

Yarning with a remote Aboriginal community about the next steps for achieving healthy skin

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Abstract

Objective: Skin health is widely recognised as being important for overall good health and well-being, yet the burden of skin infections in remote Aboriginal communities remains high. This project aimed to explore if virtual support for skin health could be a strategy to reduce community barriers to skin health engagement.

Methods: This study collected qualitative data using a yarning methodology within a participatory action research design. A community co-researcher who was intimately familiar with the Country, language, and community in which this study was based was employed to guide the research process.

Results: The final dataset comprised of interviews with 21 participants. Three primary themes were identified including: Reach Further into the Community with Education and Skin Checks, Virtual Skin Health Support is not Preferred but Acceptable, and Environmental Health Cannot be Ignored.

Conclusions: Participants provided several suggestions on improving health promotion messaging within community whilst emphasising the need for a stronger focus on environmental health. The employment of a community co-researcher was integral to informing the methodology.

Implications for Public Health: This project provides further evidence of the significance of community engagement, inclusion and capacity building when conducting research in remote Aboriginal communities and the benefits of two-way learning as foundational to good research practices.

Key words: Aboriginal and Torres Strait Islander health, skin health, impetigo, participatory action research

Introduction

Skin health is widely recognised as being important for overall health and well-being,¹ yet the burden of skin infections in remote Aboriginal communities remains high. Across northern Australia, the highest rates of skin infections in the world are recorded.^{2,3} Serious downstream complications can develop from untreated bacterial skin infections, including acute rheumatic fever (ARF) and rheumatic heart disease (RHD).^{1,4} Alarming, although ARF and RHD have mostly been eliminated from high-income countries, these conditions persist in Aboriginal communities in remote Australia, with 92% of all ARF diagnoses between 2017 and 2021 being amongst Aboriginal Australians.⁵

The high burden of skin infections in remote Aboriginal communities can be attributed to environmental and social determinants of health

including crowded households, poverty and social disadvantage, and inadequate access to health hardware and water for washing.⁶ Although a link between skin sores caused by Strep A⁷ and ARF and RHD has been suspected for a long time,^{8,9} Oliver et al.⁴ only recently provided evidence that Strep A skin infections can trigger ARF. Strep A can enter the body through disruption from any itchy skin infection, with the potential to cause ARF and more serious health complications including RHD. Despite this, skin infections frequently go untreated due to under-recognition, normalisation, and lack of awareness of their importance on the part of both healthcare staff and community members,¹⁰ particularly in regions where there is also a high prevalence of serious health complications from these skin infections.¹¹

In 2014, skin health was identified as a significant problem and a research priority by community leaders, as well as by primary health

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care, health promotion and environmental health professionals, in the Kimberley region of Western Australia.¹² This resulted in the design of the See, Treat and Prevent skin sores and scabies (SToP) Trial,¹³ a stepped-wedge cluster randomised trial aiming to reduce the burden of skin infections in nine remote Aboriginal communities. The trial aimed to See skin infections (through school surveillance and training to improve the recognition of skin infections and their significance), Treat skin infections (children with infections were referred to the clinic for treatment, with the trial advocating for alternative evidence-based treatments) and Prevent skin infections (through the development of community-driven skin health promotion resources and environmental health initiatives).¹³ Trial results have been described elsewhere.^{14,15}

In 2022 and at the height of the COVID-19 pandemic in Western Australia, many of the communities that were involved in the SToP Trial closed to reduce COVID transmission risk. During this period, a co-designed, community-owned virtual skin check (VSC) was discussed with the research team as one potential way to continue providing ongoing healthy skin support to communities from trained skin health professionals. This would involve the use of an online platform, such as Microsoft Teams, to examine the participants' skin via video link, as would be done during in-person checks or telehealth appointments. In schools, an appropriate adult from the school would accompany a child, helping to move the camera to show already exposed skin, to answer questions and potentially to cover identified skin infections with band aids. The adult involved could also receive comprehensive training prior to being involved. The VSC could be considered a form of virtual health care or telehealth.¹⁶

This idea was subsequently presented to SToP Trial communities and supported by community members; however, it was ultimately not required as COVID-related community closures eased, and all planned skin checks were completed in person. However, the question of “what next?” for communities involved in the SToP Trial remained pressing as trial activities concluded at the end of 2022 and in-person skin checks ceased. The project therefore aimed to explore what the story of skin health was—past, present and future—for communities involved in the SToP Trial. Specific questions about the acceptability and feasibility of a support for skin health as a strategy to reduce community barriers to skin health engagement were woven into understanding the story of what the future of skin health would look like within communities, with an emphasis on community acceptability.

Methods

Setting

Of the nine remote Kimberley communities participating in the SToP Trial, Beagle Bay was selected for this sub-study due to its closer proximity to Broome (the largest Kimberley town and a SToP Trial base, 120 km south of Beagle Bay) allowing for frequent visits with relative ease (Figure 1). Additionally, the Beagle Bay community had not been involved in the development of as many community-driven health promotion initiatives as some of the other SToP Trial communities, and thus this research project presented itself as an opportunity to determine with the community their suggested next steps.

Study design

This study collected qualitative data using a yarning methodology within a participatory action research (PAR) design. PAR is a research methodology that involves collaboration between researchers and

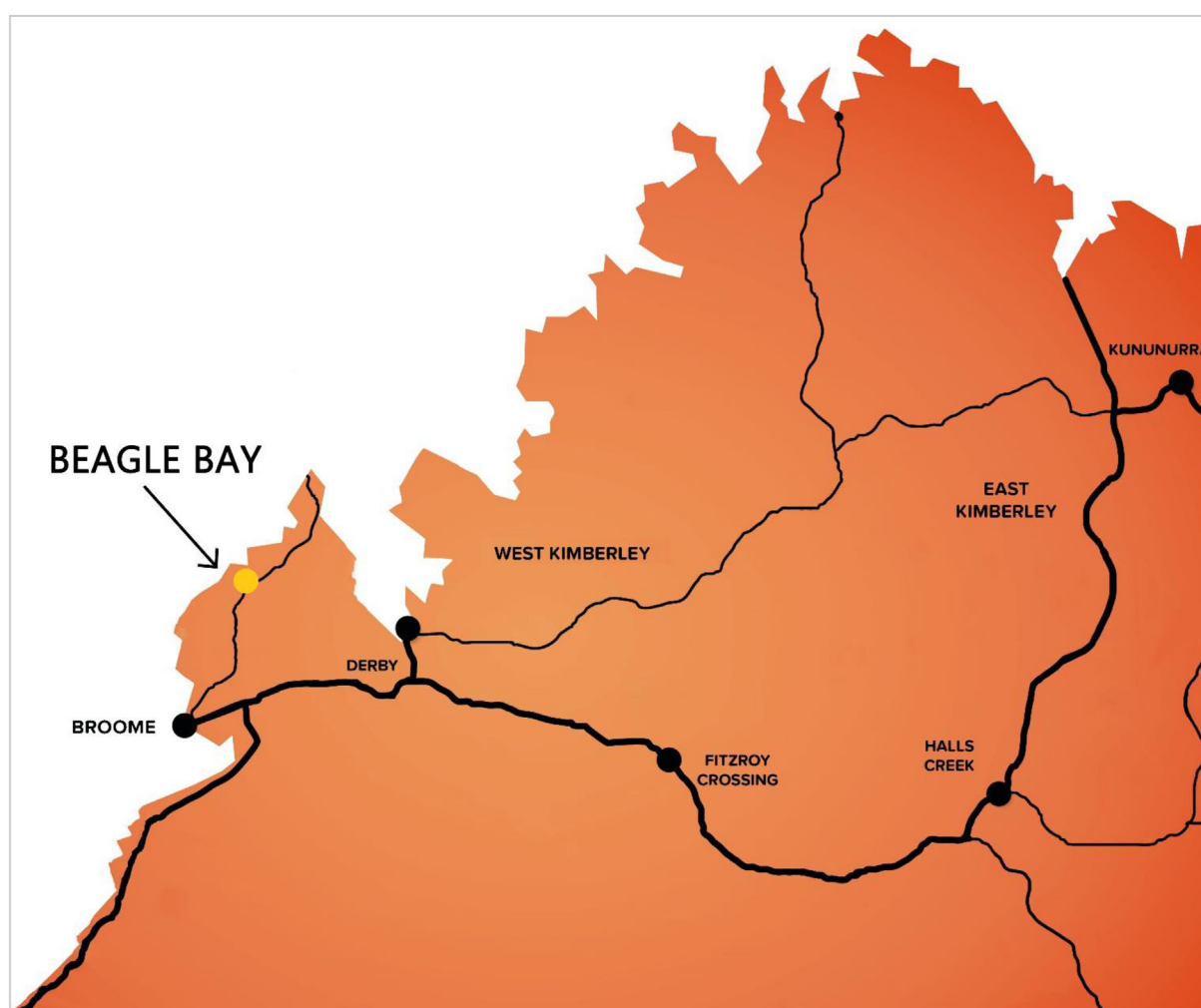
members of the community influenced by the research to bring about social change and provide community members with increased control over their lives.¹⁷ PAR is underpinned by the value of viewing the community as equal partners in the research process. In studies using PAR, the community has control of the research process, and the cycle of research investigation, reflection and action is directed and executed by the community.¹⁸ In the current project, community control was achieved by using a yarning methodology (see later in the text) as well as employing a community co-researcher (CCR) who was intimately familiar with the Country, language and community of Beagle Bay. This choice to employ a CCR (Erin Victor) was integral to informing the entire methodology and reflects the importance that the research team placed on valuing local knowledge and respecting cultural protocols whilst conducting research in partnership with the community.

Indigenous research methodology underpinned and informed the methodological framework, aiming to decolonise the research process by privileging Aboriginal voices through the sharing of positive narratives and lived experiences.¹⁹ Yarning was utilised as both a methodology and a data collection method. Regarding the former, the project was not viewed as simply a data extraction exercise²⁰ but rather aimed to co-construct knowledge and ideas for the future of skin health, including the use of VSCs, with knowledge holders (i.e. community members/participants). Rebecca Dalton—the primary researcher—is an Aboriginal person whose interest in this project was underpinned by experiences as an educator in communities across the Kimberley and Western Australia for more than 20 years. These experiences as an Aboriginal person within a Western-dominated system led to the belief that any education or health interventions or promotion initiatives need to be co-designed and community-led, be culturally responsive, and incorporate Aboriginal ways of knowing, being, and doing. The methodology embraced principles of yarning methodology²¹ which include the following: *Control*—via talking with community members to decide on the research focus which led to an expanded focus to the story of skin health rather than a singular research question on the acceptability of VSCs. *Freedom*—where working with potential participants, and the CCR, participants were free to dictate how their knowledge of skin health and related initiatives would be collected, where this knowledge would be collected (i.e. in which setting), how knowledge would be shared (i.e. approval to use yarning circles) and how findings would be shared with the wider Beagle Bay community (via community graphic recording; see later in the text).

Space—Rebecca Dalton travelled to Beagle Bay several times to ensure that knowledge sharing took place on the Country where the knowledge was held. *Gift*—the research team showed appreciation for the gift of knowledge that participants were willing to share by ensuring that it was generated in methods endorsed by them as well as expanding the research focus to allow participants to share their knowledge of how skin health had previously been taken care of (i.e. pre-colonisation), how it is currently occurring and their ideas for future skin health solutions. Importantly, the project methodology also centred the *relationality* core to yarning²² by Rebecca Dalton and the CCR sharing time together and with participants and community leaders outside of data collection activities which built trust and accountability between all.

As a data collection method, yarning circles and one-on-one yarns were selected as a culturally safe way for participants to share

Figure 1: A map of the Kimberley region of Western Australia with Beagle Bay highlighted.



knowledge through a process of storytelling and a recommended data collection method when conducting research with Aboriginal people^{23,24} as the meaning of life through stories is prioritised.

Participants for this sub-study were selected using purposive and snowballing sampling methods to ensure responses were based on authentic experiences and knowledge. Recruitment took place through promotions at the school, the health clinic and through the CCR. Several steps were taken to ensure cultural safety of the participants including always working with the CCR, meeting with participants in an informal manner and at a location in which they felt comfortable, and spending time in the community building relationships before data collection and analysis periods. The selection of participants, location of meetings and the development of the yarning guides were all in consultation with community navigators and the CCR.

Data were collected through yarning circles and one-on-one yarns with Rebecca Dalton and/or the CCR (EV). Yarning-circle participant numbers were determined by the community members present. With consent, yarning sessions and interviews were audio recorded and transcribed. Two participants did not wish to be audio recorded, and their contribution was instead recorded via notetaking by a scribe who was not participating in the yarn/interview. These notes and

transcriptions were offered back to the participants to check and confirm at the conclusion of the yarn/interview or when available. This member checking promoted dependability and credibility which is further discussed in the data analysis section.

Transcriptions were uploaded into NVivo® 12 and analysed reflexively in a manner that allowed for a theoretically flexible interpretative approach to qualitative data analysis.²⁵ This form of analysis recognises the researcher's subjectivity as a strength by allowing for flexibility in coding and theme development whilst maintaining a rigorous and systematic approach where the researcher must articulate how their assumptions informed their approach. NVivo codes were summarised and synthesised by Rebecca Dalton into the three themes that formed the narrative for the story of skin health. The codes were then reviewed by the CCR using NVivo®, and themes were synthesised through discussion with CCR and other members of the research team.

Data sovereignty

Indigenous data sovereignty principles recognise that Indigenous peoples and communities should own the data they provide to researchers; however, as this sub-study was embedded within a larger pre-existing clinical trial, it was not possible for participants to retain

digital copies of their data. Participants were, however, given printed copies of their transcripts from yarnning circles or one-on-one yarns. The Australian Institute of Aboriginal and Torres Strait Islander Studies Code for Aboriginal and Torres Strait Islander research highlights that “ownership, management and communication of research data results should be negotiated between Indigenous people and the researcher”,²⁶ and the research team, therefore, engaged in continual consultation with the Beagle Bay community to ensure that the data are used and held in a way that is acceptable to the participants and the broader community.

Graphic recording

Following the results first being delivered back to the community, several adjustments were made in response to community feedback to ensure there was a shared understanding of the report so it could be accessible for the whole community. Along with some language changes and minor rewording, a strong recommendation from the community was that the findings be more visual. Upon this request, a graphic recording service was used to translate the findings into a visual document.

Results

The participants (n=21) in this research were recruited from a remote Aboriginal community, which has a population of 287 people.²⁷ Fifteen participants identified as being Aboriginal, 16 were community members, having lived there for most of their life, four were employed by the school, four at the health clinic and four as part of an Indigenous Ranger group. All participants were over the age of 18 years. Of the 21 participants, 10 had been previously exposed to—or had knowledge of—the SToP Trial and its purpose. Eight participants were school or clinic staff who had received skin infection recognition and/or treatment training from the SToP Trial team and were aware of the skin checks that were conducted at the school. Two of the 10 participants with knowledge of the trial were community navigators who described themselves as the link between the community and services (including research).

Three themes were identified in addressing the question of skin health moving forwards, including whether there was a place for virtual support. The themes identified include: Reach Further into the Community with Education and Skin Checks, Virtual Skin Health Support is not Preferred but Acceptable, and Environmental Health Cannot be Ignored.

Reach Further into the Community with Education and Skin Checks

The most frequent theme was that education of community members on the importance of skin health and its link to downstream health conditions needs to continue, but it needs to reach beyond the school and the clinic, where it was centred in the SToP Trial.^{13–15} Participants frequently discussed clinic and school staff as being heavily invested in improving skin health and having knowledge that the rest of the community did not.

“So, you’ve got a lot of people with rheumatic heart, but nobody really understands how you get it. Even the people who have rheumatic heart they don’t understand how they got it. They just know that they have to come back for their 28-day medication, and

they don’t know how they get it, but it’s simple. It’s from a sore throat, skin sores untreated” (a group 1 participant).

The SToP Trial conducted skin health checks for school-aged children. There was strong support from participants for these skin health checks to continue. It was felt that the skin checks played an important role in improving the skin health of children and that continuing the skin checks at the same frequency (three times a year) would be important in maintaining those improvements.

“I would like the skin checks to continue in the school.....to continue coming back, regular check-ups” (a group 3 participant).

Participants also discussed skin problems in members of the community who were older and how it would be beneficial for them to have access to the same skin health checks as the children.

“I think all this sort of stuff could extend; it doesn’t necessarily have to be the kids; it could be just checking everyone. The kids don’t stop getting sores at 17 when they finish school. Adults end up with sores and boils, just exactly the same as the kids do” (a group 2 participant).

Participants also offered suggestions on how and where skin checks could be conducted. There were several references made to “men’s” and “women’s” days at the clinic and that male doctors attend the men’s days and female doctors the women’s days. These days were popular with participants and were considered a culturally safe way that skin health checks could be offered to the broader community. Participants also suggested that these days be widely promoted, not just at the clinic, and that the use of flyers and the local radio station would be an effective way to get the message out. Community events were also mentioned as being helpful for health promotion messaging, as was the provision of gift bags with health-supporting items like soap and body cream.

Alongside skin checks, participants also advocated strongly for skin health and RHD education to be delivered to the whole community. Continuing to deliver this education through the school and the clinic was still important, but there were also suggestions made about linking in with community-based groups such as the Indigenous Rangers. This would represent an extension of the two-way learning the school had already implemented. The Indigenous Ranger group was enthusiastic about continuing this two-way learning and providing a focus on skin health to prevent major health problems.

“Two-way learning would help with that, including the bush medicine in that.....We’ve been doing more of that in culture, so everything is all linked in too because we talk about all this, medicines and stuff, when we are dealing with cultural stuff” (a group 3 participant).

Traditional knowledge of the “old ways” of maintaining good general health, including skin health, was an important part of this learning. As well as continuing to work with the school in planning and facilitating on Country learning excursions, the Rangers also discussed creating resources such as videos for skin health.

“That be a good way of showing the kids prevention, like in a video showing clips of the old people that were healthy. They had white teeth, they had white eyes, the skin was—there was nothing on them” (a group 2 participant).

The use of the SToP Trial flipchart resources during training sessions was also considered a helpful visual knowledge translation tool. Other suggestions were to develop fact sheets that could be shared with parents through the school and the wider community and the

possible development of an app for healthy skin. When asked what the app could offer, participants suggested that it could be used to identify skin infections either through comparative photos or sending them to a skin specialist, and as a place to access fact sheets about skin infections plus preventative education around how to keep your skin healthy.

Other suggestions for resources included a magnet for the fridge that has a quick response link to fact sheets or the flipchart resource, referral-type letters that the school could use to write home to parents about skin infection concerns, and books like the flipchart resources that could be in homes as well as at the school and clinic. The main suggested methods of communicating these resources to the community included physically handing them out and the use of the local radio station, videos, community events and information days.

The school was viewed by both school and community participants as playing an important role in increasing the reach of skin health education. One school participant suggested that skin health could be included in the health curriculum if teachers were provided with enough support materials and the skin infection identification training for staff was to continue. A school and community member participant also noted that there was a flow on effect of educating the children at school.

“Because when kids learn different things here, they go back, they tell their parents” (participant 6).

Several suggestions from community participants indicated there should be clinical staff present in the school to assist with all health matters, treatment and prevention, inclusive of skin health. This included a consistent school-health nurse, a role present in the community but irregularly filled.

“I don’t know whether you guys can do at all or something that’s suitable for clinic is have a nurse based at the school” (a group 2 participant).

Many participants expressed their desire for the skin infection recognition and treatment (currently only the clinic does the treatment component) training to continue. This request included the need not only to train new staff, as the staff turnover at both the clinic and the school is high, but also to keep refreshing and upskilling the staff that have already completed the training. The school specifically requested that this training be provided for all staff including teachers, Aboriginal Teaching Assistants (ATAs) and administration and support staff as they all have direct contact with the children and families of the school.

Requested skin health training for staff as the SToP Trial has been doing—once a year to keep refreshing old staff and upskilling new ones” (Interview notes from participant 5).

Participants were also asked who was best placed to do all the work involved in continuing the good story of skin health, including ongoing staff training, and reaching further with education and skin health promotion. Responses indicated that the community would like continued regular support from the SToP Trial team or another health service provider (the health clinic or Kimberley Aboriginal Medical Service) to continue this work, but that it would be more sustainable for the community to train up local people to be able to continue the work when services are not in town. Specific suggestions were made that the CCR would be best placed to be suitably trained to continue this work and that this could include providing skin

checks at the school and referring to the clinic or the SToP Trial team with any concerns.

“Well, [CCR] can do it here while you’re not in community; she can still go out and do your thing” (participant 6).

Virtual Skin Health Care is not Preferred but Acceptable

When asked their thoughts on VSCs, all participants communicated that they would prefer that the skin checks be done in person but that if this was not possible, then they are open to trying VSCs and virtual training for clinic and school staff.

“so like, ‘Oh, show me this bit and show me that bit’,..... yeah, and photos wouldn’t be great, but it is doable. Yeah, but we prefer you come” (participant 4).

Participants were asked about their experiences with telehealth in general, and if they had any knowledge of it being used in the community already. Several participants had experienced positive uses and interactions with telehealth, reporting that it saved them from having to waste taxpayers’ dollars by having to travel to Perth. One participant said that he was always accompanied by an Aboriginal Health Worker (AHW) during his appointment and felt it was a much easier way of following up with his specialist in Perth.

“Better than me going to Perth for nothing. Yeah. You’re using taxpayer’s money for nothing, that what I used to do, go for check-up every six months, (to Perth—Sir Charles Gardiner) every six months; now, I go and talk with Charley Gardiner (Sir Charles Gardiner Hospital)” (participant 7).

Participants listed uses of telehealth that they were aware of in the clinic, which included use during COVID-19, for emergencies and for specialist appointments.

“If I remember correctly, the clinic were using it during COVID..... for diagnostics kind of stuff with the doctors” (a group 2 participant).

Positive responses from participants included mentions of the different forms of “virtual health care” which included references to the development and use of a skin health app and the potential usefulness of being able to take photos of skin infections and forward them to skin specialists for diagnosis (store and forward) and suggested that these photos may be useful for further research.

“Where people take photos of their thing and send it through to you, so that way that gives you more research to do, but it helps the bigger world” (a group 2 participant).

Participants who responded positively to the idea of a VSC mostly thought that the VSC would need to be supported by a suitably trained person, such as a clinic or school nurse or an AHW. Suggestions were also made that a community member or ATA could also be trained to support the VSCs. Most participants expressed concerns that resourcing the VSC at the school or the clinic would be difficult with the current responsibilities and pressures both services already experience. Both the school and the clinic mentioned the importance of prioritising, with school participants saying that whilst they must look after the health and well-being of the children whilst they are at school, their core business is educating students.

“Because yeah, if we’re doing that, then that obviously takes away from teaching time” (a group 3 participant).

Clinic-resourcing concerns pertained to both the technology resources (not having enough telehealth monitors and sometimes unreliable internet quality) and limited staff, which would be strained

even further if an AHW or nurse was to conduct VSCs at the school or clinic.

“I think it’s a good idea, but I think what might be lacking in community is the resources to be able to do it. Because from what I understand, the clinic only has that one telehealth monitor that does interviews from down here to Perth” (participant 3).

Participants from the school were concerned that having a teacher or school staff member conducting a VSC may challenge the relationship that they have established with the child, and they were also unsure about whether conducting the skin check would conflict with a teachers’ “Code of Conduct” that they need to follow. Having someone external to the school performing this role would be preferable and avoid relationship break downs and potential “Code of Conduct” issues.

“I just sort of think that we have a different relationship with the kid as well, and I think we notice a lot, but—you want them to have the trust with you” (a group 3 participant—a teacher).

Another reason given by participants as to why they would prefer skin checks or training to be done in person was the importance of human contact and relationship building. So much has been done over the screen recently due to the COVID-19 pandemic, and participants believed that it was important to do as much as possible face to face.

“I’m a face-to-face person. The minute you get me behind a computer, you’ve lost me. That’s me, I’m a visual person to an extent but then, yeah, face-to-face interaction works better for me” (participant 9).

Although participants from the clinic and school were willing to try virtual training, it was noted as being a non-preferred alternative to being trained in person by a SToP Trial team member or other health professional.

Participants expressed concerns over gaining informed consent from parents and families, so they know when and how the VSCs are happening. These concerns stemmed from the possible misinterpretation of the use of the video or photos by parents and questions about privacy. Informed consent is therefore a major consideration. Having a safe space and a person whom the child trusted with them during the VSC was another major consideration. Some participants believed that it would be more culturally appropriate to have an AHW or ATA with the child.

Participants suggested both the clinic and the school as being suitable places to conduct the VSCs, with the overall preference being for the school. The notion of having a safe space was raised but not discussed in detail. As already discussed, the major consideration for both the clinic and school participants with conducting the VSCs at the school or clinic was that of resourcing. The resources of concern were human resources and having access to technology resources including the internet, computers and programs that could provide images or videos with a high enough quality to be able to identify skin infections. Several participants suggested that a school nurse or clinic worker would be best placed to conduct the VSCs. This would be a consideration in trialling a VSC, but, once again, resources would be a challenge.

Environmental Health Cannot be Ignored

Within the context of remote Aboriginal communities, housing and environmental health service provision are two distinct entities with varied responsibilities. Most remote community homes—Beagle Bay

inclusive—come under the responsibility of the Western Australian Department of Communities who arrange for maintenance and repairs with the employment of contracted services. Aboriginal Environmental Health programs exist to fill gaps in service provision and include environmental health referrals, safe bathroom assessments, dog health and basic plumbing repairs.²⁸ These programs are perceived as integral to fulfilling longstanding needs, are highly valued and are often able to amend basic defects without the household needing to engage the Department of Communities.

In this study, participants communicated that environmental health was important in maintaining strong skin health. This was a significant point of discussion within the SToP Trial and will be explored in detail elsewhere; however, the results of this sub-study theme are summarised in the following paragraphs.

Participants held a firm belief that the environment that people are living in was a root cause of many health problems. Housing and living conditions were discussed as being important considerations in any future health support that any service or program can offer. Environmental health was raised by Kimberley health leaders as being a key activity to prevent skin infections when the Trial was designed, which is why there was such a strong focus on prevention activities. The Environmental Health referral—an initiative whereby environmental health services could be referred to a particular home with the consent of a householder to rectify possible defects causing illnesses attributable to the environment²⁸—was recommended for all participants attending clinic with a skin infection; however, under resourcing of this sector made this challenging to achieve and speaks to the criticality of this theme. Guided by communities involved in the process, the SToP Trial “Prevention” activities targeted the identification and treatment of skin infections and the development of skin health promotion resources. For a Hip-Hop video filmed in Beagle Bay and surrounding areas with local teens singing and dancing (<https://www.youtube.com/watch?v=7eLLO9EuOil>), the selected message focus by environmental health practitioners was environmental health and personal hygiene practices.²⁹ This was at the request of Kimberley leaders in the field of environmental health as part of trial consultation.

Participants described ongoing problems with overflowing sewage systems and housing conditions, with striking comparisons made.

“I live in [community name] and my house; every rain season, my sewage tank is over the top of the lid, and that’s not good…… I think I mentioned last week with living conditions, just things like that, and I’m not saying we’re a Third World community……the living conditions. I’m not saying we’re all living in poverty, but you might have some people who are struggling, and their houses are Third World houses” (a group 2 participant).

Although maintaining the structural components of houses including water, sewage and plumbing was seen as the responsibility of the Government housing department, participants did believe that maintaining cleanliness and hygiene is a responsibility of individuals and families. This however does imply knowledge of the link between the immediate environment and health.

“I see the housing standards; I see environmental health in some of the households. I’m not judging no one; I’m just seeing it, saying it for what it is. And then kids end up with school sores, any kind of skin sores, they go to school, they spread it there. Or if the parents are not keeping up with proper hygiene because they don’t have the

awareness or they don't have money to do it, to buy those products from the shop, it's a vicious cycle going" (participant 9).

There was also discussion amongst participants about services—specifically those under the remit of housing—not fulfilling their responsibilities.

"....in doing their job properly, what they get paid for They get paid to do the job, they need to do the job one time, get it fixed and not keep coming back to do repairs, repairs, repairs, repairs" (a group 2 participant).

This theme highlights the importance of environmental health as a factor in maintaining good general health and skin health. Participants frequently mentioned their concerns over environmental health in their community and the lack of service providers to help rectify these concerns.

All results were summarised visually by a graphic recorder and member checked by EV; these can be viewed in [Figure 2](#).

Discussion

The project aimed to explore the narrative of skin health—past, present and future—within a community involved in the SToP Trial. It specifically investigated the acceptability and feasibility of strategies for reducing barriers to skin health engagement, focussing on community perspectives and envisioning the future of skin health in these settings.

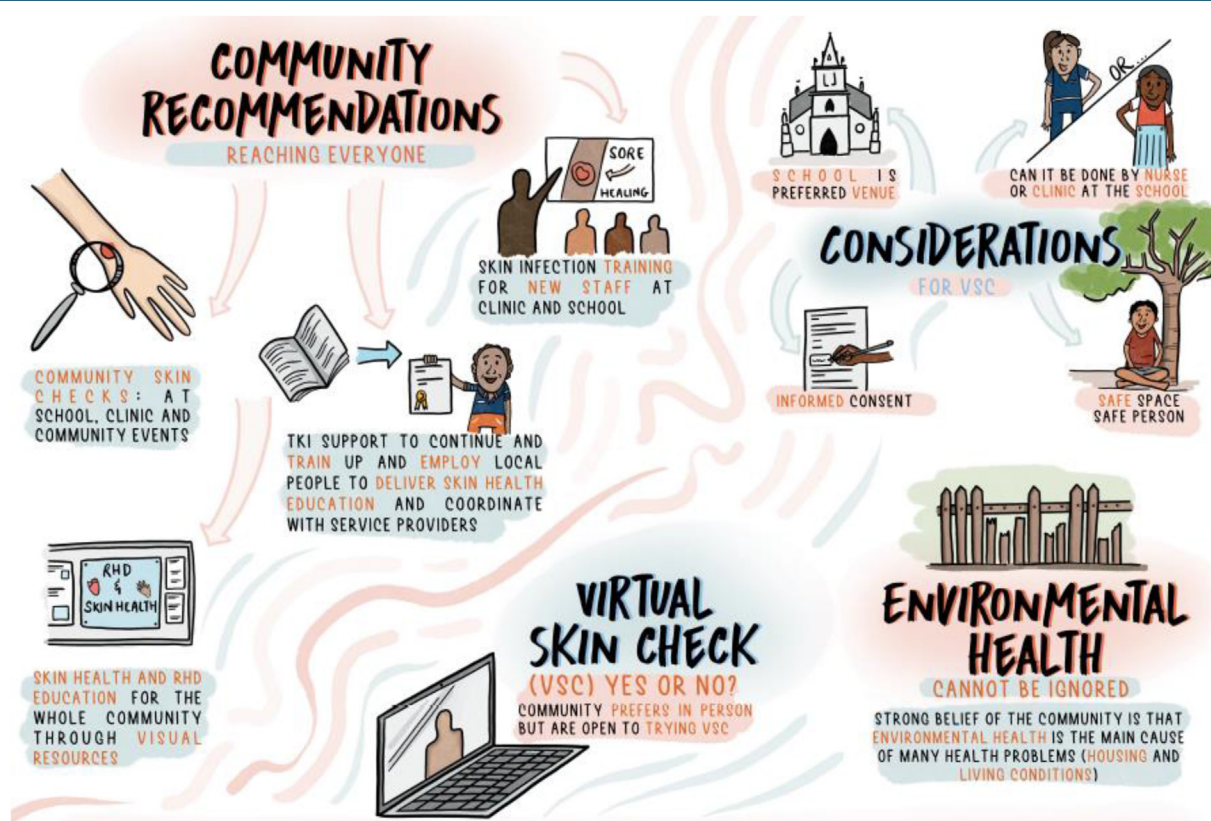
Methodology should empower knowledge sharing

This research prioritised Indigenous ways of knowing, being and doing, ensuring Aboriginal voices controlled the research design and conduct.^{19,30,31} This approach, grounded in Aboriginal knowledge systems,³² helped build trust and capture community perspectives. The cyclical nature of knowledge sharing was evident through community feedback affirming the clarity and impact of SToP Trial resources,³³ which improved awareness of skin health and its link to RHD. This exemplifies how participatory methods can empower communities to influence and take control of their health, a process that should continue in similar work.^{34,35}

Reaching beyond the school

The community called for the skin health checks to be offered to not only school-aged children but the whole community, to expand access and enable all to benefit. This voice is helpful as many initiatives that may be beneficial throughout the community, e.g. dental and eye checks, often focus on the schools and ignore adults.³⁶ It is also relevant where school attendance is low, with the Kimberley, averaging below 70%.³⁷ These skin health checks would also provide opportunities for education and information sharing with community members about the importance of skin health and its link to more serious health conditions including RHD, all of which were prioritised by community. However, any community-based approach to improve skin health needs resourcing, and research has an obligation to allocate resources beyond data collection and

Figure 2: Community recommendations on the future of skin health. Please note TKI refers to Telethon Kids Institute, which was rebranded as The Kids Research Institute Australia in 2024 after the completion of this work.



presentation to ensure sustainable translation and implementation of findings. One of the recommendations from Matsumoto et al.³⁸ was that knowledge translation be embedded in all Kimberley-based Aboriginal health research projects, and this means thinking beyond the research project to allow resourcing for practical approaches to working with people and communities to use the research findings. It is also consistent with the voice of the Aboriginal Community Controlled Health Organisation Sector in the early days; “no survey without service”.³⁹

Health via virtual means

Our findings indicate that VSCs are acceptable to the community but not preferred. Previous studies conducted by Caffery et al.⁴⁰ and Russell et al.⁴¹ have concluded that virtual health was acceptable to Aboriginal people in other remote and rural communities, with similar positive perceptions about personal telehealth experiences with shared. However, the implementation of such solutions needs to address barriers such as unreliable internet, limited access to telehealth technology and the need for trained local facilitators. A telecommunications method referred to as “store and forward” whereby information is sent to an intermediate station and sent at a later time was evidenced in the study by Caffery et al.⁴⁰ as being an effective way to overcome poor internet quality and consequent poor-quality video links. To make VSCs and other telehealth programs work in remote Aboriginal communities, policies need to focus on better internet infrastructure, culturally safe program design, and building local skills and capacity whilst making sure face-to-face health care remains accessible, prioritised and supported.

Environmental health

Poor environmental health and housing are at the root of many health issues, and without addressing these, efforts to improve skin health are just a band-aid solution. Whilst participants acknowledged the great work being done by environmental health providers to make changes in homes, they also noted that these teams are underfunded and stretched beyond capacity. Programs like the Environmental Health Trachoma Project, which carry out large-scale home repairs with local providers and community involvement, are a good example of what works and could be expanded across Western Australia.^{14,15} The Healthy Living Practices were used throughout the SToP Trial to evaluate and understand the gaps in environmental health services available and opportunities for housing improvement^{14,15} and have also been central to the RHD Endgame Strategy.⁹ Environmental health remains contested due to decades of underinvestment underpinned by systemic racism as a result of colonisation and disposition of land rights.

Limitations

This sub-study had several limitations. Firstly, children were not recruited to yarn about the future of skin health, and their inclusion may have provided an extra depth of information to add to the community story of skin health and complete the picture. Second, during this project, the results of the SToP Trial were still blinded and were not available as part of the discussions with community members about the future of skin health. It is possible that the conversations could have been very different if the discussions had been led by the results of the trial.^{14,15} This may be a limitation but could also be seen as a strength of this project as the community was

not influenced in any way by the results of the SToP Trial. Third, this study only consulted with one remote Aboriginal community about the future of skin health, and the findings and recommendations are therefore place-based and specific only to Beagle Bay. It was however strengthened by the involvement of a CCR and Aboriginal researchers who emphasised Aboriginal ways of knowing, being and doing, and who significantly guided the research process and allowed for a well-informed and targeted approach to the unique community.

Recommendations

The following recommendations were endorsed by the study and CCR.

1. Continue to provide regular training in skin infection identification to both school and clinic staff to help combat high staff turnover. This training could be virtual, but in-person training is preferred.
2. Increase funding and time allocation for a school health nurse or Aboriginal health worker that can support healthy skin at schools in school-aged children.
3. Train a community member in skin health checks who can be employed to conduct community-based skin health checks at the clinic and the school.
4. Continue further development (with the community) of skin health and RHD health promotion resources. These resources would include Aboriginal community member knowledge and be co-designed with community members. Examples of resources could include flyers, fact sheets and two-way learning resources developed with the school and Indigenous Rangers. Funding that has been awarded to the Kimberley for primary healthcare strategies to address RHD may assist with this recommendation.

Conclusion

This sub-study explored what a remote Kimberley community desired with regards to the future of skin health following the completion of a four-year clinical trial.^{14,15} Whilst VSCs appeared acceptable to the community, significant barriers were identified, and there was a preference for face-to-face skin checks to continue. Participants provided several suggestions on improving health promotion messaging within community whilst emphasising the need for a stronger focus on environmental health. This project has also further evidenced the significance of community consultation when conducting research in remote Aboriginal communities. The employment of a CCR was integral to informing the methodology, reflecting the importance of valuing local knowledge, and respecting cultural protocols whilst conducting research in partnership with community.

Conflicts of interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Asha C. Bowen reports financial support was provided by National Health and Medical Research Council. All other authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethics

This sub-study forms a component of the See, Treat and Prevent skin sores and scabies Trial, which has ethics approval from the Western Australian Aboriginal Health Ethics Committee (WAAHEC; Reference 819), Child and Adolescent Health Service Human Research Ethics Committee (CAHS HREC; PRN: RGS0000000584) inclusive of WA Country Health Service governance, Department of Education and Catholic Education of Western Australia, with reciprocal ethics at the University of Western Australia HREC, University of Notre Dame HREC and Murdoch University HRECs.

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References

1. The Australian Healthy Skin Consortium. *National healthy skin Guideline for the prevention, treatment and Public health control of Impetigo, scabies, Crusted scabies and Tinea for Indigenous populations and communities in Australia*. 2nd ed. Perth: Telethon Kids Institute; 2023.
2. Davidson L, Knight J, Bowen AC. Skin infections in Australian Aboriginal children: a narrative review. *Med J Aust* 2020;212(5):231–7.
3. Bowen AC, Mahe A, Hay RJ, Andrews RM, Steer AC, Tong SY, et al. The global epidemiology of impetigo: a systematic review of the population prevalence of impetigo and pyoderma. *PLoS One* 2015;10(8):e0136789.
4. Oliver J, Bennett J, Thomas S, Zhang J, Pierce N, Moreland NJ, et al. Preceding group A streptococcus skin and throat infections are individually associated with acute rheumatic fever: evidence from New Zealand. *BMJ Glob Health* 2021;6(12):e007038.
5. Australian Institute of Health and Welfare. *Acute rheumatic fever and rheumatic heart disease in Australia 2016–2020, cat number CVD 95*. Canberra: AIHW, Australian Government; 2022.
6. Hengge UR, Currie BJ, Jäger G, Lupi O, Schwartz RA. Scabies: a ubiquitous neglected skin disease. *Lancet Infect Dis* 2006;6(12):769–79.
7. Bowen AC, Tong SYC, Andrews RM, O'Meara IM, McDonald MI, Chatfield MD, et al. Short-course oral co-trimoxazole versus intramuscular benzathine benzylpenicillin for impetigo in a highly endemic region: an open-label, randomised, controlled, non-inferiority trial. *Lancet* 2014;384:2132–40.
8. Amgarth-Duff I, Hendrickx D, Bowen AC, Carapetis JR, Chibawe R, Samson M, et al. Talking skin: Attitude and practice around skin infection, treatment options, and their clinical management in a remote region in Western Australia. *Rural Remote Health* 2019;19(3):21–31.
9. Wyber R, Noonan K, Halkon C, Enkel SL, Ralph A, Bowen AC, et al. *The RHD Endgame Strategy: the blueprint to eliminate rheumatic heart disease in Australia by 2031*. Perth: The END RHD Centre of Research Excellence; 2020.
10. Abdalla T, Hendrickx D, Fathima P, Walker R, Blyth CC, Carapetis JR, et al. Hospital admissions for skin infections among Western Australian children and adolescents from 1996 to 2012. *PLoS One* 2017;12(11):e0188803.
11. Yeoh DK, Anderson A, Cleland G, Bowen AC. Are scabies and impetigo “normalised”? A cross-sectional comparative study of hospitalised children in northern Australia assessing clinical recognition and treatment of skin infections. *PLoS Neglected Trop Dis* 2017;11(7):e0005726.
12. Custodio J, Kelly G, Haenga M, Bell C, Bond T, Prouse I, et al. Working in partnership with communities at risk: the potential of integrated public health action during an outbreak of APSGN in remote Australia. *Aust Indigenous Health Bull* 2016;16(4).
13. Mullane MJ, Barnett TC, Cannon JW, Carapetis JR, Christophers R, Coffin J, et al. SToP (See, Treat, Prevent) skin sores and scabies trial: study protocol for a cluster randomised, stepped-wedge trial for skin disease control in remote Western Australia. *BMJ Open* 2019;9(9):e030635.
14. Thomas HMM, Mullane M, Enkel SL, McRae T, Amgarth-Duff I, Carapetis JR, et al. Multi-methods process evaluation of the SToP Trial, a cluster randomised, stepped wedge trial to support healthy skin in remote Western Australia. *eClinicalMedicine* 2024;77:102793.
15. Thomas HMM, Enkel SL, Mullane M, McRae T, Barnett TC, Carapetis JR, et al. Trimodal skin health programme for childhood impetigo control in remote Western Australia (SToP): a cluster randomised, stepped-wedge trial. *Lancet Child Adolesc Health* 2024;8(11):809–20.
16. Bradford NK, Caffery LJ, Smith AC. Telehealth services in rural and remote Australia: a systematic review of models of care and factors influencing success and sustainability. *Rural Remote Health* 2016;16(4):1–23.
17. Baum F, MacDougall C, Smith D. Participatory action research. *J Epidemiol Community Health* 2006;60(10):854.
18. Minkler M. Community-based research partnerships: challenges and opportunities. *J Urban Health* 2005;82(2):ii3–12.
19. Rigney L-L. *Internationalisation of an Indigenous anti-colonial critique of research methodologies: a guide to Indigenous research methodology and its principles*. HERDSA Annual International Conference. 1997. Adelaide.
20. Uink B. Conference presentation - Yarning: an indigenous methodology. *Community-driven Indigenous Research, Cultural Strengths and Leadership to Advance Equity (CIRCLE)* 2024. Perth.
21. Barlo S, Boyd WBE, Pelizzon A, Wilson S. Yarning as protected space: principles and protocols. *Alternative* 2020;16(2):90–8.
22. Atkinson P, Baird M, Adams K. Are you really yarning research? Mapping social and family yarning to strengthen yarning research quality: an international journal of indigenous peoples. *Alternative* 2021;17(2):191–201.
23. Bessarab D, Ng'andu B. Yarning about yarning as a legitimate method in Indigenous research. *Int J Crit Indig Stud* 2010;3(1):37–50.
24. Doyle K, Cleary M, Blanchard D, Hungerford C. The Yerin Dilly Bag model of indigenous health research. *Qual Health Res* 2017;27(9):1288–301.
25. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;3(2):77–101.
26. AIATSIS. *AIATSIS code of ethics for Aboriginal and Torres Strait Islander research*. 2020.
27. Australian Bureau of Statistics. *2021 Beagle Bay, Census aboriginal and/or Torres Strait Islander people QuickStats*. <https://abs.gov.au/census/find-census-data/quickstats/2021/ILOC50100202>, 2021. [Accessed 3 May 2024].
28. Haynes E, Walker R, Gadsdon M, Ward S, Gudka S, Katzenellenbogen J, et al. *Review of the Western Australian Aboriginal environmental health program – final report*. WA Department of Health; Perth; 2022.
29. McRae T, Leaversuch F, Sibosado S, Coffin J, Carapetis JR, Walker R, et al. Culturally supported health promotion to See, Treat, Prevent (SToP) skin infections in Aboriginal children living in the Kimberley region of Western Australia: a qualitative analysis. *Lancet Reg Health West Pac* 2023;35:100757.

30. Burchill LJ, Kotevski A, Duke DL, Ward JE, Prictor M, Lamb KE, et al. Ethics guidelines use and Indigenous governance and participation in Aboriginal and Torres Strait Islander health research: a national survey. *Med J Aust* 2023; **218**(2):89–93.
31. Smith RL, Devine S, Preston R. Recommended methodologies to determine Australian Indigenous community members' perceptions of their health needs: a literature review. *Aust J Prim Health* 2020;**26**(2):95–103.
32. Kennedy M, Maddox R, Booth K, Maidment S, Chamberlain C, Bessarab D. Decolonising qualitative research with respectful, reciprocal, and responsible research practice: a narrative review of the application of Yarning method in qualitative Aboriginal and Torres Strait Islander health research. *Int J Equity Health* 2022;**21**(1):1–22.
33. Resource Hub [Internet]. *Healthy skin and ARF prevention team*. Perth: The Kids Research Institute Australia; 2024. <https://www.telethonkids.org.au/our-research/early-environment/end-rhd/healthy-skin-and-arf-prevention/resource-hub/>. [Accessed 1 August 2024].
34. Baum F, MacDougall C, Smith D. Participatory action research. *J Epidemiol Community Health* 2006;**60**(10):854.
35. Crooks K, Ahmed F, Liberda EN, Massey PD, Taylor K, Harwood E, et al. We cannot repeat history again: a call to action to centre indigenous leadership as we prepare for the next pandemic. *Int J Equity Health* 2025;**24**(1):24.
36. Dossetor PJ, Thorburn K, Oscar J, Carter M, Fitzpatrick J, Bower C, et al. Review of Aboriginal child health services in remote Western Australia identifies challenges and informs solutions. *BMC Health Serv Res* 2019;**19**(1):1–15.
37. Office of the Auditor General. *Follow-on: Managing student attendance in Western Australian Public schools*. Perth: Government of Western Australia; 2016. <https://www.parliament.wa.gov.au/publications/tailedpapers.nsf/displaypaper/3913218afaa8e78d68c9867048257ea60016ea89/%24file/3218.pdf>. [Accessed 24 June 2024].
38. Matsumoto A, Blackburn K, Spicer B, Seear K, Johnson C. A Mixed methods study of 15 Years of aboriginal health research in the Kimberley: 'We've been researched, We think, from Head to Toe, inside and outside, Upside down'. *Int J Environ Res Publ Health* 2023;**20**(6):4823.
39. Harfield S, Pearson O, Morey K, Kite E, Canuto K, Streak J, et al. *The Aboriginal and Torres Strait Islander quality Appraisal Tool*. Adelaide: South Australian Health and Medical Research Institute; 2018.
40. Caffery LJ, Bradford NK, Wickramasinghe SI, Hayman N, Smith AC. Outcomes of using telehealth for the provision of healthcare to Aboriginal and Torres Strait Islander people: a systematic review. *Aust N Z J Publ Health* 2017;**41**(1):48–53.
41. Russell S, Quigley R, Strivens E, Miller G, Norrie J, Craig D, et al. Validation of the Kimberley indigenous Cognitive assessment short form (KICA-screen) for telehealth. *J Telemed Telecare* 2021;**27**(1):54–8.