended twice-weekly sessions, each comprising 45 minutes of education and one hour of exercise, over a 12-week cycle, with multiple cycles available. Critical resources for the program included exercise spaces, educational materials, and health monitoring tools to track progress.[15]
Yantiin Kalabara	The *Yantiin Kalabara* program aimed to encourage healthy lifestyle choices and foster strong, sustainable, and respectful relationships between Aboriginal and non-Aboriginal Australians.[21] This school-based intervention embedded Aboriginal culture and perspectives through interactive learning stations, referred to as "PITSTOPs." Each of the five PITSTOPs involved a brief presentation followed by

Name	Description
	an engaging activity, culminating in a cultural dance at the end of the day. The program was delivered to 293 primary school students in classrooms by a multidisciplinary Primary Care team, which included a dietitian, exercise physiologist, occupational therapist, and Aboriginal health worker. The program was conducted over one day, with five 20-minute sessions. To prepare staff, the Primary Care team received one day of training from the study team.[21]

Outcomes reported in intervention studies

Intervention studies reported on a range of outcomes of interest that related to the outcome domains of physical activity, healthy eating, SEWB and physical health. No studies reported outcomes across all four domains. Two studies reported outcomes across three domains (physical activity, healthy eating, SEWB, and physical activity, healthy eating, physical health respectively).[9, 13] Five studies reported on two domains[2, 10, 15, 17, 21], three studies reported on one domain[5, 6, 16], and one study reported program retention as an outcome[3] and this has been reported in the section describing the enablers of program participation section and Table 3.

Physical activity

Cunningham et al. (2022) reported that the *B-Strong* program had a statistically significant improvement on the time spent engaging in physical activity, but there was no effect on sedentary behaviour.[9] Hu et al. (2019) reported that the *Work it Out* program contributed to statistically significant increase in the distance participants could walk in a 6-minute walk test (6MWT)[15], and Quinn et al. (2017) reported that the *Get Healthy Service* statistically significantly improved the number of 30-minute sessions participants were able to walk per week, and the number of 30-minute moderate physical activity sessions participants engaged in per week.[13]

Waller et al. (2023) reported that a pilot text message program aimed at improving the health of Aboriginal people showed a positive trend toward improving physical activity outcomes, but these findings were not statistically significant.[17] Similarly, Babic et al. (2023) reported that the *Yantin Kalabara* program improved the average time that participants spent engaging in physical activity, but this finding was not statistically significant.[21]

Healthy eating

Cunningham et al. (2022) reported that the *B Strong* program contributed to a positive, statistically significant improvement in the number of fruit serves per day, and vegetables and legume/bean serves eaten per day.[9] However, they also found a statistically significant increase in consumption of sugary drinks and takeaway food, and a non-significant increase in consumption of snack foods. Both Pettigrew et al. (2015) and Quinn et al. (2017) reported that the *FOODcents* and *Get Healthy Service*

programs led to statistically significant improvements in the number of servings of fruit and vegetables consumed, and a statistically significant reduction in the number of days per week participants consumed fast food or takeaway meals.[10, 13] Waller et al. (2023) reported that the pilot text-message program led to a statistically significant improvement in the number of vegetable serves consumed per day and positive, but not significant, improvements in the consumption of fruit and reductions in sugary drink and alcohol consumption.[17] Babic et al. (2023) reported positive improvements in self-reported vegetable intake, fruit, and water consumption, but also increases in consumption of soft drinks, fast food and the number of evening meals spent in front of the television.[21] Statistical significance was not reported.

Social and emotional wellbeing

Cunningham et al. (2022) found that 96% of health staff participants of the *B Strong* program reported that the program had inspired them to think about their own lifestyle behaviours, and to model changed behaviour to support their clients, whilst they also felt that their own behaviour was no longer a barrier to delivering brief health interventions for community members.[9] Gidgup et al. (2022) reported that the *Ironbark* program led to a significant decline in health-related quality of life at 12-months compared to baseline, but this outcome significantly increased at 24-months post-baseline.[2] Notably, the decline in health-related quality of life was during the COVID-19 pandemic when the program was forced to shut down. This study also found that culturally appropriate physical activity interventions were perceived by participants to be safe, secure and to provide more choice for older Aboriginal people. Participants also reported an increased sense of confidence. Murtha et al. (2021) found the *Learning, Eating, Active Play and Sleep* program led to non-significant improvements in participant knowledge of nutrition, physical activity, and the impact of sedentary behaviour, and increased confidence in advocating for and communicating about, the importance of nutrition and physical activity for children.[6] Pettigrew et al. (2015) found that the *FOODcents* program led to statistically significant improvements in participant confidence and nutrition knowledge[10], and Skerrett et al. (2018) reported qualitative findings indicating that the *UHELP* program contributed to participants having an improved understanding of holistic health and improved coping skills, and that the program led to a statistically significant decrease in suicidal ideation immediately post program completion, but that this was not maintained at 2-month follow-up.[5]

Physical health

A randomised controlled trial of a 12-week sports-based exercise program for Aboriginal men in a regional NSW community reported a statistically significant decrease in insulin, estimated insulin sensitivity, insulin resistance, BMI, waist circumference and waist-to-hip ratio, leptin, and a statistically significant increase in peak oxygen consumption.[16] Gidgup et al. (2022) reported that the *Ironbark* physical activity program led to a statistically significant improvement in physical functioning and a non-significant improvement in cardiovascular risk factors.[2] Hu et al. (2019) reported that the *Work it Out* program had a small but statistically significant reduction in participants waist and hip circumference, and a statistically significant reduction across all other anthropometric measures (BMI: 0.71, 95% CI: 1.35 to 0.07; weight: 2.59 kg, 95% CI: 4.84 to 0.34; WC: 5.09 cm, 95% CI: 6.99 to 3.20; waist-to-hip ratio: 0.033, 95% CI: 0.047 to 0.02).[15] The improvement in exercise capacity was significantly related to reductions in waist circumference. Quinn et al. (2017) reported that the *Get*

Healthy Service program led to a statistically significant reduction in participants weight, BMI and waist circumference.[13]

Program enablers of participation

Co-design of programs with Aboriginal communities

Study authors discussed several factors that emerged as important in enabling participation in healthy eating and physical activity programs in Aboriginal communities. In ten of the studies, co-design with Aboriginal communities was described as critical to enabling culturally appropriate and effective programs.[2, 4, 5, 8, 11-14, 21, 23] This approach involved engaging with Aboriginal service providers, community members, and stakeholders from the outset to ensure programs are relevant to community needs.[21] It was noted that extensive consultation, privileging Aboriginal leadership, community-driven interventions, and fostering mutual understanding through respectful partnerships enhanced trust and meaningful participation, leading to better clinical health outcomes and community-driven change.[2, 7, 13, 21] Prioritising self-determination so Aboriginal people lead decision-making, further strengthened community ownership of programs and alignment with local cultural values, priorities and health needs.[2, 5, 7, 12, 13, 21] Authors noted that strength-based approaches that privilege Aboriginal voices, build long-term relationships, and respect distinct cultural contexts are more likely to achieve meaningful, sustainable outcomes.[4, 11, 23] In one study that evaluated the feasibility and acceptability of the *1 Deadly Step* program, a community-based chronic disease screening program for Aboriginal people, engaging local stakeholders and leveraging existing community capital was reported to be critical to success.[8]

Integrating holistic views and perspectives of health in co-design

The importance of integrating holistic views and perspectives of health in the co-design of healthy eating and active living programs for Aboriginal communities was discussed in two of the intervention studies, recognising the relationship between healthy lifestyle behaviours and the broader social and cultural determinants of health and wellbeing, and the need to address these aspects alongside mental and physical health.[5, 6] Skerrett et al. (2018) observed that programs that adopt a holistic approach to health align more closely with Aboriginal concepts of wellbeing, improving participant engagement.[5] This holistic approach to program design was also described in a study by Seear et al. (2020), which aimed to design a program for young Aboriginal people in a remote town in North West Australia to promote healthy lifestyle changes; the program content addressed the relationship between healthy lifestyle behaviours and broader wellbeing.[19] In their study of the adaptation, implementation and evaluation of the *Learning, Eating, Active Play and Sleep* program in Cape York, Murtha et al. (2021) found that social connectedness, fostering relationships with family and friends and promoting mutual support significantly enhanced participants' motivation and overall wellbeing.[6] In addition, programs incorporating the cultural determinants of health within Aboriginal-led initiatives have been shown to promote empowerment, self-determination, and cultural safety.[17] Programs that foster social connectivity and cultural pride contribute to improved mental health and stronger community bonds.[15] This broader impact reflects a holistic approach where health is not viewed in isolation but as part of a broader system of social and cultural connections.

The interconnectedness of health and cultural identity was acknowledged to further support emotional wellbeing, participation, and positive health outcomes in Aboriginal communities.[4, 23] Gidgup et al. (2022) argued that engagement with Aboriginal communities must be mindful and flexible, taking into account the effects of historical trauma while emphasising respect and reciprocity.[2, 7] Urquhart et al. (2024) proposed a 'lifeworld approach' to co-design, which emphasised love, connection, respect, culture, and belonging as essential for sustaining wellbeing programs.[11] The authors advocated for policymakers and service providers to invest time in building relationships with distinct Aboriginal communities, listening to Aboriginal voices, and fostering shared understanding to co-create effective, relevant and sustainable wellbeing programs.[11] Of the non-intervention studies, two emphasised the importance of integrating holistic views and perspectives of health in the co-design of healthy eating and active living programs for Aboriginal communities and suggested that this enhanced cultural identity and community engagement.[4, 8] Another described a holistic approach to program design for the *Maboo Wirriya, Be Healthy* program for young Aboriginal people in a remote town in North West Australia which aimed to promote healthy lifestyle changes; the program content addressed the relationship between healthy lifestyle behaviours and broader wellbeing.[19]

Cultural appropriateness

Enhancing accessibility and engagement in healthy eating and physical activity programs for Aboriginal communities requires a culturally appropriate approach in program design and delivery. Of the programs described in the intervention studies, one incorporated culturally rich learning activities and encouraged cultural diversity in a school setting.[21] Bohn-Goldbaum et al. (2022) and Cunningham et al. (2022) reported that programs that encouraged group formats, family inclusion, and the support of existing social networks fostered participation and that Aboriginal health workers played a vital role in building trust and facilitating engagement through culturally relevant practices, such as yarning circles.[3, 9] Additionally, training non-Aboriginal staff in cultural competency and offering same-sex facilitators was seen to further encourage participation.[5, 9, 13]

Aboriginal health workers were found to act as "cultural brokers", as they have pre-established trusted relationships with community and can navigate both community wellbeing needs and the requirements of the Western health system. This role enabled them to manage health system logistics, support participants, and provide cultural mentoring to ensure program cultural safety, especially in programs run by non-Aboriginal facilitators or funded by Western health systems.[11] In the RCT conducted by Mendham et al. (2015) of a 12-week sports-based exercise program, space was created for community connection and the involvement of family in the program design and implementation. They suggested that sport-based activities were often perceived as being more accessible and culturally resonant than individualistic focused programs.[16]

The non-intervention study conducted by Macniven et al. (2018) examining perceptions of the *Indigenous Marathon Program* in a remote community also highlighted the importance of community cohesion and connection in program design and implementation, and suggested that programs that are designed to be culturally appropriate tend to contribute to both individual and collective health outcomes.[20] Similarly, the *Yantiin Kalabara*[21] and the *Ironbark* programs[2] involved regular consultations with Aboriginal Elders and community members which ensured that traditional knowledge and cultural practices were integrated into the design and implementation of the programs.

Findings from the non-intervention studies indicated that accessibility was improved by tailoring program delivery to local community contexts, using culturally relevant activities and practices (i.e. yarning circles), culturally safe venues, and providing flexible entry and exit points to accommodate family and community responsibilities.[2, 7, 14, 18, 19] Cultural competency training was also reported to be an important component of the *Maboo Wirriya, Be Healthy* program.[19]

Practical strategies for enhancing accessibility and participation

Practical strategies to improve accessibility and participation included the use of technology for health support and reminders, repeating program events to maximise reach, and ensuring free or low-cost participation options.[6, 12, 17, 18]

Waller et al. (2023) found that the use of text messages sent to participants to encourage them to improve their lifestyle behaviours in the adapted *DTEXT* program was a very effective strategy for improving participation.[17] They noted that there was a high use of mobile phones among Aboriginal people and that text messages can be received without phone credit. The authors also suggested that the ease and convenience of text messages may be preferred over health apps for Aboriginal people with low computer literacy, and it also allows for the sharing of text messages to non-participants, which may increase program reach.[17] Similarly, McRae et al. (2023) credit the success of the *HipHop2SToP* program, which was implemented during the COVID-19 pandemic, to the use of technology.[12] They found that the availability of the internet and virtual videoconferencing platforms improved access to the program for remote communities that were 'locked down' and could not participate in face-to-face program delivery.[12]

Other targeted approaches, such as designing age- and gender-specific programs, were also found to increase engagement and retention, with studies noting that older participants and females had higher retention in team-based programs.[3, 24] Additionally, authors discussed the need for gender-aware planning to address barriers, such as time constraints, that disproportionately affect certain groups.[14] In addition, simplifying content for participants with limited formal education and providing face-to-face delivery options were found to be further strategies to enhance accessibility.[19]

Community involvement

Involving local community members in program delivery strengthens ownership and sustainability. Employing local people and fostering community readiness are key enablers of program success.[12, 20] Designing replicable program formats that function without reliance on external resources or personnel also supports long-term sustainability.[19] For instance, two studies observed that Aboriginal health workers trained to provide role modelling and peer support helped create culturally safe environments. Crowe et al. (2017) observed that involving Aboriginal Educational Officers, parents, or community members in pilot sessions for children's programs helped to build trust and support community buy-in[23], while Babic et al. (2023) noted that providing teacher training and additional resources for teachers and parents would support long-term program sustainability and access.[21] Effective recruitment strategies include using straightforward language, strong Aboriginal visuals, and clear communication of free services in marketing materials.[13] Word-of-mouth referrals supported by relationship-building and local ambassadors further enhance program reach and engagement .[4, 8]

Program barriers to participation

The studies reviewed identified a range of personal, cultural, environmental, and logistical barriers that affect program participation in Aboriginal communities. A key finding from Quinn et al. (2017)'s study on the *Get Healthy Service* was that the cultural priorities of Aboriginal participants differed from those assumed in the program design.[13] For example, food choices and weight loss were not high priorities within the communities where the program was implemented, which led to lower motivation to participate. The study emphasised the need to engage sensitively with Aboriginal people, understanding their cultural values, kinship relationships, and community responsibilities to ensure health programs are responsive to their needs.[13]

Environmental barriers were also important, as noted in Macniven et al. (2018)'s study of the *Indigenous Marathon Program*. Physical obstacles to running, such as poor street amenities, extreme weather, and uncontrolled dogs, hindered participation.[20] Cultural factors, including feelings of "shame" associated with physical activity and a lack of role models, further limited engagement. The authors suggested that over time, physical activity interventions may reduce these negative perceptions and help normalise physical activity within the community.[20] Shame was also reported as a barrier by Sushames et al. (2017), who found that exercising apart from family and community could be seen as a disconnecting experience, creating reluctance to participate.[18] Additionally, personal factors such as obesity contributed to a lack of motivation or willingness to participate.[20] Exercise-related barriers were prominent in Esgin et al. (2023)'s study, where participants cited injuries, changing dietary habits, and time constraints as challenges.[14] Female participants, in particular, struggled with vigorous exercise, and nearly 40% found exercise too expensive.[14] Sushames et al. (2017) also observed that menstruation and a lack of family or peer support hindering participation, highlighting the need for flexible and supportive environments.[18] Gidgup et al. (2022) also noted that cost was a barrier for older Aboriginal Elders in the *Ironbark* program.[7]

In educational settings, Babic et al. (2023) observed that the effectiveness of the *Yantiin Kalabara* health education program was limited by a lack of parental and community involvement.[21] This points to the importance of ensuring family and community support for sustained program engagement.[21] Similarly, Crowe et al. (2017) found that recruitment was a challenge in school-based programs due to the requirement for written parental/carer consent, which restricted participation unless verbal consent was obtained.[23]

Studies also showed that engaging young participants was challenging due to their short attention spans, as noted by Seear et al. (2020) and Stanley et al. (2024).[4, 19] Both studies emphasised the need to tailor programs to meet different developmental and educational needs across age groups.

Logistical and structural barriers were highlighted by Peiris et al. (2019) in their evaluation of the *1 Deadly Step* screening program. The study pointed to difficulties in intersectoral collaboration between local hospital districts, GPs, Aboriginal Community Controlled Health Services (ACCHSs), and other agencies. The most significant issue was the challenge of ensuring continuity of care and care pathways when screening was conducted by one organisation but follow-up was required by another.[8]

Finally, several studies identified seasonal and logistical factors as critical determinants of participation and retention. Factors such as the timing of program activities (e.g., accessible only during working hours), suitability for local climates, access to facilities, and the availability of

transport—particularly in rural and remote areas—played a significant role in participation.[4, 14, 18] Additionally, Quinn et al. (2017) identified time commitment and scheduling flexibility as potential barriers, noting that programs requiring rigid schedules may struggle to retain participants.[13] Sushames et al. (2017) identified cultural factors like "sorry business" (a time of mourning), as needing to be considered in relation to their potential to disrupt engagement in programs.[18] Addressing these barriers requires a flexible, culturally sensitive approach to program design and delivery to improve participation and outcomes in Aboriginal communities.

Discussion

Of the 21 included studies, 11 were intervention studies and 10 were non-intervention studies. Of the intervention studies, one study was a randomised controlled trial and the remaining 10 used a pre-post study design. Of the 10 non-intervention studies, seven were qualitative studies that collected data via yarning circles, interviews, focus groups or observations. Two studies used mixed methods, and one was a descriptive study. Collectively, the studies included in this Rapid Evidence Check described a range of programs that were delivered in school or community settings, to Aboriginal children, young people and adults.

Of the intervention studies that reported on the effectiveness of HEAL programs, the *Get Healthy Service*, was found to be the most effective program across multiple outcome domains.[13] This program reported statistically significant improvements in physical activity, healthy eating, and physical health outcomes, including reductions in BMI, weight, and waist circumference. Its combined focus on improving both diet and physical activity outcomes and the fact that, as a telephone-based coaching service, it was widely accessible to a range of participants regardless of their location, are likely important factors that contributed to its effectiveness. The *Ironbark* program was shown to be effective for older Aboriginal people. Notably, the program prioritised cultural safety and incorporated practices such as yarning circles, traditional group-based activities, and involvement of Aboriginal health workers. Combined, these created an environment where participants felt safe, respected and connected, and in turn, were critical in enabling participation.

Programs that involved Aboriginal health workers and peer-led approaches were also found to be effective, demonstrating the critical role of trusted community members in encouraging health behaviour change. *B-Strong*, which used a "train-the-trainer" model, empowered Aboriginal health workers to deliver health messages and role-model healthy behaviours within their communities. This approach fostered a sense of ownership and alignment with community health priorities, leading to improvements in both physical activity and dietary outcomes. Involvement of Aboriginal health workers and their role modelling of health behaviours were reported as critical enablers that improved participation.

Programs that enabled social connectivity and family engagement, such as the *Knockout Health Challenge*, were also effective. This team-based, family-inclusive program used a competitive format to enhance motivation and participation, driving physical activity improvements through social accountability. By involving family and friends, participants felt a collective responsibility to participate and to improve their outcomes, which aligns with Aboriginal values and the importance they place on holistic and communal wellbeing. *Work It Out,* which combined physical activity and chronic disease management in a group setting that fostered social connectivity, also led to physical health outcome improvements, but also improved SEWB outcomes.

Across all programs described in the reviewed studies, the consistent enablers of participation were co-design with Aboriginal communities, cultural safety, flexibility, social connectivity, and accessible practical supports. By far the most important enabler of participation was involvement of Aboriginal

community members and elders in the co-design and implementation of a program. Creating culturally safe environments was also reported in all studies as being an essential enabler of participation, with programs achieving this through provision of cultural competence training for non-Aboriginal staff, embedding traditional values, particularly in relation to taking a holistic and communal approach rather than an individualistic approach, by using group-based delivery modes, and incorporating culturally relevant activities such as yarning circles. Similarly, programs that featured activities or an environment that fostered social connectivity were consistently found to have better engagement and participation.

Flexibility in program delivery and having a combination of ways participants can engage in a program, whether in-person, remotely via videoconferencing facilities, or mobile applications were also seen as important enablers. This allowed participants to balance family and community responsibilities and to engage in a program at their own pace. Using text messaging to promote positive health behaviours was also seen as an effective strategy for increasing participation as it allows participants to engage with a program in a cost-effective way and without geographical constraints, ensuring those in various locations, can access the program. However, whilst text message-based programs may increase accessibility and improve program reach, consideration should be given to whether they may also reduce social connectivity. Practical considerations were also found to be important enablers of participation. Key enabling features included providing culturally relevant and appropriate educational resources and guidance materials, ensuring there was space or a venue to exercise, and that these spaces were culturally safe (i.e., a separate space for women and men), ensuring there was little to no cost for participation, or financial assistance for participation, and designing programs to fit the routines and rhythms of participants.

The key barriers to participation in HEAL programs included limited community and family involvement, cultural misalignment, logistical challenges, and stigma. For programs that target young people, low parental and community engagement was found to impact participation. The most significant barrier to participation was cultural misalignment, specifically, programs that did not prioritise Aboriginal values struggled to engage participants. Similarly, programs that focused on what were perceived to be ‘mainstream health outcomes’, such as weight loss or a reduction in BMI, or that did not include a holistic approach to health and wellbeing, also experienced barriers to participation. The time commitment involved in programs, and rigid scheduling and routines, were also reported as barriers to participation, as was the shame or stigma of exercising alone and not as part of a group.

Limitations

The main strength of this Rapid Evidence Check is that it was prepared over a six-week timeframe. It also included synthesis of both good quality evidence from intervention studies that reported on effectiveness of HEAL programs, and rich qualitative data about the enablers and barriers to participation in HEAL programs for Aboriginal people. However, the wide variation in HEAL programs described in the literature, and in the outcomes measured in the intervention studies, limits the ability to draw firm conclusions or direct comparisons about the effectiveness of different programs for different populations of Aboriginal people.

Of the ten intervention studies, only one used an experimental study design (RCT), and the rest used a pre/post study design. This finding was not surprising given RCTs emerged from Western research

paradigms such as positivism and objectivity. Their experimental nature breaks down social connectivity and promotes inequitable Aboriginal community involvement[39]; two critical enablers of Aboriginal participation identified in this Rapid Evidence Check.

Of the nine intervention studies that did not use an experimental design, two collected self-reported outcomes but also objective measures of physical health (e.g., weight, BMI), two only collected objective measures of physical health, and seven collected only self-reported outcome data of participants. As self-report data can be prone to bias, findings from these studies should be interpreted with caution. Additionally, no studies reported outcomes using routinely collected, administrative datasets. Compared to self-report data, routinely collected data are relatively inexpensive, and they are less likely to be biased by non-consent (as their use does not necessarily require individual consent, provided anonymity can be protected). Provided studies are designed ethically and embed Aboriginal data sovereignty and data governance from the outset, routinely collected data can be used to evaluate community-based programs and answer important research questions using quasi-experimental designs without the need to burden Aboriginal communities with additional data collection.[40] Finally, it was also unclear in most studies whether participants were adequately blinded to the study aims and outcomes, which could have led participants to indicate they were engaging in healthier behaviours than they otherwise might have.

The requirement for inclusion of both intervention and non-intervention studies led to the identification of a high number of studies and given the brief timeframe within which this Rapid Evidence Check was delivered, we limited the search to studies published between 2015 and 2024. Although these studies only comprise relatively recently implemented interventions, they are likely to represent the best evidence based on the assumption that they are informed by earlier research findings. Furthermore, no grey literature was included, and we limited the number of databases searched, so it is possible that relevant studies or reports were not included. Despite these limitations, the authors are confident the findings provide useful information that will support the design of new, or the redesign of existing, HEAL programs in NSW.

Conclusion

This Rapid Evidence Check found that programs that created a culturally safe environment, that took a holistic perspective of health and wellbeing, that were co-designed by Aboriginal people, and that encouraged community involvement and leadership, produced the most effective physical activity, healthy eating, SEWB and physical health outcomes for Aboriginal people. By incorporating these program features, programs were found to be more accessible and culturally relevant, which in turn, increased participation.

Appendices

Appendix 1 — Search strategy

Table 1.1 provides a step-wise overview of the syntax for OVID and EBSCO platforms. Search yields will be reported against these steps. The syntax has been designed to allow for a single EndNote library to be supplied. The syntax will be adapted as may be required for specific collections outside the OVID and EBSCO platforms, such as Web of Science.

Table 1.1. Syntax

Step	Domain	Query syntax (OVID)	Query syntax (EBSCO)
1	Population	(Aborigin* OR "Torres strait island*" OR "indig* adj3 Austral*" OR "first nations" OR "first people*").tw.	((TI Aborigin* OR AB Aborigin*) OR (TI "Torres strait island*" OR AB "Torres strait island*") OR (TI "indig* ajd3 Austral*" OR AB "indig* ajd3 Austral*") OR (TI "first nations" OR AB "first nations") OR (TI "first people*" OR AB "first people*"))
2	Program	((("health* eat*" OR nutrit* OR diet OR activ* OR (physical ADJ2 activ*) OR exercis* OR lifestyle* OR wellbeing OR (behavi* ADJ2 chang*) OR "health promot*") AND (program* OR interven* OR schem* OR initiative* OR promot*)).tw. OR ("primary prevention" OR "secondary prevention").mp.)	((((TI "health* eat*" OR AB "health* eat*") OR (TI nutrit* OR AB nutrit*) OR (TI diet OR AB diet) OR (TI activ* OR AB activ*) OR ((TI physical OR AB physical) N2 (TI activ* OR AB activ*)) OR (TI exercis* OR AB exercis*) OR (TI lifestyle* OR AB lifestyle*) OR (TI well being OR AB wellbeing) OR ((TI behavi* OR AB behavi*) N2 (TI chang* OR AB chang*)) OR (TI "health promot*" OR AB "health promot*")) AND ((TI program* OR AB program*) OR (TI interven* OR AB interven*) OR (TI schem* OR AB schem*) OR (TI initiative* OR AB initiative*) OR (TI promot* OR AB promot*))) OR ("primary prevention" OR "secondary prevention"))
3	Setting	1 and 2	S1 and S2
4	Recency	filter 4 to (yr="2015 -Current")	S4 AND DT 20190101-20241231

Note that syntax relating to outcomes has not been included in the search strings as this narrows the outputs.

Appendix 2 – Search Strings[†]

Medline (Ovid)

((("health* eat*" or nutrit* or diet or activ* or (physical adj2 activ*) or exercis* or lifestyle* or wellbeing or (behavi* adj2 chang*) or "health promot*") and (program* or interven* or schem* or initiative* or promot*)).tw. or ("primary prevention" or "secondary prevention").mp.) and ((Aborigin* or Torres strait island* or indig* or first nations or first people*) and Australia*).tw.

CINAHL (EBSCO)

(((((TI "health* eat*" OR AB "health* eat*") OR (TI nutrit* OR AB nutrit*) OR (TI diet OR AB diet) OR (TI activ* OR AB activ*) OR ((TI physical OR AB physical) N2 (TI activ* OR AB activ*)) OR (TI exercis* OR AB exercis*) OR (TI lifestyle* OR AB lifestyle*) OR (TI wellbeing OR AB wellbeing) OR ((TI behavi* OR AB behavi*) N2 (TI chang* OR AB chang*)) OR (TI "health promot*" OR AB "health promot*")) AND ((TI program* OR AB program*) OR (TI interven* OR AB interven*) OR (TI schem* OR AB schem*) OR (TI initiative* OR AB initiative*) OR (TI promot* OR AB promot*))) OR ("primary prevention" OR "secondary prevention")) AND ((TI Aborigin* OR AB Aborigin*) OR (TI "Torres strait island*" OR AB "Torres strait island*") OR (TI "indig* ajd3 Austral*" OR AB "indig* ajd3 Austral*") OR (TI "first nations" OR AB "first nations") OR (TI "first people*" OR AB "first people*")))

PsychInfo

((("health* eat*" or nutrit* or diet or activ* or (physical adj2 activ*) or exercis* or lifestyle* or wellbeing or (behavi* adj2 chang*) or "health promot*") and (program* or interven* or schem* or initiative* or promot*)).tw. or ("primary prevention" or "secondary prevention").mp.) and ((Aborigin* or Torres strait island* or indig* or first nations or first people*) and Australia*).tw.

Web of Science

((((TS=("health* eat*" OR nutrit* OR diet OR activ* OR (physical NEAR/2 activ*) OR exercis* OR lifestyle* OR wellbeing OR (behavi* NEAR/2 chang*) OR "health promot*")))) AND TS=((program* OR interven* OR schem* OR initiative* OR promot*))) AND TS=("primary prevention" OR "secondary prevention")) AND TS=(Aborigin* OR "Torres strait island*" OR indig* OR "first nations" OR "first people*")) AND TS=(australia*)

Cochrane Library

(((health* NEXT eat*) OR nutrit* OR diet OR activ* OR (physical NEAR/2 activ*) OR exercis* OR lifestyle*OR wellbeing OR (behavi*NEAR/2 chang*) OR (health NEXT promot*)):ti,ab,kw AND (program* OR interven* OR schem* OR initiative* OR promot*):ti,ab,kw OR ("primary prevention" or

[†] Note all searches were limited to 2015 - current

"secondary prevention"):ti,ab,kw) AND ((Aborigin* OR ("Torres strait" NEXT island*) OR indig* OR "first nations" OR ("first" NEXT people*)):ti,ab,kw AND (australia*):ti,ab,kw)"

Appendix 3 – Data Extraction Tables

Table 3.1: Study characteristics and outcomes by study type

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
	Intervention studies n=11							
1	Babic, 2023[21]	To develop, implement and evaluate the novel one-day, school-based health education program *Yantiin Kalabara*.	Pre/post questionnaires, follow-up at 4 weeks	N=293 primary school students (52% male; 45% female) at 5 primary schools (March–July 2021) in Hunter New England region, NSW	POSITIVE PA mean scores increased from 164.9 minutes per day at baseline to 203.9 minutes. Students self-reported improvement in PA (mean 3.4/4). NEGATIVE No. of days meeting PA guidelines (self-reported) decreased from 6.1 to 5.3 days. NEUTRAL Typical days PA increased from 5.3 to 5.4. Weekday screen time increased from 666.2 mins to 792.8 mins.	POSITIVE Nutrition patterns self-reported: vegetable intake (3.2 to 3.4), fruit (3.1 to 3.3), water consumption (4.8 to 4.9). Students self-reported improvement in eating habits (mean 33/4) and screen-time patterns (mean 3.2/4). NEGATIVE Increases in soft drink (3.1 to 3.2), fried food (2.6 to 2.9) and fast food consumption (2.6 to 2.9), as well as evening meals in front of television (2.7 to 2.9).	NA	NA

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
2	Bohn-Goldbaum, 2022[3], ‡	To assess factors relating to program retention among Aboriginal and Torres Strait Islander peoples who participate in a team-based weight-loss and healthy lifestyle program *Aboriginal Knockout Health Challenge*.	Pre/post questionnaires + anthropometric measures	N=3107 adult first-time participants in 10 Aboriginal Knockout Health Challenge contests.	NA	NA	NA	NA
3	Cunningham, 2022[9]	To assess the impact of the *B.strong* program on the personal health behaviours of health staff participants, specifically in smoking, nutrition, and physical activity.	Pre/post questionnaires x 4 (pre, post, 3- and 6-months)	N=1131 participants in B.strong training workshops.	POSITIVE Statistically significant improvement between pre-workshop and 3-month follow-up in time spent in PA. NEUTRAL No significant change in sedentary behaviour.	POSITIVE Statistically significant improvement between pre-workshop and 3-month follow-up in no. of fruit serves per day, and vegetables and legume/bean serves eaten per day. NEGATIVE Statistically significant increase in consumption of sugary drinks and	POSITIVE 96% of n=612 respondents to post-workshop survey agreed workshop inspired them to think about their own lifestyle behaviours, and to model changed behaviour to support clients. Decrease in proportion of participants reporting feeling their own behaviour was a barrier to	

‡ This study reported on program retention as an outcome and details of outcomes are presented in the Table detailing the enablers or barriers of participation.

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
						takeaway food. Non-significant increase in consumption of snack foods.	delivering brief interventions (smoking intervention 10.2% to 3.7% - sig.; HE intervention 9.6 to 4.8 – sig.; PA intervention 9.3 to 4.6 – nonsig).	
4	Gidgup, 2022[2]	To translate and evaluate the impact of a PA program on the physical function of older Aboriginal elders, *Ironbark* PA program.	Mixed methods. Longitudinal design within Indigenous methodology Pre/post quant and qual measures, follow up at 6, 12 and 24 months	N=23, Two Aboriginal Elder groups, one metropolitan, one regional, aged >45 years.	NA	NA	Health-Related Quality of Life significantly declined at 12-months compared to baseline, but not at 24-months. (Note – program affected by closure during COVID at 12–18-month mark). Culturally appropriate PA intervention provides safety, security and choice for older Aboriginal people. Reported increase in confidence.	POSITIVE Significant improvement in physical function from baseline at 12-months. Non-significant improvement in cardiovascular risk factors from baseline at 12 and 24 months.
5	Hu, 2019[41]	To examine overall changes in participants' exercise capacity	Pre/post Functional + anthropometric measures	N=406 (37.4% male, 62.6% female); program participants urban	POSITIVE A statistically significant increase in the 6MWT and	NA	NA	Small but statistically significant reductions in waist

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
		and anthropometric measurements, *Work It Out* program.		Aboriginal people with/at risk of chronic disease.	participant exercise capacity.			and hip circumference (WC: 1.79 cm, 95% CI: 2.76 to 0.82; HC 1.11 cm, 95% CI: 2.13 to 0.08). Statistically significant reductions observed across all anthropometric measures (BMI: 0.71, 95% CI: 1.35 to 0.07; weight: 2.59 kg, 95% CI: 4.84 to 0.34; WC: 5.09 cm, 95% CI: 6.99 to 3.20; waist to hip ratio: 0.033, 95% CI: 0.047 to 0.02).
6	Mendham, 2015[16]	To assess the impact of a 12-week sports-based exercise intervention on glucose regulation, anthropometry and inflammatory markers associated with the prevalence of type 2 diabetes mellitus (T2DM) in	RCT Anthropometric + metabolic + functional measures	N=33, n=17 exercise, n=16 control Indigenous Australian men (mean age 48 years) participating in the local Aboriginal Medical Centre Men's group in a regional NSW community	NA	NA	NA	POSITIVE The exercise condition, compared to control, reported a statistically significant decrease in insulin, estimated insulin sensitivity, insulin resistance, BMI, waist circumference and waist-to-hip ratio, leptin, and a statistically

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
		Indigenous Australian men.						significant increase in peak oxygen consumption.
7	Murtha, 2021[6]	To adapt, implement, and evaluate the *Learning, Eating, Active Play and Sleep* program for remote Aboriginal and Torres Strait Islander communities in Cape York, focusing on improving nutrition and physical activity in early childhood education settings.	Pre/post questionnaires + qualitative data incl interviews	N=63 participants from n=24 early childhood education services	NA	NA	POSITIVE Increased knowledge. The highest gains were around PA and sedentary behaviour (non-sig). Increased confidence in talking with families about PA and nutrition, with running structured PA with children, in supporting a family who is concerned about a child's nutrition or physical growth (non-sig).	NA
8	Pettigrew, 2015[10]	To assess the relative effectiveness of an adult nutrition education program, *FOODcents*, for Aboriginal and non-Aboriginal participants.	Pre/post questionnaires	N=875 participants including n=169 self-identified as Aboriginal	NA	POSITIVE Statistically significant behaviour change evident among Aboriginal participants (servings of fruit consumed n=142, Change in mean = 0.6 (1.08), p<0.001; servings of	POSITIVE Statistically significantly larger improvements in confidence, and nutrition knowledge among Aboriginal participants.	NA

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
						vegetables n=141, Change in mean = 1.14 (1.81), p<0.001, Days per week fast food consumed n=145, Change in mean = -0.54 (1.57), p<0.001).		
9	Quinn, 2017[13]	To detail how formative research with Aboriginal communities is applied to guide the development and refinement of the *Get Healthy Service* and referral pathways, and to assess reach and impact of the Aboriginal-specific program on the lifestyle risk factors of Aboriginal participants.	Mixed methods Pre/post interviews + anthropometric + PA + nutritional measures + formative research	N=34,211 (99.1% (33,897) were classified according to the GHS programs available: n=28,801 (85%) in standard GHS; n=4,280 (12.6%) in the Diabetes prevention program; and N=816 (2.4%) in the Aboriginal program. N=1,462 (4.5%) of all GHS participants were Aboriginal.	POSITIVE Aboriginal participants made statistically significant improvements to no. 30 min sessions walking per week, and no. 30 min moderate PA sessions per week.	POSITIVE Aboriginal participants made statistically significant improvements to daily serves of fruit and vegetables consumed, and takeaway meals (weekly serves).	NA	POSITIVE Aboriginal participants made statistically significant improvements to anthropometric measures from baseline to 3- and 6-months (weight, BMI, waist circumference).
10	Skerrett, 2018[5]	To describe the design and implementation of a group-based intervention, *UHELP,* and to report the results	Mixed methods Pre/post, follow up at program completion and 2 months post-program completion	61 Aboriginal people aged 11-21 (mean age 15), 58.7% male. South-west Brisbane, QLD	NA	NA	A statistically significant decrease in suicidal ideation (not maintained at 2-month follow-up).	

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
		of the various qualitative and quantitative measures.	Focus groups + questionnaires				Qualitative data indicated that participants experienced improved understanding of holistic health and an increased number of coping skills.	
11	Waller, 2023[17]	To evaluate the acceptability, feasibility, and preliminary impact of a pilot text-message program aimed at improving the health of Aboriginal people with, or at risk of, chronic disease. Text messages adapted from the *DTEXT* program.	Mixed methods Pre/post Questionnaire baseline, 3 and 6-months + process evaluation	N=20	NEUTRAL Self-report PA showed positive trend – no significant outcomes.	POSITIVE Significant increase in no. of vegetable serves per day (n=17, baseline mean = 2.08 (1.41), 3-mths mean = 2.94 (1.80), 6-mths mean = 3.35 (2.21)). No other self-report lifestyle behaviours showed significant outcomes however, a positive trend for improvement was seen for consumption of fruit, sugary drinks, reduced alcohol.	NA	NA
	Non-intervention studies n=10							
1	Crowe, 2017[23]	To explore the links between Aboriginal	Qualitative, 7 semi-structured focus groups	N=40 Aboriginal children (5-12 years) from three	NA	NA	NA	NA

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
		children's perspectives on culture and healthy lifestyle behaviours, and to provide insight into how to approach the development of an intervention targeting lifestyle behaviours.		communities in South Coast NSW				
2	Esgin, 2023[14]	To determine: (i) Indigenous perceptions of the facilitators and barriers to exercise; (ii) The potential feasibility and sustainability of an exercise intervention.	Descriptive, point-in-time survey	N=133 participants (53% female)	NA	NA	NA	NA
3	Gidgup, 2022[7]	To explore how engaging in a culturally appropriate PA program impacted on the lived experiences of Aboriginal Elders.	Qualitative, yarning circles, observations, interviews	N=52 elders participated in the Program. Interview participants:19 Elders mainly from the Noongar nation (WA)10 from metropolitan areas and 9 from regional areas (mean age 64	NA	NA	NA	NA

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
				years, 89% female)				
4	Macniven, 2018[20]	Examine perceptions of the *Indigenous Marathon Program* in a remote Torres Strait Islander community.	Qualitative, interviews	N = 18 (14 Indigenous) community and program stakeholders	NA	NA	NA	NA
5	McRae, 2023[12]	To report a qualitative process evaluation of the *HipHop2SToP* project.	Qualitative, interviews	N=8; 7 female, 1 male Semi-structured interviews	NA	NA	NA	NA
6	Peiris, 2019[8]	To evaluate the feasibility and acceptability of a community-based chronic disease screening program for Aboriginal people, the *1 Deadly Step* program.	Mixed methods. Questionnaire + analytics data + interviews	N=297 survey respondents, n=21 interviews.	NA	NA	NA	NA
7	Seear, 2020[19]	To design a program, *Maboo wirriya, be healthy*, for young Aboriginal people	Qualitative, focus groups	7 Focus groups with a total of 32 young Aboriginal participants (24 female, 3-8	NA	NA	NA	NA

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
		in a remote town in North West Australia with a high level of health needs and relatively few preventive initiatives.		participants in each group). A small number of non-Aboriginal people also participated in the focus groups but the perspectives of Aboriginal people were prioritised. Advisory discussions with Aboriginal community members.				
8	Stanley, 2024[4]	To evaluate the feasibility of study methods and program implementation of a co-created afterschool cultural program, *Strong Culture, Healthy Lifestyles*, and identify areas for improvement	Mixed methods. Non-randomised single-group study design, yarning circles	N=111 Aboriginal children and their siblings (aged 5-13 years) from regional NSW enrolled in the program. 12 follow-up yarning circles across 3 communities (n=74; teachers n=5, Aboriginal education officer n=1, program mentors n=5, caregivers n=4.	NA	NA	NA	NA

	First author, year	Study aim	Design	Sample/setting	Outcomes & effectiveness (**statistically significant)			
					Physical activity	Healthy eating	Social / emotional wellbeing	Physical health
9	Sushames, 2017[18]	To explore perceived barriers and enablers to attending an 8-week PA program	Qualitative, interviews	N=34 Aboriginal adults (aged 18-45) from rural (n=12) and regional (n=22) communities in Far North QLD participated in the intervention. Qualitative interviews conducted with n=12 participants.	NA	NA	NA	NA
10	Urquhart, 2024[11]	To explore what sustains an Aboriginal wellbeing program, *Spring into Shape*.	Qualitative, individual yarning sessions followed by co-developed interpretation via 2 collaborative yarning sessions	N=15 Individual Yarning sessions N=9 at 2 Collaborative Yarning sessions	NA	NA	NA	NA

Table 3.2: Program implementation characteristics

	First author, year	Program aim/objective	Brief description (including mode of delivery, duration, no. of sessions)	Critical resources (delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training)
	Intervention studies n=11			
1	Babic, 2023[21]	To encourage healthy lifestyle choices and promote strong, sustainable and mutually respectful relationships between Aboriginal and non-Aboriginal Australians.	*Yantiin Kalabara* embeds Aboriginal culture and perspectives within interactive "PITSTOP" learning stations. Each of the five PITSTOPs includes a brief presentation followed by an interactive and engaging learning activity. A Primary Care team delivers the program, comprising a dietitian, exercise physiologist, occupational therapist and Aboriginal health worker. Each day concludes with a cultural dance. MODE A primary care team deliver the program in primary school classrooms SETTING schools DOSE 1 day, 5 x 20min activities	1 day of training provided by study team for the Primary Care team.
2	Bohn-Goldbaum, 2022[3]	To increase fruit and vegetable intake, promote healthy lifestyle practices, and improve weight loss.	The *Knockout Health Challenge* is a state-wide community-based team weight loss competition open to Aboriginal Australians aged 16 years or older. Program activities include group fitness training, gym sessions, cooking workshops, weekly team meetings, monthly weigh-ins, and visits to health care providers. Participants can also join the NSW Get Healthy Information and Coaching Service (a free telephone service staffed by qualified health coaches). Ongoing support via social media, educational resources and financial assistance are provided. MODE Delivered by community team leaders	The community-based team leaders receive training

	First author, year	Program aim/objective	Brief description (including mode of delivery, duration, no. of sessions)	Critical resources (delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training)
			SETTING Community DOSE 10-12 weeks, twice a year	
3	Cunningham, 2022[9]	To build capacity and confidence in delivering brief interventions for an array of lifestyle factors that give rise to chronic illness and disease, such as smoking cessation, nutrition, and physical activity among health professionals.	The *B.strong* program provides brief intervention training to Aboriginal and Torres Strait Islander Health Workers and other health professionals in smoking cessation, nutrition, and physical activity. Centred on the stages-of-change model and motivational interviewing. MODE Group workshop, online, written resources SETTING DOSAGE 1-day workshop, 6 2-hr online modules	Workshop venues, online platform, practitioner and client training materials, training personnel
4	Gidgup, 2022[2]	To improve physical, mental, and social wellbeing among Aboriginal Elders and older Aboriginal individuals through culturally appropriate physical activity and community engagement.	*Ironbark* is a community-based, culturally adapted physical activity program that includes exercise sessions and yarning circles, focusing on fall prevention, and improving the overall health and wellbeing of Aboriginal Elders delivered by Aboriginal health workers and health professionals. MODE Yarning circle and 1-hr exercise session SETTING DOSAGE Weekly/fortnightly, 24 months	Exercise space, exercise hand-outs, music, diaries, audio-recording device, facilitators, Aboriginal health workers/project officers, health professionals
5	Hu, 2019[41]	To improve participants' physical functioning, general wellbeing, and chronic disease self-management knowledge and behaviour.	*Work It Out* is a holistic chronic disease self-management and rehabilitation program specifically designed for urban Aboriginal and Torres Strait Islander people with/at risk of chronic disease. It includes education and exercise sessions.	Exercise space, educational materials, health monitoring tools

	First author, year	Program aim/objective	Brief description (including mode of delivery, duration, no. of sessions)	Critical resources (delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training)
			MODE Group and individual sessions at community health centres SETTING DOSAGE 2/wk, 45min education + 1hr exercise, 12 weeks/cycle, multiple cycles	
6	Mendham, 2015[16]	To reduce T2DM risk factors in Indigenous Australian men.	A sports-based exercise program for inactive Indigenous Australian men led by Aboriginal Medical Centre and Men's group. MODE Group and sports-specific exercise training sessions SETTING DOSAGE 2-3 /wk for 12 weeks	Exercise equipment and space, facilitators
7	Murtha, 2021[6]	To increase knowledge and confidence of ECEC educators regarding nutrition and physical activity, and to support the implementation of these practices in remote Aboriginal and Torres Strait Islander communities.	*Learning, Eating, Active Play and Sleep* is a professional development program aimed at supporting ECEC educators in remote communities to implement and reinforce healthy nutrition and physical activity practices in their services. MODE Group, online SETTING DOSAGE 1-day workshop, 2 online modules with ongoing support	Training materials, participant workbooks, catering for sessions, facilitators
8	Pettigrew, 2015[10]	To improve nutrition knowledge, confidence in buying healthy foods, and dietary behaviours among disadvantaged populations, including Aboriginal participants.	*FOODcents* is a flexible nutrition education program designed to increase the consumption of fruit, vegetables, and cereals, decrease the consumption of foods high in sugar, fat, and salt, and improve food expenditure on a limited budget, delivered by a consortium of three non-government organisations. MODE Group	Not described

	First author, year	Program aim/objective	Brief description (including mode of delivery, duration, no. of sessions)	Critical resources (delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training)
			SETTING DOSAGE 1 2-hr session (single topic) OR 2-8 session course	
9	Quinn, 2017[13]	To reduce chronic disease risk factors by providing culturally tailored lifestyle advice and coaching to Aboriginal adults.	*Get Healthy Service* is a free telephone-based service supporting NSW adults to make sustained improvements in healthy eating, physical activity, reducing alcohol intake, and achieving or maintaining a healthy weight. MODE Resources and coaching calls SETTING DOSAGE 6 months (10 calls)	Coaches, telephone service
10	Skerrett, 2018[5]	To improve social and emotional wellbeing in young people.	*UHELP* sessions include an hour of content an hour of physical activity (touch football, relays, traditional Indigenous games) and the sharing of a healthy meal, with accompanying nutritional advice MODE Group SETTING DOSAGE 1/wk, 4 weeks	Facilitators
11	Waller, 2023[17]	To improve health outcomes by supporting behaviour change through culturally appropriate text messages.	*DTEXT* is a text-message intervention designed to improve lifestyle behaviours (nutrition, physical activity, smoking) among Aboriginal people with or at risk of chronic disease. MODE Text message, individual SETTING DOSAGE daily first 3 months, 4/wk last 3 months	Mobile phones, text message platform
	Non-intervention studies n=10			

	First author, year	Program aim/objective	Brief description (including mode of delivery, duration, no. of sessions)	Critical resources (delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training)
1	Crowe, 2017[23]	n/a – study explores Australian Indigenous children's cultural perspectives and healthy lifestyle behaviours.	MODE Face-to-face SETTING DOSAGE N/a	Focus group facilitators, participant incentive (gift voucher)
2	Esgin, 2023[14]	n/a – study describes barriers/enablers to physical activity overall. No specific program reported.		
3	Gidgup, 2022[7]	n/a – study describes program reported above.[2]		
4	Macniven, 2018[20]	To provide more opportunities for Aboriginal and Torres Strait Islander peoples to participate, achieve their goals, inspire themselves, their families, communities, and the nation.	*Indigenous Marathon Program is* a not-for-profit initiative which uses running and local role models to promote healthy lifestyles in Indigenous communities. MODE Group SETTING DOSAGE Annual	Runners undertake vocational courses in health, fitness and running coaching and are encouraged to establish and coordinate local community Indigenous running groups and fun runs
5	McRae, 2023[12]	To raise awareness on environmental health and skin infections.	During the COVID-19 pandemic, a community-led health promotion hip-hop music video, *HipHop2SToP* was produced involving young people from four Dampier Peninsula communities to promote healthy skin and healthy living practices. MODE Video, online SETTING DOSAGE n/a	Guidance from Woombooriny Amboon Angarriiya Partnership Initiative (WAAPI) Community Navigators. Access to technology, such as MS Teams, to facilitate 'digital yarning'. After-school virtual workshops with a local hip-hop artist in Broome and two hip-hop artists from Melbourne joining in via Zoom.
6	Peiris, 2019[8]	To engage Aboriginal communities in chronic disease screening and management.	*1 Deadly Step* is a community-based program using sporting platforms and cultural ambassadors to improve chronic disease prevention and management through screening, referrals, and follow-up.	Not described

	First author, year	Program aim/objective	Brief description (including mode of delivery, duration, no. of sessions)	Critical resources (delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training)
			MODE Community (rugby league) events SETTING DOSAGE Annual	
7	Seear, 2020[19]	To prevent diabetes in young Aboriginal people.	*Maboo wirriya, be healthy* involves an education component consistent with the US Diabetes Prevention Program and practical activities including group exercise. MODE Group education (30-min) and exercise to music SETTING DOSAGE 8 sessions	Facilitator and participant resources, music, tablet device
8	Stanley, 2024[4]	To improve health and educational outcomes among Aboriginal children through cultural connectedness.	The *Strong Culture, Healthy Lifestyles* project is a participatory community-based afterschool cultural program, delivered to Aboriginal children and their siblings, by two local Aboriginal mentors (one male and one female). MODE Group SETTING DOSAGE 2 2-hr sessions/wk, 10 weeks	Facilitators, facility (primary school, Aboriginal Child and Family Centre, Aboriginal Community), transportation to areas of cultural significance, food
9	Sushames, 2017[18]	To improve health outcomes.	A community-tailored physical activity program for Indigenous Australians who have a chronic disease or a risk factor for chronic disease in rural and regional settings. MODE Group SETTING DOSAGE 4 1-hr sessions/wk, 8 weeks	Facilitator
10	Urquhart, 2024[11]	To improve wellbeing.	*Spring into Shape* is an Aboriginal community-driven wellbeing program including exercise and nutrition	Gym, kitchen, facilitator, transport, fruit and vegetable vouchers

	First author, year	Program aim/objective	Brief description (including mode of delivery, duration, no. of sessions)	Critical resources (delivery personnel, participant incentives, equipment or infrastructure, guidelines or processes, staff training)
			components for adult men and women, who have or are at risk of a chronic condition, such as type 2 diabetes or cardiovascular disease, or mental illness such as depression or anxiety disorders. The program is led by an Aboriginal Health Worker. MODE Group SETTING DOSAGE 3/wk 1hr PA + 1/wk cooking/nutrition session, 20 weeks	

Table 3.3: Program features that enable or are barriers to participation

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
	Intervention studies n=11						
1	Babic, 2023[21]	The program was developed in consultation with Aboriginal service providers, community members, researchers, and other stakeholders well-known and well-connected within the Aboriginal communities. The		Intervention conducted by Hunter Primary Care staff and supervised by classroom teachers. To be cost-effective and sustainable for schools, classroom teachers need to be trained to deliver the	The inclusion of high-quality and culturally rich learning activities significant to the school communities. Recognising and promoting the cultural diversity of school communities through school-based learning programs can help		Lack of parental/wider community involvement may limit effectiveness.

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
		reference group guided decision-making at all stages of the project including reviewing consent forms and delivery methods and examining each component of the program.		program and embed it in their learning schedule. Provision of additional training and resources be provided for teachers (e.g. tailored and community-informed lesson plans that support the curriculum in the area of healthy eating) and parents (e.g. educational resources, videos and newsletter promotions). This could potentially allow for community engagement.	build educational and health and wellbeing outcomes for students and their families. Focus on expression through movement contributed to learning, success and enjoyment by students. Inclusion of culture into PDHPE in schools may be needed for promoting sustainability – offering rich contexts to initiate learning and connect PDHPE education with a more holistic worldview may be needed. Consideration towards inclusion of cultural connection with food when designing nutrition intervention.		
2	Bohn-Goldbaum, 2022[3]			*Knockout Health Challenge* – age and gender were related to retention for initial participation, with females and older (>49 years) participants more likely to complete	Emphasis on cultural values of community and connectedness through the team format. Social support and cohesion, inclusion of family members and group-structured		

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
				their first participation. Adequate and high PA increased the odds of first participation retention compared to low PA. The odds of contest completion increased significantly with each fellow team member completing. This shows the reinforcing effect of retention within a team. Potential for sporting organisations to be used to optimise uptake, participation and retention in KHC by males warrants further exploration. Investigating the use of mixed gender vs. single gender programs suggested given high retention rates observed in single-sex interventions and gender differences in sport and PA attitudes and beliefs.	formats are factors promoting participation. Prior social ties might facilitate successful outcomes. Staffing factors have been shown to affect participation in community settings. Team managers play a role in fostering KHC participation and their role and the potential interaction between leadership and social ties on participation could be explored further.		
3	Cunningham, 2022[9]				Aboriginal health workers are often the		

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
					first point of contact with the local community who seek to access health services, their presence is pivotal to the delivery of culturally safe and comprehensive primary health care for Aboriginal people.		
4	Gidgup, 2022[2]	Extensive consultation with Aboriginal community groups is important. Active listening to Aboriginal voices when building meaningful, culturally appropriate service provision and delivery for Aboriginal populations. Privilege Aboriginal leadership and relationships. Culturally competent, experienced and confident Aboriginal researchers and support workers assisted and supported delivery of the program.		Aboriginal health workers to facilitate making the PA program as comfortable as possible for the Elders by providing group and individual support for all aspects of attendance and participation.	Relationship building forms an integral part of how Aboriginal people prefer to interact with health professionals and if based on mutual respect then the communication and conversation can be fruitful. A 'one size fits all' approach to working with Aboriginal Elders living on Country in different places will not necessarily work, as there may be different language, and cultural practices. Engaging with Aboriginal Elders to be engaged in conversations to seek input as to how		Cost

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
		Decolonising approach to implementation: inform and seek recommendations, decisions, approval and consent of Aboriginal people. Prior to commencement, work with Elders develop terms of reference describing their values and expectations about how the program will be conducted to meet the needs of the community. Understanding that one's own cultural beliefs, values, attitudes and practices may vary considerably and being able to accept and be respectful of these differences was fundamental. Having knowledge of the history of older Aboriginal and Torres Strait Islander peoples which includes trauma, loss and illness, means that steps can be taken toward mutual			Aboriginal and non-Aboriginal staff need to meet and work together. Program delivery in local community centres which were culturally safe spaces. These centres were used by other local Aboriginal people for their cultural activities and multicultural activities that the local Aboriginal community participated in, Use of yarning circles – a respectful and culturally acceptable way to engage with Elders, for it helps to improve and build lasting relationships by honouring the Elders through actively listening. Yarning circles facilitated by Aboriginal health worker/ project officer.		

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
		understanding and building partnerships for more respectful and meaningful communication, leading to successful outcomes.					
5	Hu, 2019[15]				Aboriginal health worker or other staff member present and working closely with the exercise physiologist at each session.		
6	Mendham, 2015[16]	Development and ownership of interventions by community members and organisations are effective at improving clinical health outcomes for primary disease prevention within Aboriginal Australians.			Aboriginal Australians are community focused and so group and sport-based intervention is more appropriate than individualised gym-based programs.		
7	Murtha, 2021[6]		Social connectedness (connecting and re-connecting with family and friends) and a shared responsibility to help each other emphasised to	Repeated events needed to increase reach.			

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
			increase motivation levels.				
8	Pettigrew, 2015[10]	No barriers/enablers reported					
9	Quinn, 2017[13]	Working closely with ACCHS and be sensitive to Aboriginal needs by providing a personalised service. Community consultation process in partnership with Aboriginal communities can lead to enhancement of a mainstream service to meet the health and cultural needs of the population. Involve community in: planning and delivery; respect and respond to differences in culture; incorporate flexibility and be well-coordinated. Build awareness and credibility through community promotions and networks and partnerships.		Referral pathways through ACCHS	Train non-Aboriginal staff in cultural competency skills	Marketing: use straightforward language and strong Aboriginal visuals and colours; emphasise free service Use of coaches to provide support to participants, and act as ambassadors for the program (recommend to others) Train Aboriginal health workers in the use of the service.	Addressing lifestyle behaviours must consider that food choices and losing weight do not necessarily have a high priority within Aboriginal communities. Time commitment required. Flexibility of booking coaching calls. Ability of the service to sensitively understand Aboriginal people, kinship and culture and be responsive to Aboriginal health needs.

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
10	Skerrett, 2018[5]	Framework based on three principles: 1) Community ownership – program developed by and for the Aboriginal community; 2) Cultural validity – program based on culturally accepted constructs for discussing and improving health and wellbeing; 3) Community-individual engagement – program delivered within a framework designed to build genuine relationships and trust with the community. To implement the above, a cultural governance framework involving 3 groups of stakeholders established: Youth Advisory Group, Steering Committee, Elder's meetings (second two were existing community oversight structures).	Modelling holistic health with the mental health benefits of exercise and healthy diet is consistent with Aboriginal conceptualisations of wellbeing and was considered as important to the program as the content.		Topic areas in program conceptualised in a way that made sense from a cultural perspective. Program delivery: for each hour of content there was an hour of PA (e.g. touch football, relays, traditional Aboriginal games), the sharing of a healthy meal with accompanying nutritional advice. This provided a platform for facilitators to build relationships with participants prior to engaging in program content. Separate groups for male and female participants and jointly facilitated by a male and female project officer from the local Aboriginal community. Culturally sensitive material delivered by a same-sex facilitator.		

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
11	Waller, 2023[17]		The intervention used cultural determinants of health with program delivery occurring within an established Aboriginal-led program to enhance participant empowerment, self-determination, connectivity and cultural safety.	Low-cost text message program reported as feasible. High use of mobile phones among Aboriginal people, and the fact that text messages can be received without phone credit or data improve access to health support. Ease and convenience of text messages may also be preferred over health apps for Aboriginal people who have low computer literacy and poor engagement. The sharing of text messages to non-participants increased reach.			
	Non-intervention studies n=10						
1	Crowe, 2017[23]	The program was co-designed through the Participatory Action Research framework, which ensured meaningful community	The discussion guides were formatted to elicit dialogue in a non-threatening way and a variety of activities to encourage interaction	Focus groups were conducted at the schools. Each group session was attended by three project team members, a facilitator,	A qualitative research method was selected as the most culturally appropriate way to engage with Indigenous		Recruitment was direct through the primary schools (purposive sampling) and children without

First author, year	Enablers of participation					Barriers to participation
	Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
	engagement at every stage. Aboriginal communities were involved from the outset, with their input guiding the program's development. After receiving community approval, the developers collaborated closely with Aboriginal stakeholders to create culturally appropriate materials, such as discussion guides. Ongoing dialogue and feedback were central to the process, ensuring the program remained responsive to community needs and priorities.	from the children, such as a flash card game with pictures of different activities and food. The discussion guide was split into four key areas: places, people, food and drink, and things to do. Cultural interactions have encouraging effects on emotional wellbeing, linking participants to sense of identity and belonging Instead of separating health into categories of PA and healthy eating, consider it holistically for this cohort with health being the outcome of connectedness. Sharing knowledge is a crucial aspect of sustaining links to Country and maintaining health. Interventions promoting and celebrating culture may improve participation rates and consequently health outcomes.	a scribe and an observer. For the pilot sessions, an Aboriginal Educational Officer or parent were also present.	communities because it provided: a platform for conversation; a way to understand diversities in experiences and identities; and a means of interpreting varying social lives, languages, communities and belief systems. The discussion guide was distributed to the Board of Managers, Aboriginal Education Officers, and the Aboriginal Children and Family Centre General Manager for face validity testing. Cultural practices embedded within everyday life and associated with healthy lifestyle behaviours related to healthy eating and PA. E.g. dancing, football, collecting bush tucker, fishing.		written consent were not allowed to participate unless verbal consent was received.

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
2	Esgin, 2023[14]	Participatory Action Research methods were used to design the data-gathering instrument for the study, a questionnaire co-designed with the Noongar Aboriginal Community of Perth, WA. This instrument was designed in consultation with key community stakeholders, Noongar Elders and Noongar Academics, facilitated by the first author (TE), a member of the Noongar community.		A larger proportion of males (34%) than females (24%) reported greater ease in finding time to exercise every day.	Culturally safe exercise options and facilities where Indigenous people live are important and likely improve accessibility and exercise participation.	Facilitators mainly related to the potential social and community benefits of exercising with other people, preferably in small groups, and the importance of a culturally secure venue.	The most common barriers indicated by participants were exercising with an injury (63%), changing diet (58%), finding time to exercise every day (55%) and exercising the next day with pain from exercising the day before (54%). More females (46%) than males (25%)reported that exercising vigorously more than 10min continuously was too hard sometimes/most of the time/always. 40% of participants indicated that exercising was too expensive about half the time, most times or always. This underscores the value in flexibility

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
							of exercise options and of having supportive environments for exercise.
3	Gidgup, 2022[7]	The program was adapted from a NSW based program called The *Ironbark* program. This was then tailored with Aboriginal elders in WA, for Aboriginal elders in WA. The lead researcher, a Noongar woman, is well known in her community. Community consultation was undertaken for approximately two years (2017- 2019) with older Aboriginal and Torres Strait Islander people and service providers on Noongar Country in the Southwest of WA.	The lead researcher used her knowledge and lived experience to engage and work closely with the groups, having the ability to take an Aboriginal perspective of being mindful and flexible. This was important for her own understanding of working with complex Aboriginal communities. She was aware that things are not always going to run well, bearing in mind the effects of an oppressive history,37 and knowing that continuous listening, patience, respect and reciprocity are needed when working with Elders.	Decolonising PA programs leads to better access for Aboriginal people.	Stakeholders conveyed that the key enabler to the program being delivered successfully was that the team developed a culturally appropriate space. This was undertaken in a shared ways of working with Elders by placing importance on building strong relationships and creating a sense of belonging. Stakeholders reflected that the success of the program was evidenced by the positive benefits observed, such as social connections, for both the Elders and the communities.		
4	Macniven, 2018[20]	In 2014, two of the 12 *Indigenous Marathon Program* squad runners lived on		Reaching different groups of people of all ages was seen as important.	Physical activity becoming a social norm (i.e. overcoming 'shame')	High initial levels of community readiness.	Lack of motivation, perceptions of shame.

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
		Thursday Island and established the island's Deadly Runners.			Importance of support for individuals and groups.		Environmental factors such as roaming camp dogs, the heat and lack of public footpaths.
5	McRae, 2023[12]	Aboriginal community-ownership and leadership by 'community navigators' providing effective guidance to all stakeholders. Ground-up approach. Virtual collaboration to maintain relationships with remote communities during COVID-19 lockdowns was critical success factor.			Strong sense of 'Aboriginal knowing, doing and being' underpinned the philosophy of the intervention strengthening the cultural validity and integrity of the project. Demonstrated the need for community-led health promotion where Aboriginal people's voices and culture are central to messaging to help facilitate ownership and strengthen sustainability.	Strengths based approach: Provide opportunities for local people to be employed and local organisations to be contracted rather than skills required being outsourced. E.g. a strong enabler of intervention was the employment of local community members to support the project.	
6	Peiris, 2019[8]	Collaboration model: Engage local stakeholders via a working group to determine interest and capacity in organising an event. Drawing on			De-medicalise intervention: Holding community event outdoors rather than inside a clinic facility; hold event concurrently with a longstanding	Community engagement and marketing strategy: Use of Country Rugby League ambassadors; event shirts.	Intersectoral collaboration between local hospital districts, GPs, ACCHSs, and other agencies given different

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
		existing 'community capital'. Ability of the co-ordinating agency to be locally responsive while at the same time providing macro-level view of the program important factor to success.			national cultural event (NAIDOC).	Integration of intervention into service processes.	jurisdictional responsibilities, information systems, and care processes.
7	Seear, 2020[19]		Although program focused on healthy lifestyle changes, program content recognised a holistic concept of health and the relationship between health behaviours and broader wellbeing.	Program modifications were made to suit the local context and participants. These modifications were ascertained during formative research with local community members. Content comprehensive but straightforward, concise and accessible to people with limited formal education and without English as a first language. E.g. colourful visual information, videos, face-to-face formats preferred. Emphasis on practical skills for everyday use.	Refine program for local context needs/specific risk factors in a community. Pilot presentation of information in local context. Group PA included in each session with the intention to be supportive and devoid of pressure. Preference for single-sex groups, and gender-matched facilitator. Use language appropriate and relevant to the local context/community.	Replicable format for sustainability. E.g. no guest speakers or excursions required.	Attention span of young people.

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
				Format of education component did not require participant interaction, acknowledging high level of disengagement from formal education among participants. Group and individual support opportunities with program facilitator. Accommodation for sporadic attendance and flexibility in delivery. E.g. arranging information by topic rather than week of delivery.	Design of intervention to be delivered by community members and peers in replicable format. This contributed to its cultural appropriateness, peer support and role modelling. Focus on developing the health facilitation skills of local Aboriginal people.		
8	Stanley, 2024[4]	Involving participants in the design from the beginning and using a bottom-up approach in partnership with the local community is critical. Flexible approach to design and implementation, providing the local community with ownership and control.	Connection to culture and healthy lifestyles viewed holistically.		Changes to program delivery by local program mentors due to cultural observance, e.g. when Country provided a teaching opportunity, the mentors adapted the program accordingly. Culturally appropriate content that connects participants with their culture enhanced	Word of mouth most effective strategy for recruitment. Recruiting children requires a relationship with the children. Other strategies – visual – use a video clip.	Time of year and days of planned implementation are important factors impacting attendance and types of activities implemented. Transport a key factor impacting attendance and retention of participants.

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
		Adopting a strengths-based approach using culturally appropriate methods in the intervention based on cultural respect and community engagement e.g. storytelling, photography, yarning.			acceptability of the program.		Intervention designed for children needs to be designed to meet different educational/pedagogical needs of different ages.
9	Sushames, 2017[18]		PA seen as a means for prevention and management of chronic disease in some communities.	No cost to participate. Flexibiity in program delivery to allow participation by those who are the primary carer for children or dependent adults.	Inclusion of family members into the activities. Recruitment via snowballing methods through family members and kinship connections.	Peer support and guidance. Good relationship with the facilitator and other participants. Gender matched facilitators. Separate groups by gender. Need for role models.	Work commitments Logistical barriers: timing of class, access to transport, access to facilities. 'Sorry business' (a time of mourning) in the community. Barriers to PA: Menstruation for females. Lack of family and peer support. Shame and stigma – the desire to personally

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
							improve oneself through exercise can be looked upon as a shameful and disconnecting experience by the community as it is often undertaken separately from family and community.
10	Urquhart, 2024[11]	'Lifeworld approach' privileges shared understanding and advocates for policy makers and service providers to listen to Aboriginal voices to enable actions by and with community members to shape strong wellbeing programs. It is important for health service providers to take the time to develop relationships with each distinct Aboriginal community as part of their practice to enable change.	'Lifeworld approach' Qualities of love, connection, respect, culture and belonging sustain the wellbeing program. These relational and communicative qualities involve the dynamics of identity, power and self-determination and demonstrate a culturally responsive path towards self-determination of Aboriginal health and wellbeing.		Aboriginal health worker program coordinators play pivotal roles as 'boundary spanners' or 'cultural brokers' - transitioning between supportive and advocacy roles – working with program participants, health system logistics and funding requirements. They also play a crucial role as cultural mentors, trust-builders and community consultants in wellbeing programs that involve non-Aboriginal health professionals as facilitators, and in		

	First author, year	Enablers of participation					Barriers to participation
		Co-design	Holistic views/perspectives of health	Access	Cultural appropriateness	Other	
					programs funded and facilitated by Western health systems.		

References

1. Clark JM, Sanders S, Carter M, et al. Improving the translation of search strategies using the Polyglot Search Translator: a randomized controlled trial. *J Med Libr Assoc* 2020; 108: 195-207. 2020/04/08. DOI: 10.5195/jmla.2020.834.
2. Gidgup MJR, Kickett M, Jacques A, et al. Translating and Evaluating a Physical Activity Program for Aboriginal Elders on Noongar Boodjar (Country) - A Longitudinal Study. *Frontiers in Public Health* 2022; 10. DOI: 10.3389/fpubh.2022.904158.
3. Bohn-Goldbaum E, Cashmore A, Bauman A, et al. Team members influence retention in a First Peoples' community-based weight-loss program. *Preventive Medicine Reports* 2022; 26. DOI: 10.1016/j.pmedr.2022.101710.
4. Stanley RM, McKnight A, Probst Y, et al. Strong culture, healthy lifestyles: a mixed methods feasibility study for a co-created afterschool cultural programme for Australian Aboriginal children. *Pilot and Feasibility Studies* 2024; 10. DOI: 10.1186/s40814-023-01422-y.
5. Skerrett DM, Gibson M, Darwin L, et al. Closing the Gap in Aboriginal and Torres Strait Islander Youth Suicide: A Social-Emotional Wellbeing Service Innovation Project. *Australian Psychologist* 2018; 53: 13-22. DOI: 10.1111/ap.12277.
6. Murtha K, Thompson K, Cleland P, et al. Adaptation and evaluation of a nutrition and physical activity program for early childhood education settings in Aboriginal and Torres Strait Islander communities in remote Far North Queensland. *Health Promotion Journal of Australia* 2021; 32: 163-171. DOI: 10.1002/hpja.352.
7. Gidgup MJR, Kickett M, Hill KD, et al. Connecting and reconnecting to a community, with a sense of belonging - Exploring Aboriginal Elders' perspectives of engaging in a physical activity program. *Health Promotion Journal of Australia* 2022; 33: 138-149. DOI: 10.1002/hpja.582.
8. Peiris D, Wright L, News M, et al. Community-Based Chronic Disease Prevention and Management for Aboriginal People in New South Wales, Australia: Mixed Methods Evaluation of the 1 Deadly Step Program. *Jmir Mhealth and Uhealth* 2019; 7. DOI: 10.2196/14259.
9. Cunningham FC, Murphy MG, Ward G, et al. Impact of an Aboriginal and Torres Strait Islander brief intervention training program on health staff participants' own health behaviours: Smoking, nutrition and physical activity. *Health Promotion Journal of Australia* 2022; 33: 235-245. DOI: 10.1002/hpja.628.
10. Pettigrew S, Jongenelis MI, Moore S, et al. A comparison of the effectiveness of an adult nutrition education program for Aboriginal and non-Aboriginal Australians. *Social Science & Medicine* 2015; 145: 120-124. DOI: 10.1016/j.socscimed.2015.09.025.
11. Urquhart L, Roberts K, Duncanson K, et al. Sustaining an Aboriginal wellbeing program: Informing health promotion practice and policy. *Health Promotion Journal of Australia* 2024; 35: 457-469. DOI: 10.1002/hpja.776.
12. McRae T, Walker R, Enkel S, et al. HipHop2SToP a community-led health promotion initiative empowering Aboriginal youth in the Kimberley region of Western Australia: a process evaluation. *Frontiers in Public Health* 2023; 11. DOI: 10.3389/fpubh.2023.1258517.
13. Quinn E, O'Hara BJ, Ahmed N, et al. Enhancing the get healthy information and coaching service for Aboriginal adults: evaluation of the process and impact of the program. *International Journal for Equity in Health* 2017; 16. DOI: 10.1186/s12939-017-0641-8.
14. Esgin T, Hersh D, Rowley K, et al. The facilitators and barriers to exercise in the Noongar Aboriginal population in Perth, Australia. *Health Promotion International* 2023; 38. DOI: 10.1093/heapro/daac023.
15. Hu J, Basit T, Nelson A, et al. Changes in exercise capacity and anthropometric measures after Work It Out-a holistic chronic disease self-management program for urban Aboriginal and Torres Strait Islander people. *Public Health* 2019; 174: 49-55. DOI: 10.1016/j.puhe.2019.05.035.

16. Mendham AE, Duffield R, Marino F, et al. A 12-week sports-based exercise programme for inactive Indigenous Australian men improved clinical risk factors associated with type 2 diabetes mellitus. *Journal of Science and Medicine in Sport* 2015; 18: 438-443. DOI: 10.1016/j.jsams.2014.06.013.
17. Waller K, Furber S and Bauman A. Acceptability, feasibility and preliminary impact evaluation of a pilot text-message study on improving the health of Aboriginal people with, or at risk of, chronic disease in Australia. *Health Promotion Journal of Australia* 2023; 34: 24-29. DOI: 10.1002/hpja.676.
18. Sushames A, Engelberg T and Gebel K. Perceived barriers and enablers to participation in a community-tailored physical activity program with Indigenous Australians in a regional and rural setting: a qualitative study. *International Journal for Equity in Health* 2017; 16. DOI: 10.1186/s12939-017-0664-1.
19. Seear KH, Atkinson DN, Henderson-Yates LM, et al. Maboo wirriya, be healthy: Community-directed development of an evidence-based diabetes prevention program for young Aboriginal people in a remote Australian town. *Evaluation and Program Planning* 2020; 81. DOI: 10.1016/j.evalprogplan.2020.101818.
20. Macniven R, Plater S, Canuto K, et al. The "ripple effect": Health and community perceptions of the Indigenous Marathon Program on Thursday Island in the Torres Strait, Australia. *Health Promotion Journal of Australia* 2018; 29: 304-313. DOI: 10.1002/hpja.43.
21. Babic M, Maynard J, McLeod R, et al. Evaluation of Yantiin Kalabara - 5 Ways to a Healthier You: A primary school-based education program targeting healthy living choices through interactive workshops. *Australian Journal of Indigenous Education* 2023; 52. DOI: 10.55146/ajie.v52i2.636.
22. Welfare AIoHa. Mortality and life expectancy of Indigenous Australians: 2008 to 2012. Canberra: AIHW, 2014.
23. Crowe R, Stanley R, Probst Y, et al. Culture and healthy lifestyles: a qualitative exploration of the role of food and physical activity in three urban Australian Indigenous communities. *Aust N Z J Public Health* 2017; 41: 411-416. 2017/06/16. DOI: 10.1111/1753-6405.12623.
24. Bohn-Goldbaum E, Cashmore A, Bauman A, et al. Team characteristics associated with weight loss in a First Nations community intervention: An observational study. *Health Promotion Journal of Australia* 2023; 34: 9-12. DOI: 10.1002/hpja.663.
25. Brimblecombe J, Ferguson M, Chatfield MD, et al. Effect of a price discount and consumer education strategy on food and beverage purchases in remote Indigenous Australia: a stepped-wedge randomised controlled trial. *Lancet Public Health* 2017; 2: E82-E95. DOI: 10.1016/s2468-2667(16)30043-3.
26. Brimblecombe J, Ferguson M, McMahon E, et al. Reducing Retail Merchandising of Discretionary Food and Beverages in Remote Indigenous Community Stores: Protocol for a Randomized Controlled Trial. *Jmir Research Protocols* 2019; 8. DOI: 10.2196/12646.
27. Passmore E, Donato-Hunt C, Maher L, et al. Evaluation of a pilot school-based physical activity challenge for primary students. *Health Promotion Journal of Australia* 2017; 28: 103-109. DOI: 10.1071/he16021.
28. Browne J, Adams K, Atkinson P, et al. Food and nutrition programs for Aboriginal and Torres Strait Islander Australians: an overview of systematic reviews. *Australian Health Review* 2018; 42: 689-697. DOI: 10.1071/ah17082.
29. Grunseit AC, Bohn-Goldbaum E, Crane M, et al. Participant profile and impacts of an Aboriginal healthy lifestyle and weight loss challenge over four years 2012-2015. *Australian and New Zealand Journal of Public Health* 2019; 43: 328-333. DOI: 10.1111/1753-6405.12914.
30. Fehring E, Ferguson M, Brown C, et al. Supporting healthy drink choices in remote Aboriginal and Torres Strait Islander communities: a community-led supportive environment approach. *Australian and New Zealand Journal of Public Health* 2019; 43: 551-557. DOI: 10.1111/1753-6405.12950.
31. Canuto K, Brown A, Wittert G, et al. Understanding the utilization of primary health care services by Indigenous men: a systematic review. *Bmc Public Health* 2018; 18. DOI: 10.1186/s12889-018-6093-2.
32. Dumont C, Butcher LM, Foulkes-Taylor F, et al. Effectiveness of Foodbank Western Australia's Food Sensations(R) for Adults Food Literacy Program in Regional Australia. *International Journal of Environmental Research and Public Health* 2021; 18. DOI: 10.3390/ijerph18178920.

33. Porykali B, Davies A, Brooks C, et al. Effects of Nutritional Interventions on Cardiovascular Disease Health Outcomes in Aboriginal and Torres Strait Islander Australians: A Scoping Review. *Nutrients* 2021; 13. DOI: 10.3390/nu13114084.
34. Gidgup MJR, Kickett M, Weselman T, et al. Barriers and Enablers to Older Indigenous People Engaging in Physical Activity-A Qualitative Systematic Review. *Journal of Aging and Physical Activity* 2022; 30: 340-352. DOI: 10.1123/japa.2020-0465.
35. MacLean S, Ritte R, Thorpe A, et al. Health and wellbeing outcomes of programs for Indigenous Australians that include strategies to enable the expression of cultural identities: a systematic review. *Australian Journal of Primary Health* 2017; 23: 309-318. DOI: 10.1071/py16061.
36. Passmore E, Shepherd B, Milat A, et al. The impact of a community-led program promoting weight loss and healthy living in Aboriginal communities: the New South Wales Knockout Health Challenge. *Bmc Public Health* 2017; 17. DOI: 10.1186/s12889-017-4955-7.
37. Seear KH, Atkinson DN, Lelievre MP, et al. Piloting a culturally appropriate, localised diabetes prevention program for young Aboriginal people in a remote town. *Australian Journal of Primary Health* 2019; 25: 495-500. DOI: 10.1071/py19024.
38. Wallace S, Scarcella M, Sealy L, et al. Aboriginal and Torres Strait Islander children with obesity: A review of programmes for children and young people aged 5-17 years. *Journal of Paediatrics and Child Health* 2022; 58: 2150-2155. DOI: 10.1111/jpc.16267.
39. Canuto K, McDermott R and Cargo M. Participant views on participating in a pragmatic randomised controlled trial: the Aboriginal and Torres Strait Islander Women's Fitness Program. *Int J Equity Health* 2014; 13: 77. 2014/09/07. DOI: 10.1186/s12939-014-0077-3.
40. Engstrom T, Lobo EH, Watego K, et al. Indigenous data governance approaches applied in research using routinely collected health data: a scoping review. *NPJ Digit Med* 2024; 7: 68. 2024/03/16 21:42. DOI: 10.1038/s41746-024-01070-3.
41. Aquino D, Leonard D, Hadgraft N, et al. High prevalence of early onset anaemia amongst Aboriginal and Torres Strait Islander infants in remote northern Australia. *Australian Journal of Rural Health* 2018; 26: 245-250. DOI: 10.1111/ajr.12403.