JOURNAL OF Pharmacy Practice and Research
Official Journal of the Society of Hospital Pharmacists of Australia
ADVANCED PHARMACY AUSTRALIA

RESEARCH ARTICLE

Working together to ensure research conducted with Aboriginal and/or Torres Strait Islander Peoples is culturally appropriate illustrated using a pharmacy-intervention study

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Abstract

Background: Historically, health research conducted in Australia with Aboriginal and/or Torres Strait Islander Peoples has not been requested by communities. Health policies cite evidence for inclusive care including cultural perspectives.
Aim: To determine if the design and implementation of a pharmacist-led diabetes screening study was culturally appropriate for Aboriginal and/or Torres Strait Islander Peoples admitted to a metropolitan hospital, located in New South Wales (NSW), Australia.
Method: Data were drawn from four components: (1) timeline and key steps to develop the study, (2) study alignment with the *NSW Aboriginal health ethics guidelines: key principles*, (3) elements and processes of bicultural care, and (4) the extent of community participation. Ethical approval was granted by the Human Research Ethics Committee of the Aboriginal Health and Medical Research Council of NSW (Reference no: #1709/20) and the St Vincent's Hospital Human Research Ethics Committee (Reference no: #2020/ETH01314) and the study conforms to the Australian *National statement on ethical conduct in human research*. In the original intervention study, informed consent was obtained from all participants via distribution of a project information sheet and completion of a written consent form.
Results: The process to design and implement the larger study demonstrated cultural appropriateness across four analyses. Strengths included involvement from knowledge holders and Aboriginal clinician-researchers. Analyses illustrated respect for community priorities as central to the research process. This required sufficient time for respectful conversations, formation of strong partnerships, and reciprocity. Future studies should ensure time is set aside to build relationships with patients in concept building and design phases. Results cannot be generalised to another hospital. However, study findings could inform diabetes care efforts in other hospital settings.
Conclusion: Respectful, non-rushed two-way communication was crucial to the cultural appropriateness of the study. This study offers suggestions for pharmacists wishing to conduct research in this area. Future research is needed to incorporate Indigenous research methodologies into study designs and to apply the Australian Bicultural Care model to other clinical settings.

Keywords: Aboriginal and Torres Strait Islander Peoples, Indigenous Australian, hospital pharmacist, research, culturally appropriate.

INTRODUCTION

All authors are employed on Gadigal land in Australia, except one who is employed on Wurundjeri land in Australia (KL) and one on Osage land (GPK) in the United States of America. Two authors are Yuin nation (PD and SD) and one author is Gundungurra nation (GPK).

The terminology which refers to Aboriginal and/or Torres Strait Islander Peoples (the First Peoples of Australia) will be used throughout this paper except when referring to existing resources which at times use other terms. Within New South Wales (NSW), the term

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'Aboriginal' is preferred over 'Aboriginal and Torres Strait Islander' by the Aboriginal Health & Medical Research Council of NSW.[1,2]

Historically, health research conducted with Aboriginal and/or Torres Strait Islander Peoples has not been requested by communities or informed by their priorities.[3] As a result, communities have been disempowered in the research process,[3,4] and research has been limited by a Western-centric (biomedical) lens. However, in the past 30 years, health policy efforts have cited evidence for more inclusive health care that includes cultural perspectives and healing traditions of Aboriginal and/or Torres Strait Islander Peoples.[5] The term 'bicultural care'[6] has been used in this context and refers to the concept of offering evidence-based medical approaches alongside Aboriginal and/or Torres Strait Islander approaches to care. To facilitate such inclusive approaches, research must be guided by and conducted with the community.[7]

Few publications describe hospital pharmacists working with Aboriginal and/or Torres Strait Islander Peoples.[8] A number of hospital pharmacy services exist across Australia specifically for Aboriginal and/or Torres Strait Islander Peoples. However, these have not had the opportunity to be evaluated or measure impact on health outcomes.[9] Some recent work in a metropolitan setting provides valuable outcome data on the impact of holistic team-based care (including hospital pharmacists and Aboriginal and/or Torres Strait Islander Peoples) and medication supply on discharge.[10,11] To our knowledge, no studies have documented the steps taken by hospital pharmacists to deliver 'bicultural care'. In Aboriginal Community Controlled Health Organisations (ACCHOs), pharmacists routinely integrate holistic care in a culturally safe environment with positive outcomes.[12,13]

In Australia, national[14,15] and state-based guidelines[7] help ensure research conducted with Aboriginal and/or Torres Strait Islander Peoples is safe and ethical. In addition, three Australian states have Aboriginal and/or Torres Strait Islander-specific human research ethics committees (South Australia, Western Australia, and New South Wales). Despite this, a recent survey of researchers in Aboriginal and/or Torres Strait Islander health found that existing research was mainly based on non-Indigenous notions of health, led by non-Indigenous researchers, and conducted in non-Indigenous settings.[16] Prioritising partnerships with Aboriginal and/or Torres Strait Islander researchers and communities and embedding Indigenous research methodologies into all aspects of the research are likely to produce research that is culturally appropriate and valuable to communities.[17,18]

In a Canadian commentary on Indigenous research methodologies in pharmacy practice, relationality, reciprocity, and storytelling with metaphors were core elements.[18] Australian studies have highlighted the role of researcher reflexivity in Aboriginal and/or Torres Strait Islander health research.[3] These processes can enhance researchers' understanding of power imbalances, centre the needs of Aboriginal and/or Torres Strait Islander Peoples, and decolonise the research process.[4,19] However, to our knowledge, no previous Australian studies have documented approaches by hospital pharmacists to enable research to be conducted in a culturally appropriate way. To address this shortcoming, this paper seeks to guide researchers, including pharmacists, through the process of conducting culturally appropriate research with Aboriginal and/or Torres Strait Islander Peoples. Specifically, we aimed to determine if the process used to design and implement a pharmacist-led diabetes screening study[8] was culturally appropriate for Aboriginal and/or Torres Strait Islander Peoples admitted to a NSW metropolitan hospital.

Study objectives will:

1. Describe steps taken to develop the study, collect data, and disseminate findings.
2. Map how the study aligned with the Aboriginal Health & Medical Research Council of NSW (AHMRC) *NSW Aboriginal health ethics guidelines: key principles*[7] for conducting research with Aboriginal and Torres Strait Islander Peoples.
3. Determine elements and processes of bicultural care present in study interactions by mapping field notes to the Australian Bicultural Model of Care.[6]
4. Determine the level of community participation by Aboriginal and/or Torres Strait Islander Peoples in the research process.[20]

METHOD

Ethics Statement

Ethical approval was granted by the Human Research Ethics Committee of the Aboriginal Health and Medical Research Council of NSW (Reference no: #1709/20) and the St Vincent's Hospital Human Research Ethics Committee (Reference no: #2020/ETH01314) and the study conforms to the Australian *National statement on ethical conduct in human research*. In the original intervention study, informed consent was obtained from all participants via distribution of a project information sheet and completion of a written consent form.

Study Design

This study explored the approach taken in a larger intervention study (Connecting the Dots of Care) that aimed to optimise diabetes care for Aboriginal and/or Torres Strait Islander Peoples admitted to a metropolitan hospital located in the Australian state of NSW.[8]

Aboriginal Leadership

The larger study was co-conceived using iterative cycles of feedback led by the pharmacist-researcher (SW) and the director and manager of the hospital site's Aboriginal Health Unit (PD and SD respectively; Yuin nation). The Aboriginal Health Unit provides support to Aboriginal and/or Torres Strait Islander patients, families, and carers. In the larger intervention study, the unit gave the pharmacist-researcher (SW) practical advice to ensure the cultural safety of study participants. Project support was also provided by the Aboriginal health committee at the study site. This committee is composed of Aboriginal representatives (community and hospital-based) and hospital staff and is responsible for improving the health of Aboriginal and/or Torres Strait Islander Peoples admitted to the hospital. In this study, the Aboriginal Health Unit was consulted on the study design, had oversight of the processes being used, reviewed and contributed to data analysis, and worked with the pharmacist-researcher (SW) to conduct analysis of the 'level of community participation by Aboriginal and/or Torres Strait Islander Peoples in the research process'.

Connecting the Dots of Care Study

This larger Connecting the Dots of Care study aimed to identify how metropolitan hospital pharmacists could detect if Aboriginal and/or Torres Strait Islander patients had diabetes or a higher chance of getting diabetes. The main study outcomes have been published elsewhere.[8]

Setting

A major teaching hospital in metropolitan Sydney, NSW, Australia.

Participants

Participants in the larger intervention study (Connecting the Dots of Care)[8] were Aboriginal and/or Torres Strait Islander patients, aged 18 years or older, admitted to the study hospital (Monday to Friday) during a 12-week period from July–October 2021.

Data Sources, Collection, and Analysis

Data for this study were drawn from four discrete components to determine if the research process was culturally appropriate (Table 1):

1. *Timeline and key steps taken to develop the study*: Key steps taken during study development, data collection, and dissemination of findings were documented visually on a timeline (by SW). The timeline was checked by the Yuin nation co-author (PD) and by KL.
2. *How the study aligned with AHMRC Aboriginal health ethics guidelines*: The approach taken mapped the key elements of the 'timeline' figure against the AHMRC *Aboriginal health ethics guidelines: key principles*[7] (by SW, checked with PD and KL). These five principles demonstrate how research projects bring (1) net benefits for Aboriginal people and communities, (2) Aboriginal community control of research, (3) cultural sensitivity, (4) reimbursement of costs, and (5) enhancement of Aboriginal skills and knowledge. Note that studies involving Aboriginal Peoples in NSW are required to obtain ethical approval from the AHMRC Human Research Ethics Committee.[7] This mapping enabled us to gauge how well the AHMRC Aboriginal health ethics guidelines[7] were embedded in the study.
3. *Elements and processes of bicultural care present in the study by mapping researcher-pharmacist field notes to the Australian Bicultural Model of Care*:[6] Field notes by the pharmacist-researcher (SW) documented during data collection (July–October 2021) provided reflective impressions on service implementation and patient interactions and the reflexivity required. Each field note (n = 196) was audio recorded on a mobile phone (by SW), later transcribed using Rev (Rev.com, Inc., Austin, TX, USA) and checked (by SW) prior to analysis.

The Australian Bicultural Model of Care[6] provides a template to document elements of bicultural approaches to health care. The three levels of care in this model are interpersonal processes (relationship building), treatments to promote healing, and service-level factors that can help or hinder care. This model was developed by a Gundungurra scholar (GPK) in the context of a study to improve screening and uptake of treatment for unhealthy alcohol use (drinking above recommended guidelines) in Aboriginal and Torres Strait Islander community-controlled primary care settings.[21] Using principles of the Australian Bicultural Care Model,[6] field

Table 1 Study objectives and associated data sources

Method	Timeline of key steps taken (Figure 1)	How study aligns with the AHMRC Aboriginal health ethics guidelines[7] (Figure 3)	Elements and processes of bicultural care present in study (Figure 4a–c)	Extent of community participation in research process
Objective	Describe steps taken to develop study, collect data, and disseminate findings	Map how the study aligned with the AHMRC Aboriginal health ethics guidelines[7] for conducting research with Aboriginal and Torres Strait Islander Peoples	Determine elements and processes of bicultural care present in study interactions by mapping field notes to the Australian Bicultural Model of Care[6]	Determine level of community participation by Aboriginal and/or Torres Strait Islander Peoples in research process
Data source(s)	Reflected upon and documented key steps taken during: • Relationship building (internal and external to the hospital) • Study development • Data collection • Dissemination of findings	Timeline of key steps (Figure 1) was mapped against each item of the AHMRC Aboriginal health ethics guidelines[7]	Review of field notes documented by pharmacist-researcher during data collection (July–October 2021; n = 196) and mapped against Australian Bicultural Care Model[6] (developed by a Gundungurra scholar [GPK])	Assess community participation in research process using tool adapted by Snijder et al.:[20] • Timeline (Figure 1) • Study infographic tools (Figure 2a,b) • Study alignment with AHMRC Aboriginal health ethics guidelines[7] (Figure 3)

AHMRC = Aboriginal Health & Medical Research Council of NSW; GPK = Gemma Purcell-Khodr.

'CONNECTING THE DOTS OF CARE'		STEPS TAKEN
Improve cultural awareness in metropolitan hospital pharmacy department	2010	Sought advice from AHU Built links with the only Aboriginal health professional employed at study site hospital
Identify when Aboriginal Peoples are admitted to hospital	2014	Worked with AHU to improve admission process. Mandatory question asked on admission, now visible to staff in patient software. Patient name marked with Aboriginal flag icon[a]
Brainstorm how pharmacists can help Aboriginal patients admitted to hospital	2015 – 2017	Process developed with AHU for pharmacists to assist with continuity of care in relation to medicines (supply, communicate, educate)
Improve cultural responsiveness in pharmacy care		Senior hospital pharmacist attended half-day cultural responsiveness workshop run by IAHA
Enhance cultural appropriateness of communication with Aboriginal patients in hospital		With AHU: developed, conducted and evaluated Yarnin'[b] cards; conducted clinical yarning workshops for pharmacists hospital-wide
Enhance pharmacist learning of chronic disease in Aboriginal and Torres Strait Islander contexts		Discussions with AHU about published and local evidence; importance of early diabetes detection; importance of pharmacists' role in prioritising Aboriginal patients (e.g. as an advocate and liaison with staff/family)
Communicate with knowledge holders about proposed concept for diabetes care study[c]	2018	*Endocrine* (individual clinicians and whole department) • Fostered joint understanding on need for study, sought advice on study design, referral pathways during admission and on discharge *AHU* • Built on previous work with pharmacy department to improve knowledge of chronic illness burden in community; introduced pharmacy team to community members; committed to find ways for pharmacists to be of value to Aboriginal patients • Discussed and reviewed cultural appropriateness of study design, data collection, analysis approach *Community* • Sought advice from Aboriginal leaders/relevant organisations: on cultural safety, study design and implementation • Sought advice from site-based Aboriginal Health Committee: for support study concept and design feedback on need being met *Research experts* • Sought advice on all aspects of study from researchers with expertise in Aboriginal and Torres Strait Islander health, pharmacy care *Project advisory committee formed* • Brought together Aboriginal and Torres Strait Islander and non-Indigenous Australian experts to oversee the study and ensure participant wellbeing • Regular meetings (face-to-face or online), and by email, or 1:1 (with SW) to ensure all feedback was heard
Obtain project funding		Applied for and awarded grant funding
Develop study tools and related collateral[d]	2019	*Worked with advisory team, Aboriginal staff and research supervisors* • Patient information statement form presented in an infographic way to accommodate varying comfort with reading English and the data collection tools *Worked with Aboriginal graphic designer* • To develop, pilot and produce culturally appropriate study infographic *Worked with Aboriginal leaders and research experts* • To develop verbal script to recruit patients to the study

Figure 1 Timeline describing steps taken to develop study, collect data, and disseminate findings. Timeline shading: grey = prior to participant recruitment; black = after participant recruitment began. AHU = Aboriginal Health Unit; GP = general practitioner; IAHA = Indigenous Allied Health Association; PD = Pauline Deweerd; SW = Susan Welch. [a]Flag icon: image of Aboriginal Australian flag.[29] [b]Yarning is a culturally appropriate method of communication used by Aboriginal and/or Torres Strait Islander Peoples to connect and share information and stories.[30] [c]Communication with knowledge holders occurred throughout the study development, implementation, analysis, and dissemination. [d]Feedback sought, obtained and incorporated. [e]Soft fresh fruit chosen to accommodate varying comfort with eating and oral health. [f]Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS): map of Indigenous Australia.[31]

Build knowledge	2020	*Increased pharmacist-researcher understanding* To address stigma and blame around diabetes • Incorporated gentle discussions on diabetes care with 'soft landings'[25] to enable non-judgemental brief yarns
		Participants • Increase their understanding of diabetes care (via brief intervention), linked with care in community (via GP)
		Patients' GP • Provided with knowledge and understanding on patients' diabetes test results, care and plan received during hospital admission
Acknowledge time given to the study		Individuals' contributions to the study recognised in spirit of reciprocity[7] • Patients who consented to take part were offered fresh soft fruit during initial yarn[e] • Participants followed up after hospital discharge and received a $20 store voucher by mail
Obtain ethical approvals		Aboriginal Health and Medical Research Council (AHMRC) • Aboriginal specific human research ethics committee • Hospital-based human research ethics committee
Recruit participants and collect data	2021	Conversations with participants assisted by: • Yarnin' cards previously developed with AHU (SW/PD) • AIATSIS[f] Indigenous Australia interactive map to share with participants where we were from • Culturally appropriate diabetes resources
		Benefit to clients for taking part in the study: • Immediate (test results, brief yarn on diabetes) • Sustained (test results and care plan shared with GP)
		Weekly 1-page updates for study Advisory Committee and research supervisors
		To ensure study consistency, discussions with endocrinology (doctors/nurses) when staff changes occurred during participant recruitment
		Active and reflexive listening to learn from yarns with participants – informed subsequent discussions with other participants (by senior hospital pharmacist lead)
		Approaches to offer brief yarns on diabetes screening and care with patients shared with pharmacists in hospital wards
Knowledge translation for participants and community[d]	2022	Provided barbeque on hospital grounds to feedback study findings; local investigators had input into food and drink options (AHU [PD], endocrine dietician)
		All participants received an invite to attend community barbeque by post/text message, with a reminder 7 days before the knowledge translation event
		Staff from hospital site invited to celebrate with participants at community barbeque (e.g. AHU, endocrine, pharmacy, hospital executive)
		1-page infographic designed about the study and key findings (accommodating varying comfort with reading) and shared with all at community barbeque and via mail
Knowledge translation for wider professionals[d]	2023	Results presented to AHU management, external and site-based Aboriginal Health Committee and Advisory committee. Discussed and reviewed cultural appropriateness of interpretation, knowledge translation, write up
		1-page infographic about the study and results shared with knowledge holders by email, discussions and/or formal slide during presentations to staff
		Fully drafted manuscript submitted to AHMRC for review prior to submission to peer reviewed journal as per ethical requirement[7]
		Manuscript published in peer reviewed journal

Figure 1 (*continued*)

notes were reviewed individually (by SW, GPK, KL), then via online discussions to identify key elements to provide bicultural pharmacist-led diabetes care.

4 *Extent of community participation in research process*: A tool adapted by Snijder et al. to assess community participation in research[20] was used (by SW, PD). Participation was assessed across a spectrum, from 1, no participation, to 7, self-mobilisation. The level of participation is considered at four stages in the research process: (1) diagnosis (identification of a community's priorities), (2) development (of appropriate strategies to address the priorities), (3) implementation (of the strategies), and (4) evaluation (the effectiveness of the strategies/project).

Two authors assessed the level of community participation (SW, PD). First, a summary of the study and its outcomes was provided (by SW) using the timeline (Figure 1), study infographic tools (Figure 2a,b), and a map showing study alignment with the AHMRC *NSW Aboriginal health ethics guidelines: key principles*[7] (Figure 3). A 'walk-through' of the community participation assessment template[20] was presented (by SW). SW and PD independently scored each phase of the project using paper and pen. Differences were debated until consensus was reached.

RESULTS

Four separate analyses helped determine if the research process used was culturally appropriate for Aboriginal and/or Torres Strait Islander Peoples admitted to a metropolitan hospital. Each analysis is detailed in what follows.

Timeline and Key Steps Taken to Develop Study

The timeline illustrated important elements required to allow sufficient time and opportunity for respectful conversations, the formation of strong partnerships, appropriate communication styles (e.g. yarning, infographics), and reciprocity (Figure 1).

Time taken to nurture relationships (within and external to the study site) were built on trust and mutual respect over several years (2010–2023). Flexible timeframes enabled the study to mesh with local priorities (as described by PD and SD to SW). To do so, study engagement occurred without presumption that the study would be implemented. This enabled culturally appropriate communication and discussion with Aboriginal community members and health professionals at the study site.

Knowledge holders with a range of expertise contributed to the study design (Aboriginal community leaders, Aboriginal health, pharmacy, endocrinology). In total, seven investigators and mentors guided the study. Of the seven, three were Aboriginal Australians (PD, SD, and a community leader). Expertise of non-Indigenous collaborators included research (pharmacy, public health, Aboriginal health) and endocrinology. Feedback was actively requested and incorporated from all knowledge holders, which helped to remove power imbalances between study participants and researchers and between Aboriginal and non-Indigenous researchers.

How the Study Aligns with the AHMRC Aboriginal Health Ethics Guidelines

Figure 3 depicts how the study aligns with the AHMRC *NSW Aboriginal health ethics guidelines: key principles*.[7] Providing immediate benefit from the research for individuals, their extended family, and community was a core theme. For example, at an individual level, each participant was equipped with diabetes knowledge, linked with care if needed and/or requested, and in some cases (n = 10) their risk of diabetes was identified earlier. During discussions with participants in hospital some expressed that at a community level they wanted to share, while others could share if they wished, their diabetes knowledge learned during the study with family and community members (e.g. enabling early identification of diabetes risk and of glycated haemoglobin [HbA1c] testing).

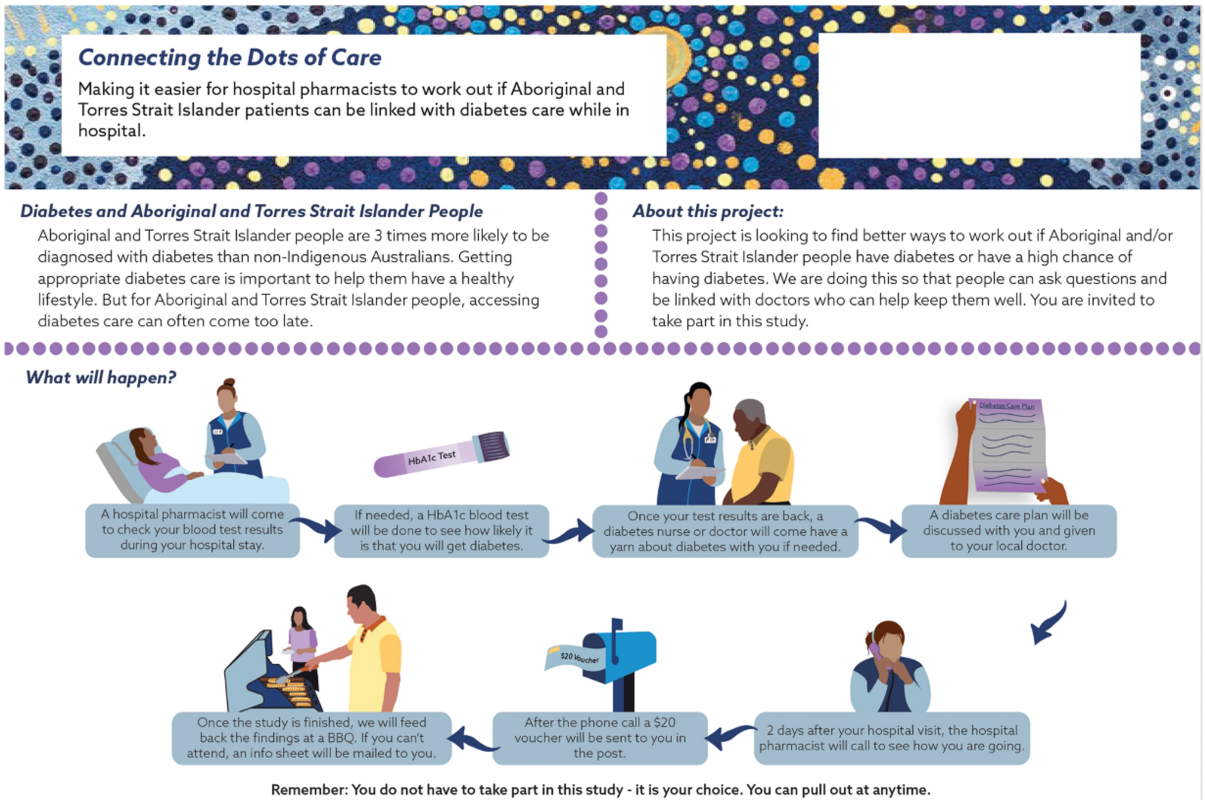
Mapping Field Notes to Australian Bicultural Model of Care

Key elements used to provide bicultural pharmacist-led diabetes care were identified using the Australian Bicultural Model of Care.[6] Elements across all three levels were identified: (1) interpersonal processes, (2) treatment and healing (delivery of bicultural care), and (3) service strategies (factors that help or hinder delivery of diabetes care) (Figure 4).

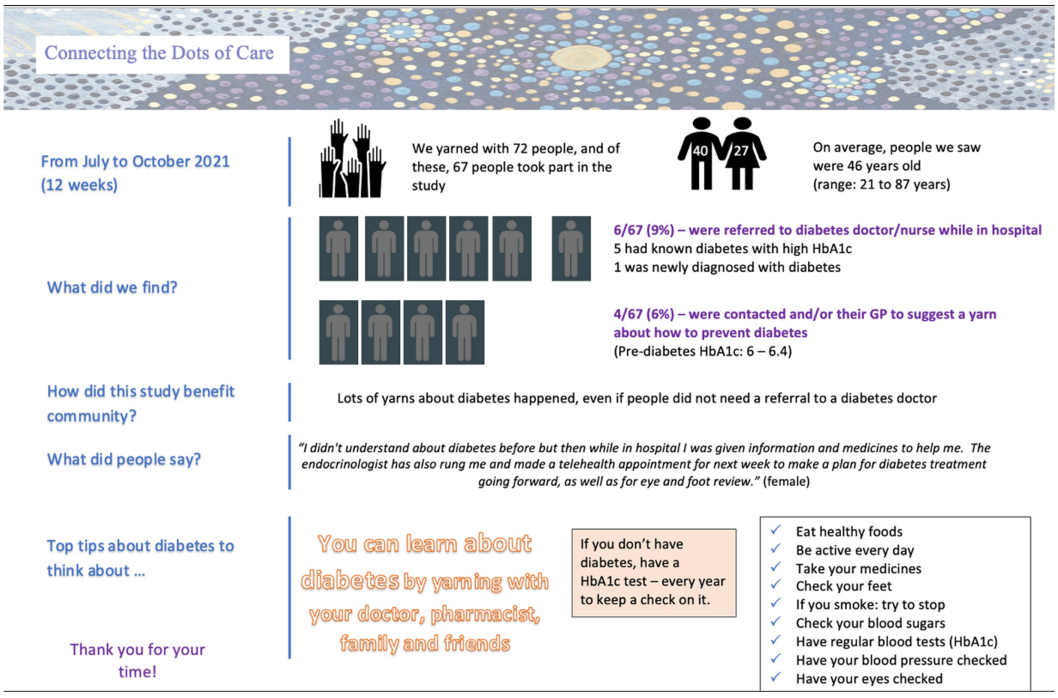
Interpersonal Processes

Supportive and respectful bicultural care was consistent in interactions between the pharmacist-researcher and study participants. Yarning occurred with managed humour, sufficient time, sharing of experiences and respect, honesty, and reliability. In turn, this appeared to

(a) To explain the project:



(b) To explain the results:



*Artistic elements used in infographics were based on original artwork designed for the study by Ms Caitlin Wharton.
Artwork in the infographic header: Dalarinji - "Ours belonging to us" by Aboriginal artist Lani Balzan

Figure 2 Infographics* used in Connecting the Dots of Care study to explain the project and explain the results. (a) To explain the project. (b) To explain the results. BBQ = barbeque; GP = general practitioner; HbA1c = glycated haemoglobin. *Artistic elements used in infographics were based on original artwork designed for the study by Ms Caitlin Wharton. Artwork in infographic header: Dalarinji – 'Ours belonging to us' by Aboriginal artist Lani Balzan.

help build trust in the participant–pharmacist relationship. It also provided the foundation to offer pharmacist-led diabetes care (Figure 4a, Level 1).

Treatment and Healing (Delivery of Bicultural Care)
Options in black text depict bicultural care approaches, and those in grey represent Western healing approaches (Figure 4b, Level 2). Key bicultural treatment and healing options were delivered in brief yarns on diabetes (brief intervention). Yarns aimed to improve health literacy and empower patients to make behaviour change on their own terms. Western approaches were important to link patients with follow up care after hospital discharge (e.g. screening tests, diabetes results shared with a general practitioner [GP] or other hospital, links with local support providers).

Service Strategies (Factors that Help or Hinder Delivery of Diabetes Care)
Figure 4c (Level 3) depicts service strategies needed to help deliver diabetes care in a culturally appropriate way. For example, it was important to have a system to respectfully identify Aboriginal and/or Torres Strait Islander patients in hospital.[29] Likewise, it was important to have strong partnerships with staff and management using easy communication methods to facilitate referrals to linked care (e.g. text messages during business hours). Reflexive social advocacy by the pharmacist helped enable access to referrals to other services (e.g. Aboriginal Medical Service or Aboriginal Health Worker to assist with GP referral).

Extent of Community Participation in the Research Process[20]

Of the four phases of project development, three (diagnosis, development, and evaluation) had a high level of participation (score of 6/7). Just one phase (implementation) required further discussion to achieve consensus (final score of 4/7; equating to 'participation by consultation' reflecting that 'community participated in activities decided upon by outsiders').

DISCUSSION

This paper intended to help build capacity in the hospital pharmacist community to conduct culturally appropriate research. We did this by describing and assessing steps taken to undertake a larger intervention study (Connecting the Dots of Care). First, we assessed the level of cultural appropriateness of the research intervention. The timeline of key steps taken and the mapping to the AHMRC *NSW Aboriginal health ethics guidelines: key principles*[7] show the depth and longevity of planning required to conceive and undertake our study. The mapping to the Australian Bicultural Model of Care (developed by Gundungurra scholar GPK)[6] and assessment of community participation assessed the study's cultural appropriateness. Mapping data to the Australian Bicultural Care Model[6] enabled us to determine the extent of bicultural elements in the research process (from conception to knowledge translation) and included consideration of participant satisfaction.

A key strength of this study was involvement from a range of knowledge holders, as illustrated within the timeline and the key steps taken throughout, as well as the study alignment with the AHMRC Aboriginal health ethics guidelines.[7] Another key strength was the involvement of Aboriginal clinician-researcher authors throughout the study from conception through to analysis, interpretation, and write-up (PW, SD). This helped ensure accountability of the study with community and health service partners. Assessing community participation across the lifespan of the research project also aided in upholding the principles of ethical, transparent research.

Community Prioritisation and Participation

Taking time to build relationships was prominent in this study. Sufficient time helped create opportunities for study partnership, participation, and guidance from Aboriginal and/or Torres Strait Islander Peoples. Respect for community was central to the research process and helped ensure the study met community priorities.[7,15] Respectful two-way relationships with Aboriginal community leaders, researchers, and health professionals helped nurture successful relationships.[6] This occurred both within the research team and with participants when seen by clinicians after discharge in hospital outpatient care. To facilitate this, a side-by-side approach was taken, with researchers walking with clinicians and participants to improve screening and diabetes care.

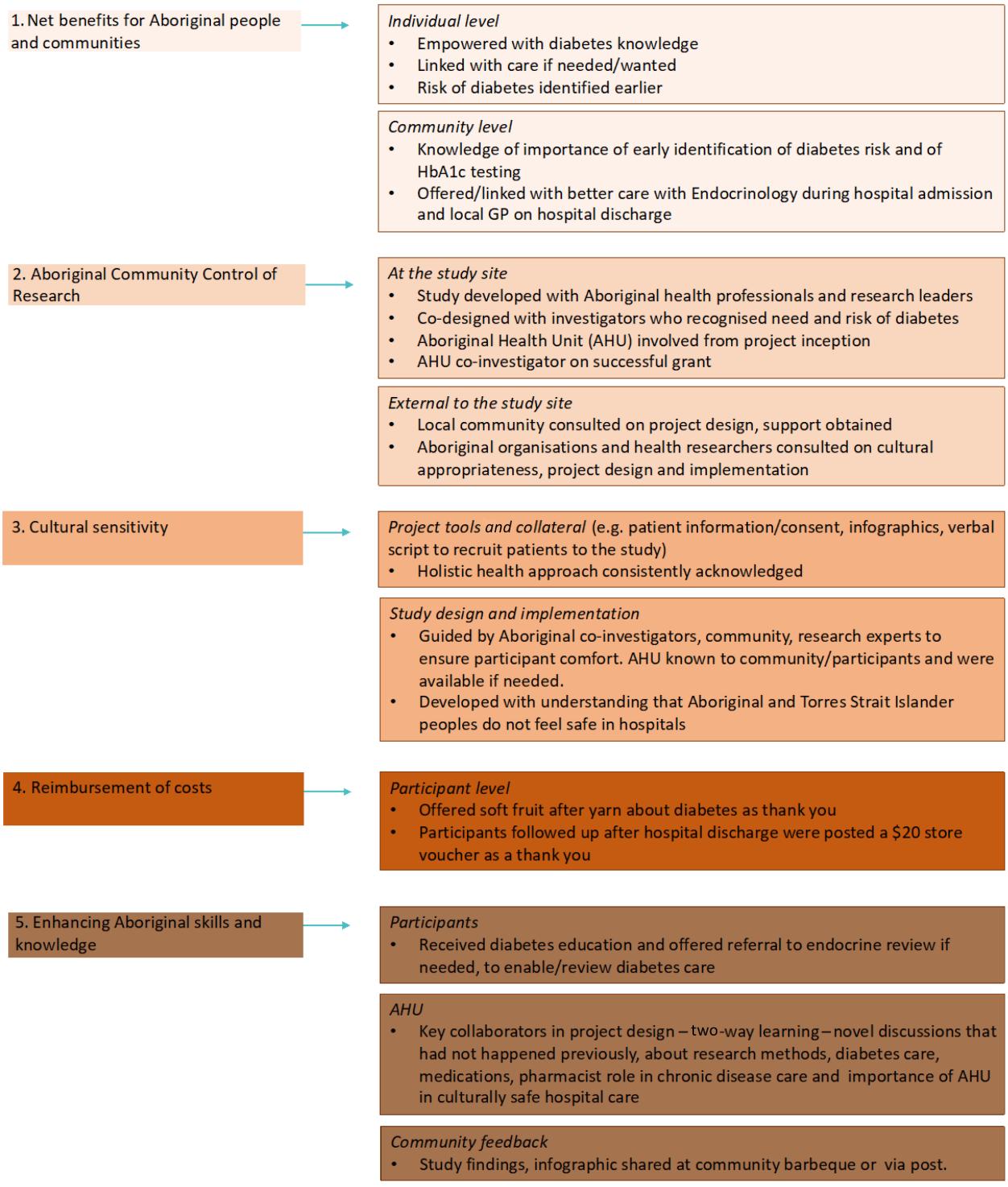


Figure 3 How the 'Connecting the Dots of Care' study[8] aligns with the Aboriginal Health and Medical Research Council of NSW (AHMRC) *NSW Aboriginal health ethics guidelines: key principles*[7] for conducting research involving Aboriginal and Torres Strait Islander Peoples. ABH = Aboriginal Health Unit; GP = general practitioner; HbA1c = glycated haemoglobin.

The importance of guidance and mentorship from Aboriginal and/or Torres Strait Islander colleagues cannot be understated yet is challenging to achieve in pharmacy practice, where the workforce is small. To achieve this in the present study, knowledge holders were sought out (by SW) to share perspectives and experiences, which in turn strengthened the design and informed implementation and dissemination of outcomes. Despite this, the assessment of community participation (implementation phase) achieved a final score of 4/7 (by two reviewers, SW and PD). This score equated to 'participation by consultation'. This score is understandable given that study participants did not have a voice in the overall study design. Instead, Aboriginal leadership in the study hospital guided the study as local knowledge holders. Future studies should invest more time to build relationships with patients in the study design phase to ensure optimal study success.

Hospitals are historically unsafe, stressful places and a particularly vulnerable setting for Aboriginal and/or Torres Strait Islander Peoples.[22] In the larger intervention study, Aboriginal community members and health workers felt safe to participate and generously shared their knowledge while knowing it would be shared in published literature. The respectful research process and relationship building likely empowered Aboriginal staff and study participants to take part (consented, n = 67/72; 93%) and are reflected in the satisfaction expressed by patients referred to the endocrinology unit (satisfied [n = 1/6], very satisfied [n = 5/6]).[8] While often not enough time or resources are allocated to ensure cultural safety in hospitals,[22] this study demonstrated how community expectations could be met when enough time is set aside to fully develop and conduct research projects.[15]

Reciprocity was a key theme in relationships developed throughout the study.[23] Reciprocity took different forms, in line with key national ethical guidelines.[14,15] Initial discussions with participants involved the sharing of stories to develop mutual connection and trust (Figure 4a, Level 1). Individual contributions to this study were recognised by offering fresh soft fruit. Participants followed up after hospital discharge received a $20 store voucher by mail. Knowledge translation for participants and community occurred at a community barbeque with an infographic about the study and its key findings. The approach taken is similar with other Aboriginal health studies in diabetes care.[24]

Communication Strategies in Research Process

Respectful, non-rushed two-way communication was crucial to study success. Our analysis using the Australian Bicultural Model of Care[6] showed that such communication can enable relationships to be built, aiding the development of bicultural research methodologies and improving cultural appropriateness of research outcomes and dissemination methods. Examples included respectful yarning, active listening, reflexivity, use of infographics, and feeding back findings using plain English. The importance of reflexivity was highlighted in both the timeline (Figure 1) (as active and reflexive listening) and at level 2 of mapping to the Australian Bicultural Model of Care[6] (as reflexive care tailored to patient). All strategies helped build trust and were fundamental to good communication. These elements also helped increase comfort for all parties to have their voice heard throughout the study.[6] Similarly, in other studies, time spent early in the research process to build trust positively impacted recruitment and study outcomes.[6] The communication approach used in this study was similar to that of previous studies, including one that used 'soft landings' to help Aboriginal and Torres Strait Islander participants feel comfortable in surveys on alcohol use.[25]

However, in the hospital setting, it can be difficult to conduct bicultural research due to practical constraints, the use of a non-Western methodology, and the institutional racism and discrimination faced by Aboriginal and/or Torres Strait Islander Peoples in and out of hospital.[26] This work illustrated the range of factors that could hinder research being conducted in a culturally appropriate way (i.e. structural, staff personalities, knowledge-based). Awareness of such factors will be important to help clinician-researchers to target systems that could negatively impact the research process and harness those aspects that would strengthen it.[6,18]

Limitations

This study was conducted at one site in a single metropolitan study location in NSW, Australia. Accordingly, results cannot be generalised to another hospital, even in a metropolitan setting given the diversity of Aboriginal and/or Torres Strait Islander Peoples in Australia. However, study findings could inform another community's efforts in a hospital setting. The level of Aboriginal and/or Torres Strait Islander community participation was assessed by only two authors (one non-Indigenous), which may have included an element of bias.

Study Implications

As a result of the larger intervention study (Connecting the Dots of Care),[8] the hospital study site is actively

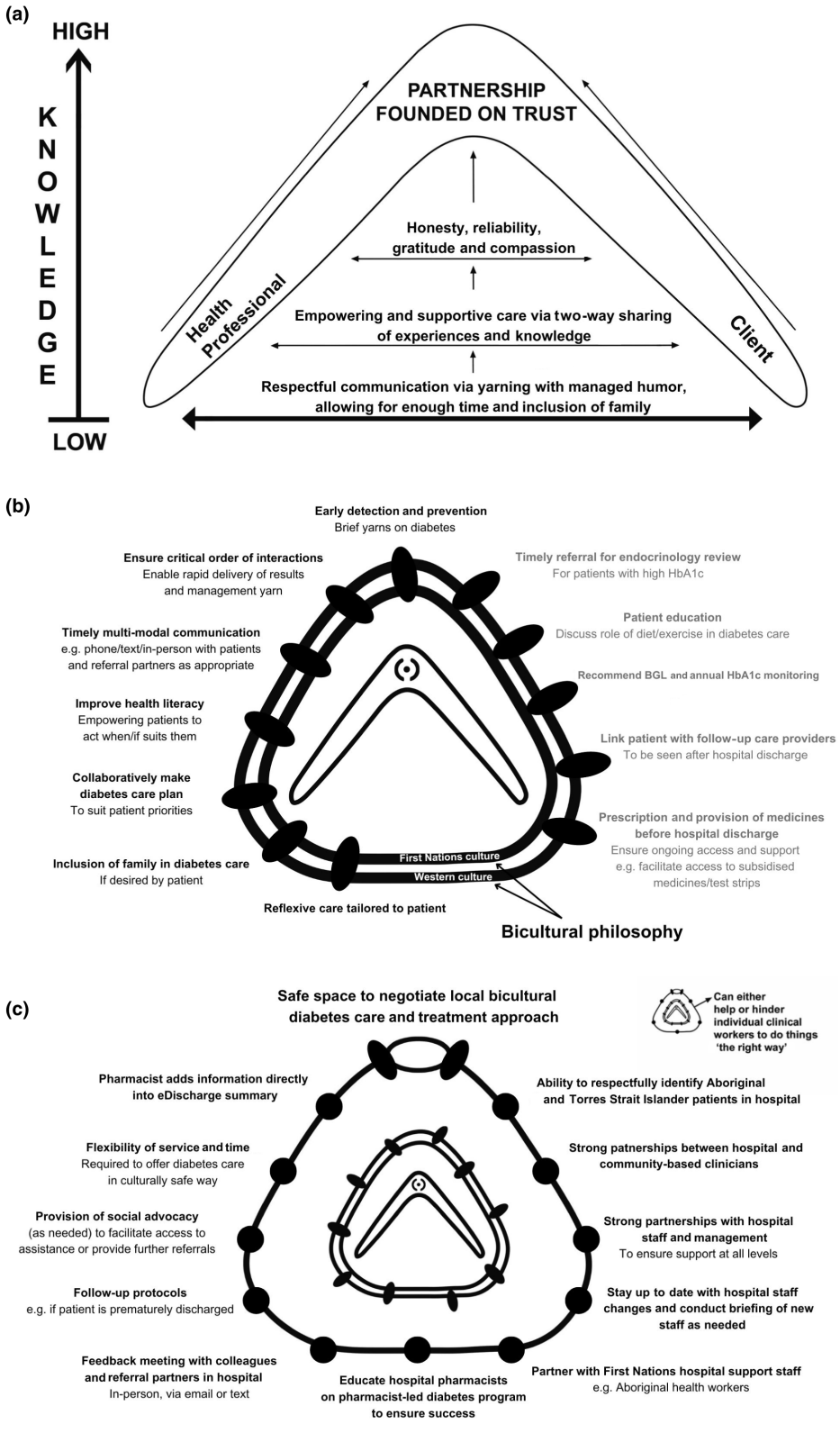


Figure 4 Mapping research process used in Connecting Dots of Care study to Australian Bicultural Care Model* in three levels. (a) Level 1: Service strategies, interpersonal processes. (b) Level 2: Treatment and healing (delivery of bicultural care). (c) Level 3: Service strategies (factors that help or hinder delivery of diabetes care).* Black text represent bicultural care approaches, grey/faded text represent Western healing approaches. BGL = blood gluclose level; HbA1c = glycated haemoglobin. *The artwork and concept of the three levels presented in this figure are based on work led by Gemma Purcell-Khodr and collaborators in a cluster randomised controlled trial conducted with Aboriginal Community Controlled Health Services to improve screening and treatment for unhealthy alcohol use, funded by the National Health and Medical Research Council via a Project Grant (Reference no: APP1105339) and the Centre of Research Excellence in Indigenous Health and Alcohol (Reference no: APP1117198).[6]

looking to expand this pharmacy-led diabetes screening and care service to involve more pharmacists. This study offers suggestions for pharmacists wishing to conduct research in this area (Figures 1–4). This includes the need for pharmacists to be educated on topics such as care of research participants, the importance of culture in holistic care, and culturally safe communication.

Expansion to other hospitals would require tailored communication strategies informed by local knowledges. This will help ensure research is aligned with community priorities and expectations. With these learnings in mind, the usefulness of this service for other chronic diseases in the hospital setting could be explored beyond diabetes.

It is worth considering the utility of the Bicultural care model[6] to help design, implement and evaluate research and care in other hospital settings. This would require adaptation and training to enable its use by busy clinicians.

Globally, pharmacists have been involved with strategies to promote health equity in a variety of settings.[27] However, incorporation of Indigenous research methodologies into pharmacy practice and practice-based research is in its infancy.[18] The ability of researchers to conduct culturally appropriate research with community and/or health service partners relies on the researcher having a deep understanding of the peoples and the settings where the research is to be conducted.[18] It also requires equal partnership with communities.[7] Such a deep understanding is required for pharmacists to undertake continuous learning through reflective practice.[28]

Conclusion

This paper demonstrated how the process followed to design and implement a pharmacist-led diabetes screening study in a NSW metropolitan hospital was culturally appropriate for Aboriginal and/or Torres Strait Islander Peoples. Respect for community priorities was central in every step of the research process. This required sufficient time and opportunity for respectful conversations, formation of strong partnerships built on mutual respect and trust, and reciprocity. The study offers suggestions for pharmacists wishing to conduct research in this area. Future research is needed to explore how to incorporate Indigenous research methodologies into study design and to apply the Australian Bicultural Model of Care[6] in clinical settings.

ACKNOWLEDGEMENTS

The authors acknowledge the study participants and staff at the site where this study was conducted. We also acknowledge Mr Boe Rambaldini (Elder, then Director of the Poche Centre for Indigenous Health, The University of Sydney), who provided advice during conception of the larger intervention study.

CONFLICT OF INTEREST STATEMENT

KL is Board Director of the Alcohol and Drug Foundation and Board Director (Victorian representative) of the Australasian Professional Society on Alcohol and Drugs, and is supported by National Health and Medical Research Council Ideas Grants (Reference no: APP1183744, APP2036689) and the Medical Research Futures Fund (Reference no: MRF2021660). The authors declare that they have no additonal conflicts of interest.

AUTHORSHIP STATEMENT

Susan Welch: Conceptualisation; methodology; data curation; writing – review and editing; writing – original draft; formal analysis; investigation; validation; project administration; software. **Gemma Purcell-Khodr:** Formal analysis; validation; writing – review and editing; investigation. **Pauline Deweerd:** Validation; formal analysis; investigation; writing – review and editing. **Rebekah Moles:** Writing – review and editing. **Alexander Viardot:** Writing – review and editing. **Scott Daly:** Writing – review and editing. **Kylie Lee:** Conceptualisation; methodology; data curation; investigation; validation; formal analysis; supervision; writing – original draft; writing – review and editing.

ETHICS STATEMENT

Ethical approval was granted by the Human Research Ethics Committee of the Aboriginal Health and Medical Research Council of NSW (Reference no: #1709/20) and the St Vincent's Hospital Human Research Ethics Committee (Reference no: #2020/ETH01314) and the study conforms to the Australian *National statement on ethical conduct in human research*. In the original intervention study, informed consent was obtained from all participants via distribution of a project information sheet and completion of a written consent form.

FUNDING STATEMENT

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

DATA AVAILABILITY STATEMENT

Data are not available due to sensitive nature of data collected of Aboriginal and Torres Strait Islander Peoples admitted to hospital.

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Received: 07 June 2024
Revised version received: 16 February 2025
Accepted: 23 March 2025