

Article

'Gudhurr-wutu' (strengthen the mob): maximizing the impact of First Nations health and well-being messaging

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Abstract

Dunghutti Country is located within Australia's number one 'stroke hotspot', with incidence almost double the national average. First Nations peoples are disproportionately affected by stroke, with higher incidence and hospitalization rates and a greater risk of dying compared to non-First Nations Australians. Early recognition of stroke symptoms is critical for people to access time-sensitive medical interventions, maximizing recovery potential. Whilst an internationally recognized F.A.S.T (Face, Arm, Speech, Time) message exists to promote rapid recognition of stroke symptoms, community awareness of F.A.S.T is limited. This project aimed to collaboratively design a culturally responsive F.A.S.T health message with and by First Nations peoples, thus increasing awareness of stroke symptoms, to improve response for seeking time-sensitive medical care. Guided by a qualitative participatory action methodology, and the use of cross-cultural Yarning as the method, this collaborative project involved six Dunghutti stroke survivors, a Dunghutti artist, a knowledge holder of local Dunghutti language, and a local occupational therapist/researcher, who reviewed the mainstream F.A.S.T health message and reimagined that message in a culturally relevant and meaningful way. Yarning allowed exploration of key themes, identifying three elements necessary to maximize the impact of First Nations health and well-being messaging. Elements included ensuring the health message (i) connects to Country, (ii) connects to understandings of health and well-being, and (iii) connects through relevant content, with First Nations peoples centred within the ideation, development, and message delivery processes.

Keywords: health promotion; health education; Australian Aboriginal and Torres Strait Islander Peoples; First Nation peoples; Aboriginal health; stroke; stroke education

Contribution to Health Promotion

- First Nations health messaging is impactful and resonates within community when the message connects to Country and connects to understandings of health and well-being and content delivery uniquely connects with local communities.
- Indigenist research methods, including Yarning and arts-based methodology, provide a culturally relevant way of ensuring First Nations ways of knowing, being, and doing are embedded within projects designed by and with First Nations Australians.
- First Nations peoples with lived experience of health issues should be centred within all phases of health messaging, including ideation, development, and message delivery strategies.

BACKGROUND

First Nations peoples and the impact of stroke

Stroke is a serious medical condition, identified as the second highest cause of death and disability worldwide (Johnson *et al.* 2019). Currently in Australia, a stroke occurs every 19 minutes, and by 2050 that rate is projected to increase to a stroke

occurring every 10 minutes, as the country's population ages and grows (Deloitte Access Economics 2020a). Australians living in regional and rural areas are 17% more likely to experience stroke than their metropolitan counterparts (Deloitte Access Economics 2020b), and concerningly, the federal electorate of Cowper in NSW (including Kempsey, Dunghutti

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Country) is the nation's number one 'stroke hotspot' (Deloitte Access Economics 2020b).

Australian Aboriginal and Torres Strait Islander peoples (henceforth 'First Nations' unless referring to a specific term used in an included reference) are disproportionately affected by stroke, with age-standardized incidence three times higher than non-First Nations Australians (Keel *et al.* 2017, Deloitte Access Economics 2020b). Concerningly, First Nations peoples are more likely to suffer stroke at a younger age (average age 53 years) and have 1.6 times greater risk of dying from stroke than non-First Nations peoples (Zhao *et al.* 2015, Balabanski *et al.* 2018, Australian Institute of Health and Welfare 2024). Determinants of cardiovascular conditions (including stroke) amongst First Nations peoples are complex and multilayered, influenced by social determinants of health (Brown *et al.* 2006, Marmot 2011), with inequalities grounded in the impacts of colonization, poorer access and differing quality, and appropriateness of health care services (Brown and Kritharides 2017, De Zilva *et al.* 2022). This disparity in stroke incidence, access, and outcome highlights the need for improved awareness, prevention, early intervention, and support services to reduce the burden of stroke on Australia's First Nations population.

Early recognition of stroke symptoms is critical for people to access acute hospital treatment in a timely manner. Given recent advancements in stroke treatment, early access to hospital improves recovery outcomes, enhancing health and well-being after stroke (Saver 2006, Deloitte Access Economics 2020b). To deliver a simple health message designed to inform the general public of key stroke warning signs, thus prompting rapid recognition, the F.A.S.T ('Face', 'Arm', 'Speech', 'Time') mnemonic was created in the USA in 1999 (Kleindorfer *et al.* 2007, Miller *et al.* 2007). F.A.S.T has since been adopted to promote stroke symptom awareness in various countries throughout the world, including Australia. Recognition of F.A.S.T is limited in some First Nations communities, demonstrated by 27% of Indigenous stroke survivors living in the Murrumbidgee Local Health District in NSW, aware of the acronym (Santos *et al.* 2022).

Recent research exploring excess risk of stroke, incidence, and stroke care for Australia's First Nations populations have identified the urgent need for improved early stroke management, deemed necessary to address significant health and well-being disparities experienced by First Nations peoples (Thrift *et al.* 2011, Blacker and Armstrong 2019, Quigley *et al.* 2019, Balabanski *et al.* 2023). Recommendations include the provision of culturally appropriate community-based health promotion, prevention, and communication strategies. Additionally, given an identified lack of symptom awareness and general knowledge about stroke, a need exists to produce and promote culturally relevant health messaging initiatives, designed specifically by and with Australia's First Nations peoples.

The Re-imagining F.A.S.T. project

In response to a locally identified concern regarding the impact of stroke on First Nations stroke survivors, their caregivers, and community, four Dunghutti stroke survivors, the Mid North Coast Local Health District (MNCLHD) stroke, chronic care, and health promotion teams, alongside Durri Aboriginal Corporation Medical Service (ACMS), Healthy North Coast Primary Health Network (PHN), and the

Stroke Foundation, organized a 'Stroke Day 2023' event at Dunghutti Elders community hall, Kempsey. A well-attended part of the day was a segment dedicated to the experiences of those four local Dunghutti stroke survivors, who shared their stroke journey through a facilitated storytelling session. In addition to the telling and sharing of stories, one stroke survivor spoke to artwork produced by family, representing his personal stroke recovery journey.

Following the success of the event, two members of the MNCLHD stroke team continued to consult with the four local stroke survivors, each of whom were keen to continue to promote Dunghutti community awareness and improve local knowledge about stroke. Given current and existing gaps in knowledge relating to emergency response and warning signs of stroke, Dunghutti stroke survivors were keen to utilize local ways of knowing, being, and doing, to promote learning and improve stroke symptom awareness, recognition, and response amongst community, through the development of culturally responsive health messaging resources. When considering where to start and what to focus on, the four stroke survivors and MNCLHD stroke occupational therapist/researcher together reviewed an existing stroke educational resource produced by the Stroke Foundation called 'Our stroke journey: Helping our mob after stroke'. Reviewing the booklet, one page stood out, with Dunghutti stroke survivors identifying the lack of appeal of the existing mainstream visual message that identifies the early warning signs of stroke, that being the F.A.S.T message. With a view for change, the Re-imagining F.A.S.T project was born.

By addressing the research question 'in what ways does a First Nations community-led early warning signs of stroke message impact response to stroke symptoms', the primary aim of the Re-imagining F.A.S.T project was to codevelop a culturally responsive version of the F.A.S.T message with local First Nations stroke survivors, to improve awareness of the early warning signs of stroke in the community, with the long-term aim of increasing early intervention-seeking behaviour to reduce the impact of stroke. Our additional objective, which is the focus of this paper, was to thematically explore the ways and means by which our health message would best resonate and achieve maximal impact across Dunghutti community.

METHODS

Ethical considerations

The Re-imagining F.A.S.T project was granted ethical approval through the North Coast Human Research Ethics Committee (HREA391 2023/ETH02866), Aboriginal Health and Medical Research Council (2239/24), and University of Newcastle (R-2024-0031).

Project governance

A local First Nations Advisory body was established, ensuring community consultation throughout the project. A Terms of Reference detailing the level and type of involvement was developed, with the Advisory body consisting of four First Nations members (including two representatives from MNCLHD Aboriginal Health service and two representatives from Durri ACMS, one of whom was also representing Dunghutti Elders Council). Throughout the course of the research project, First Nations Advisory body members attended our group sessions once per month, in person and/or via zoom, providing cultural guidance and supporting

translation of resources and project outputs into health and community settings. Data sovereignty was guided by the principles underpinning ethical and responsible First Nations research, as outlined by AIATSIS ([Australian Institute of Aboriginal and Torres Strait Islander Studies 2020](#)), including self-determination of messaging outputs and formal agreements to ensure recognition and protection of cultural property, including artwork, as per NSW Health guidelines. Research governance advice was also provided through three-monthly meetings with the University of Newcastle Wukul Yabang Community Research Panel, providing an additional level of oversight and cultural guidance. Refer to [online supplementary material](#) for Indigenous engagement guide.

Positionality statement

Prior to undertaking this research, the non-First Nations team members reflected on their social and professional backgrounds and experiences and how these may influence the research process. These members recognized the significance of their cultural positioning, level of education, and familiarity with the health system and the importance to this study of First Nations-led approaches in addressing inequities in access to stroke care and advancing self-determination. To support Indigenous research methodology, aspects of this study, from project design, advocating for funding, recruitment, data collection, interpretation, and presentation of findings were informed by Dunghutti stroke group members. Whilst also influential, the role of non-First Nations team members involved guiding the group through the research process, including providing support to access project funding; managing ethics and research governance processes; supporting vocal recordings, data management, and transcription; organizing and providing transport; participating in cross-cultural Yarning; collating findings; and preparing draft manuscripts. Non-First Nations team members focussed on research capacity building, collaboration, and ethical stewardship of the research processes. These roles were purposefully established to ensure that the research reflected Dunghutti stroke group priorities, perspectives, and ways of knowing, being, and doing. As an occupational therapist on the stroke unit within MNCLHD, and having previous clinical relationships with some members of the Dunghutti stroke group prior to the research project, H.L. was a welcomed member of the Dunghutti stroke group. Through her respectful relationships, the Dunghutti stroke group granted her the title of 'coach', symbolically representing the facilitator role assumed throughout the research process.

Research approach

Whilst it is acknowledged that First Nations peoples have been subjected to research without their consent and/or little to no community consultation ([Dew et al. 2019](#)), this research project was carefully designed to ensure genuine community participation and ownership throughout all stages of the research process.

As this project aimed to adapt an existing health message (i.e. F.A.S.T), a qualitative methodology known as participatory-action research (PAR) was chosen to guide the work ([Green and Thorogood 2018](#)). Due to its collaborative nature, PAR is increasingly considered a valuable methodological approach in health research, particularly when exploring issues amongst marginalized or underserved communities,

as community members are directly involved in knowledge production and dissemination ([Pyett et al. 2013](#)). A PAR approach has successfully been used in previous development of culturally appropriate stroke resources ([Peake et al. 2021](#)), and importantly, a PAR approach aligns with key principles outlined in the NHMRC ethical conduct in research with Aboriginal and Torres Strait Islander peoples companion document 'Keeping research on track II', ensuring an alignment of principles and values within and throughout the research process ([National Health and Medical Research Council 2018](#)).

By embracing Indigenist research methods that privilege Indigenous voice ([Dew et al. 2019](#)), this study employed qualitative methods central to Aboriginal ways of knowing, being, and doing, including 'Yarning' ([Walker et al. 2014](#), [Bessarab and Ng'andu 2010](#), [Kennedy et al. 2022](#)), alongside arts-based research techniques, where art, language, and storytelling combined to provide rich and insightful data ([Dew et al. 2019](#), [Hinsliff-Smith et al. 2022](#)).

Setting, participant sampling, and recruitment

Located within Australia's number one stroke 'hotspot', this project took place on Dunghutti Country, NSW, Australia. Given the focus of this research project was primarily to develop a culturally responsive version of the F.A.S.T early warning signs of stroke message, First Nations stroke survivors who resided on Dunghutti Country were included in this study. Stroke survivors who did not identify as First Nations were excluded. Originally, group members consisted of four First Nations stroke survivors and one non-First Nations occupational therapist/research academic. Through a process of purposive snowball sampling ([Ennals and Howie 2017](#)), a further two First Nations stroke survivors joined the group. Given the intention of the project, Dunghutti stroke group members identified the need for a local artist and a knowledge holder of local language, inviting and recruiting a local Dunghutti graphic artist and a community elder and knowledge holder of local language, totalling nine participants.

Yarning as a method

Yarning is one way First Nations peoples tell, listen, and share stories, thus creating connections and making meaning from experiences ([Bessarab and Ng'andu 2010](#)). Considered a legitimate qualitative research method aligning with a participatory action research approach ([Fredericks et al. 2011](#), [Walker et al. 2014](#), [Bessarab and Ng'andu 2010](#), [Kennedy et al. 2022](#)), Yarning offered this project a culturally safe and effective way to explore the health and wellness issues affecting the lives of First Nations stroke survivors.

Yarns were attended by members of our Dunghutti stroke group, which included Dunghutti stroke survivors and a non-First Nations occupational therapist/researcher. Given the composition of our group, cross-cultural Yarning took place, facilitated by differing members of the group, in a fluid and self-determined manner ([Byrne et al. 2021](#)). In a process similarly described by [Bessarab and Ng'andu \(2010\)](#), the Yarning process for this project involved 'social Yarning' (unstructured conversation taking place prior to more formal discussion), 'research topic Yarning' (where information specific to the study aims was discussed, loosely facilitated by a topic guide), and 'collaborative Yarning' (where group members

Table 1. Summary and description of themes identified as integral in maximizing the impact of health messaging.

Theme	Summary of theme concepts
1. Connecting through Country	From conceptual ideation to message development, and sharing and distribution of the health message, aspects of Country must be considered throughout every stage of the process Aspects of Country will be self-determined and may be demonstrated in various forms, including local First Nations language, use of totem, symbols, place, customs, and use of self Aspects of Country ensure the message has local identity, authentically connecting the message to community Working together, the various aspects of Country attract and sustain attention to a health message, further promoting relationality to the message
2. Connecting through understandings of health and well-being	The sharing of lived experiences of health and well-being is perceived to influence community understandings and action Improved community understanding about health and well-being is generated through positive health messaging Positive messaging links to awareness and understandings about potential impacts on health and well-being at an individual and community level
3. Connecting through relevant content	Visual-based learning preferences should be considered when determining the type and mode of health message Engaging visual imagery and artwork captivates and sustains attention to health messaging Consideration of colour and symbolism helps promote intergenerational appeal Consideration of health message resource type, including tangible items (such as t-shirts and magnets), and film to share the health message narrative, supports engagement and promotion

shared information and experiences, exploring ideas or concepts that led to new understanding). Interspersed throughout each Yarn, participants also experienced ‘therapeutic Yarning’, where stroke survivors shared personal stories evoking emotional and supportive responses from the group. After our initial ‘social Yarn’, ‘research topic Yarning’ was formally introduced with a Welcome to Country by an elder of the Dunghutti stroke group. Each Yarn was completed with the sharing of a meal amongst the group, where social Yarning was again embraced, strengthening relationships amongst group members.

Between May and September 2024, our Dunghutti stroke group held eight research-focussed Yarning sessions within the board room at Durri Aboriginal Controlled Medical Service. Participants attended in person or, if not on Country, online via zoom, with between five and eight participants present on each occasion. Excluding the social Yarning component before and after formal Yarning, research topic Yarns varied in duration between 58 and 128 minutes, with an average of 100 minutes. Although fluid in structure, our initial Yarning focussed on the different aspects of F.A.S.T, with stroke survivors reflecting on symptom onset and response from a lived experience perspective. Yarning also explored ways and means in which health messaging, education, and resources could best resonate, ensuring maximal impact across Dunghutti community. This latter Yarning focus forms the basis for this paper.

Analysing Yarning

Each Yarn was transcribed by author H.L., who distributed paper copies amongst the group to read and reflect upon prior to each subsequent Yarn. Bridging the disconnect between Indigenous decolonizing methods and Western knowledges, our group used an iterative, cross-cultural methodological approach to analysis, referred to as collaborative dialogical method, an inherently reflective communicative method involving both an individual and a collective engagement process (Urquhart *et al.* 2020). Our approach involved group discussion and reflection, where collectively, Yarning transcripts were inductively analysed by all members of the Dunghutti stroke group, and key themes were generated

from these group discussion (Fredericks *et al.* 2011, Urquhart *et al.* 2020). The focus of the analysis aligned with broader project aims, with relevant transcripts from our Yarns analysed line by line during latter Yarning sessions, to identify significant aspects of culturally responsive health and well-being messaging, considered essential in maximizing impact amongst First Nations community. Subsequent to group Yarns and after themes had been drafted into a narrative, H.L. contacted each group member individually, further reflecting upon themes and consolidating meaning prior to finalization of outcomes, ensuring group consensus.

RESULTS

To maximize the impact of a First Nations community’s means to connect to a health message, members of our Dunghutti stroke group highlighted the importance of integrating three key themes throughout the ideation, development, and dissemination of the health message. These elemental themes include (i) connecting through Country, (ii) connecting through understandings of health and well-being, and (iii) connecting through content. All themes interconnect, with aspects of one inseparable from aspects of another. Refer to Table 1 for summary/description of themes, and Table 2 for glossary of terms.

Theme 1: connecting through Country

To facilitate connection to a health message, Dunghutti stroke group participants viewed the inclusion of ‘Country’ within messaging as integral, from conceptual ideation, throughout development, and in sharing and distributing the health message. As described by Kwaymalina, ‘For Aboriginal peoples, Country is much more than a place. Rock, tree, river, hill, animal, human—all were formed of the same substance by the Ancestors who continue to live in land, water, sky. Country is filled with relations speaking language and following Law, no matter whether the shape of that relation is human, rock, crow, wattle. Country is loved, needed, and cared for, and Country loves, needs, and cares for her peoples in turn. Country is family, culture, identity. Country is self’ (Kwaymullina 2005).

Table 2. Glossary of terms (as described by Dunghutti stroke survivors).

Term	Dunghutti phrase	Description of meaning as defined by members of the Dunghutti stroke group
Mob	Wutu	Mob is family; a collective of family members and community. Our people, Dunghutti people, and more broadly, Australia's First Nations peoples entwined
Totem	Bagarr	Totem is our spiritual and cultural identity, a part of our origin and Country, a symbol of belonging. Totem is sacred to each individual tribe and represents where our mob are from
Blakfella	-	A word used to describe ourselves amongst ourselves; referring to Australia's Aboriginal and Torres Strait Islander peoples, the original landowners of this Country
Deadly	-	Deadly has a variety of meanings. It is an expression that refers to greatness, exceptionalism, achievement, or generally something or someone that is good, or awesome. Deadly is also a term used to describe a feeling of deep pride for the deeds or actions of another. Additionally, deadly can refer to a good-natured person



Figure 1. Primary posters developed through Yarning.

For health messages to resonate and have meaning, each message must connect through Country, as Country embodies self, community, and local culture. For Dunghutti stroke group members, connecting through Country was demonstrated within the Re-imagined F.A.S.T message through various forms, with local language, totem, symbols, customs, and use of self, all viewed as essential and symbolic to community. Each aspect signifying Country was deemed necessary, as together they would attract and sustain attention to the health message and, importantly, provide authenticity to the message being delivered.

Once consensus was reached with regard to appropriate use of local language, Dunghutti language was incorporated into the Re-imagining F.A.S.T health message through spoken word embedded into short film (short film via website: <https://mnclhd.health.nsw.gov.au/healthy-living/aboriginal-com>

[munities/learn-the-warning-signs-of-stroke/](https://mnclhd.health.nsw.gov.au/healthy-living/aboriginal-comunities/learn-the-warning-signs-of-stroke/)) and written word (presented in Fig. 1).

Knowledge holders of local language were consulted, and spoken word was provided by a local elder, ensuring authenticity. Including Dunghutti language within the Re-imagined F.A.S.T message provided a powerful way of sustaining that aspect of local culture, with the benefit of revitalizing and normalizing usage in everyday health messaging.

There's no insight into being cultural safe with having strokes. So, this is a good thing that we're doing in our group, Dunghutti language.' (Participant 1, Yarn 5)

When we see a poster or a pamphlet, to me... you're not going to take much notice of it. By having something with Aboriginal colours and something that we identify

with, well someone will get off their bum and they'll get up and have a look and read it, and maybe take it home... If it's got something with colour and everything, with Dunghutti language, they'll get up and think, I'll take this home.' (Participant 3, Yarn 1)

I know I'm in my Country and I see them words and I know what it is.' (Participant 7, Yarn 4)

Including a visual representation of the local totem for Dunghutti mob, the 'Gurrygin'—Praying Mantis—was considered an essential component of the message, as the Gurrygin is immediately recognizable and respected by Dunghutti community. Its inclusion would not only capture immediate attention to the health message, but indicated to those viewing the message that this had been created by local community, with understanding of community, thus maximizing the meaning and impact amongst Dunghutti community. The inclusion of totem provided the message itself with a powerful local identity, connecting the message in a symbolically way to community.

As soon as our people see the totem, or the praying mantis, they get drawn to it straight away, so they'll look at it. They'll get up and say "hey, what's going on here?" You know, "what's this, what they promoting here?" Which will make them get up and look, you know, like, what's going on within the mob?' (Participant 6, Yarn 1)

The praying mantis there somewhere...I think, because that represents a holistic approach with the Dunghutti and the message that we're trying to get out there with the F.A.S.T, I think, being cultural like, sensitive.' (Participant 1, Yarn 4)

I like the praying mantis. When our people see that straight away, in Dunghutti they'll go straight away, they will see the praying mantis.' (Participant 3, Yarn 6)

See, my way of doing it... that shows us, you know, you get a sense of... that's our totem, that's us.' (Participant 6, Yarn 6)

Symbols of Country were also seen as an important inclusion in the health message, where nature and community connect, allowing for deeper connection to the Re-imagined F.A.S.T message.

Significance to the area... Yeah, something that reflects... Dunghutti or reflects Kempsey or you know, the area... the mountains... you know, the waters, the mountains. The sea... as long as we can put like the water... the sea, the mountains, mountain ranges there and the river. Include all the local symbols.' (Participant 2, Yarn 2)

You want to be able to draw the eye. And really, that doesn't [motioning towards mainstream F.A.S.T picture]. I think there'd have to be in some way, Aboriginalized. And that could be through motifs... but it's got to be able to draw the eye to make you to want to, you know, read it.' (Participant 4, Yarn 1)

The symbolism of place within Country extended beyond inclusion in the visual artwork, to ensuring that the film version of the Re-imagined health message included shots of symbolically significant locations on Dunghutti Country, further linking the message to identity.

See what this fella that's going to be filming and whatever, he's got to understand that where we are sort of suggesting these shoots be, you know, our people identify with them places.' (Participant 5, Yarn 6)

Because it is about capturing our Country.' (Participant 6, Yarn 7)

We've all come together, we're all stroke victims you know and we're trying to get, trying to get the word out there, but in our way, in our culture way you know.' (Participant 6, Yarn 3)

The production of the Re-imagined F.A.S.T health message via short film offered an opportunity to extend connection to message through Country, by including Welcome to Country. The short film opens with a Welcome to Country performed by a respected Dunghutti elder, in language, inviting the viewer to respectfully engage with the health message designed by Dunghutti stroke survivors.

Welcome to Country first, definitely... that's our people. That's how we talk.' (Participant 4, Yarn 6)

As Country is self, Dunghutti stroke survivors emphasized the importance of portraying self within message. For the health message to be attended to, listened to, and respected, a personal element was considered essential.

With our group, we come from this area, which means we understand our area and our cultural aspect of it, you know what I mean.' (Participant 3, Yarn 1)

If we gonna do a thing for Dunghutti and our people, you know... I believe we need to, sort of, have a picture of all of our stroke victims, you know... so that I'm out there in community and look there and I say "oh, this is Auntie here, look", you know, I would never guess she had a stroke... this can happen to anybody you know... Like, don't put off.' (Participant 5, Yarn 1)

That will be a good idea, like you're saying Uncle, because you know, people come up and yarn with ya, you know... especially like, look at Sis you know, like Sis was the youngest, and now I'm the youngest you know... Like I know, when my Sister calls around, when my Sister had her stroke I'm thinking "fuck, I better go get myself checked here" you know.' (Participant 6, Yarn 1)

We need to be the frontrunners to educate our community... The only way they gonna convince them is with live images of us, you know, as a group or individuals... If I sort of give a story on my experience, Brothers experience, whatever, in our own actual community, people are going to sort of start to sit up and take notice.' (Participant 5, Yarn 1)



Figure 2. Primary artwork conceived following Yarning.

The concept of Country as self extended beyond stroke survivors' personal use of self within the health message, to the deliberate choice of a local artist, who was considered best placed to represent the groups' experiences through inherent connection through Country. Visual representation of the health message was conceived by the Dunghutti stroke group as more than brush strokes or graphic images to be viewed, where the imagery offered a deeper connection to Country, thus resulting in a more powerful portrayal of the health message (refer to Fig. 2).

You've got to have a Dunghutti person do the artwork, because you can't pick someone else that's not from the area who doesn't understand our values and things like that, or our people. You know our people (talking directly to the artist)... you're part of our people.' (Participant 3, Yarn 1)

'The artwork is representative of us.' (Participant 5, Yarn 6)

Theme 2: connecting through understandings of health and well-being

Dunghutti stroke group members were motivated to develop a positive health message to improve community understanding of issues specifically related to stroke health and well-being.

Connecting their understandings of stroke to an overall health promotional message was perceived as a way for the Dunghutti community to learn more about health, possible impacts of poor health, and with improved knowledge, encourage positive health actions as a community.

Well see, "Gudhurr-wutu" means "strengthen the mob", and that's what we're trying to do here. We're trying to strengthen our mob by giving them information you know, and understanding of what stroke is all about.' (Participant 6, Yarn 1)

I've changed my life, changed my ways, I get the voice out there... like the old fellas used to give us the voice to carry on stuff you know... now it's my turn.' (Participant 6, Yarn 5)

Because it feels like, from my experience, that the education is not out there. Like, I didn't know what the signs was with stroke... how many people know what F.A.S.T is?' (Participant 1, Yarn 2)

A desire to improve the health and well-being of community was motivated by several considerations, including a genuine concern for the impact of mortality on community, the potential for poorer health outcomes through lack of knowledge and inaction to health risks, and the potential benefits of health education for the entire community. Connecting to message required a cultural understanding of the community's health priorities, behaviours, barriers, and facilitators to local health needs and concerns.

Members of the Dunghutti stroke group were cognizant of the higher risk of death for First Nations peoples following stroke, the impact of which deeply felt throughout community. This awareness provided purpose for participation in health messaging development.

Us Aboriginal... it's sort of starting to stick out there you know, with our people. And you sort of might only see one or two people die from it or whatever, but one or two people is more than enough for our Aboriginal people.' (Participant 5, Yarn 2)

It's a commonality that's starting to evolve in our community and we need to, sort of, put something out there that can give them the message about F.A.ST. And if they can prevent death you know, to themselves and whatever, that's a big plus.' (Participant 5, Yarn 3)

Through personal experiences, members of the Dunghutti stroke group identified previous behaviours that may have exposed themselves personally to higher risk of poor health outcomes. By considering and sharing lessons learnt within the health message, stroke group members aimed to prevent an ongoing cycle of ill health amongst the broader Dunghutti community.

Self-inflicted stuff you know... I lived life on the edge when I was younger and sillier. But it was the choice that I made. Now I sit back, and I look on where I am now you know, why did I do that shit then you know, why did I do it? But this is my wakeup call.' (Participant 6, Yarn 3)

See, I had all the signs. Bad kidney's, high cholesterol... the list just went on. You know what my response was? [physically shrugs]. My doctor said if you keep going the way you are, you're going to get a stroke. I went [physically shrugs]... But see all the signs were there and this is what this is about, it's a message now. You're right, we've got to get this message out. When the doctor says to you "look, you've got high cholesterol"... do something about it.' (Participant 2, Yarn 5)

You know, the main thing is, people say to you, it's not going to happen to me... it's always been our thoughts, it will never happen to me, I'll never have a stroke... that's been interesting you know, like just for me, I missed that timeframe and it complicated things and probably kept me in hospital longer than I should have been you know. That's where I went wrong and I sort of want to get it right for other people that have a stroke you know... like I was mucking around there, rang me son up, you know, killing all this time instead of just ringing triple O and jumping in the ambulance and getting treated. You know, straight away.' (Participant 5, Yarn 6)

Time is the most crucial thing. Because no disrespect, most people would say "oh I'll go home, I'll go to the doctor tomorrow". That's what Blakfella's would say... "I'll do it tomorrow, I'll do it tomorrow"... Don't. I always say... The biggest saying that I learnt, don't put off what you can do today for another day, because that other day may not come, simple as that. What you can do, do it today.' (Participant 3, Yarn 1)

Ensuring community knew the benefits of being aware and understanding a health message provided a source of motivation, driving Dunghutti stroke group members to participate in the development and creation of the culturally relevant Re-imagined F.A.S.T health message. Developing a health message that community could connect to was considered a positive way for Dunghutti peoples to learn not only the symptoms of stroke, but actions that would potentially save lives, thus impacting the overall health and well-being of community.

Give this to these young fellas now, give them an understanding because, if I'm a young fella and I'm home with Pop, you know, I know what to do because I can see what's happening to Pop. And then if mum have gone downtown to do shopping, I'm home alone with Pop. Pop sitting on the chair like this here, just looking at me... 'you right?'... Start dribbling... Hey I know what to do. Pop dribbling here and half his face is drooping. Can he lift his arm? Ask him to life his arm, bang, nup, he got no movement.' (Participant 6, Yarn 5)

Theme 3: connecting through relevant content

When considering the ways and means perceived to maximize the impact of health messaging, Dunghutti stroke group members emphasized the value and preference for visual-based learning styles amongst First Nations peoples. A visually striking message would appeal to its intended audience by immediately attracting attention, thus inviting the viewer to form a connection to message content. The modalities through which content would be shared were additional considerations, as

health messages delivered through tangible products that could be seen, worn, and heard were deemed an effective way of delivering message content.

Gaining attention was an imperative, with stroke survivors emphasizing the influence of an engaging visual that included not only a connection to Country, but intricate displays and combinations of colour that would attract a viewer's curiosity.

What we're trying to do is get our Dunghutti colours and message across, so someone will see it and they'll have to get up and take it home with them, and understand it, and put it on the fridge or something like that, you know what I mean? Whereas, take something like that [pointing to mainstream F.A.S.T poster], they won't take that home, very plain.' (Participant 3, Yarn 4)

Blakfellas see something with colour, they're going to go and pick it up... it's just the way we are.' (Participant 3, Yarn 4)

I like the artwork, I really do, I think it's great... I think they are striking... I'm okay with the face, arms and speech type colouring and the brain... just as long as it draws the eye.' (Participant 4, Yarn 4)

Make it colourful so it's eye catching.' (Participant 6, Yarn 4)

What do you think people are going to notice? We're colour people, we like bright colours and things that catch our eye.' (Participant 3, Yarn 6)

There were additional benefits to the use of bold and striking visual imagery to promote a health message. Rather than an emphasis on text, artworks were considered an effective way to maximize learning amongst Dunghutti community, with the modality appealing to a visual learning style preference.

See one thing is, Blakfellas, they're visualized people... We're visualized people; we're not reading people you know. So anything that catches their eye, especially colours.' (Participant 6, Yarn 1)

I believe in visual. That's how I learn... I think it's really important to be, the message has got to come through.' (Participant 2, Yarn 2)

It's really good that we're doing something for our Indigenous people because we got that lackadaisical care-free nature... that's our people, you know what I mean? We're not so much, academic... we're all visual... visual, hands on. And when you think this will help our people, I think that this won't just help our people, I think the mainstream, if they see this, then someone else might pick that up, because the visual part of a person.' (Participant 3, Yarn 4)

We got to bougie that up to our cultural needs... As in, artwork, wording. Something that's gonna catch your eye... You know, like I said, us Blakfellas, we are visualize people. You put that up on a wall [mainstream version of FAST] and we design one and put that on a wall, I guarantee, more people are gonna go to the Aboriginal design one,

than the other one. Because they're all gonna go, "what's this about?".' (Participant 6, Yarn 1)

In addition to capturing a viewer's attention and appealing to their learning needs, the use of bright and bold visual images served another purpose. To maximize the impact of the message, it needed to appeal to a variety of ages. Gaining the attention of younger generations was viewed as essential, as Dunghutti youth may bear witness to stroke symptoms, and be required to act to a potentially life-threatening health situation. When ideating the Re-imagined F.A.S.T message, consideration was given to colour selection and symbolism, in relation to the broader target audience.

I like pretty colours... I like all the blues, greens, all the pretty colours, like, that catch you straight away. No disrespect, the old days, red, black and yellow, the old days, you know what I mean, but to me, those days are over. It's all new generation, you know what I mean.' (Participant 3, Yarn 1)

In addition to considering the benefits of a visually appealing message, Dunghutti stroke survivors contemplated various means through which the message would be most impactfully delivered. Product choice was important, as the items chosen to deliver the message were seen as having maximal connection to community. Printing the artwork onto tangible products such as t-shirts, wristbands, and fridge magnets would maximize exposure, thus promoting the health message throughout community.

Word of mouth is good... but Blakfellas love shirts.' (Participant 3, Yarn 7)

One thing about Blakfellas, where'd you get that shirt?... Blakfellas are like that. It doesn't matter who you are, young or old, hey give me that shirt, and then they'll start to read what's on the shirt. See that's just us, you know. Not us here in general, that's just our culture... if it's a nice Indigenous designed shirt or something you's do or something down the track, Blakfella says "that's a deadly shirt, where did you get that?" It's just our people, who we are.' (Participant 3, Yarn 1)

If someone down the street, and they got that band on and the bystander can look at it and think "oh, has the face dropped, how's the speech, or is you know, raise arm... And 'oh', call the ambulance quick", because I just looked through and she's having a stroke.' (Participant 1, Yarn 5)

But the visual aspect is probably the biggest thing... we get some magnets to put on the fridge or something like that for free... So when they open the fridge every day, they see it, that's something they'll see every day, and... something like shirts down the track. Because Blakfella's with shirts, I guarantee it, that's the best form of advertising.' (Participant 3, Yarn 1)

DISCUSSION

As exemplified through the Re-imagining F.A.S.T project, health messages were perceived to resonate and provide

maximal impact within Dunghutti community when the intended message was motivated by a desire to 'Gudhurr-wutu' (strengthen the mob), enabled through connection to Country, connection to local understandings of health and well-being, and connection to relevant content. Themes identified through our study align with aspects of the cultural determinants of health, identified as family/community, Country and place, cultural identity, and self-determination, whose combined influence has been found to benefit the health and well-being outcomes of First Nations peoples across the globe (Verbunt *et al.* 2021). Through the infusion of locally identified connection to Country, health and well-being, and relevant content within a community-led Re-imagined F.A.S.T message, this project further demonstrates the importance of including cultural determinants of health into promotional activities to maximize health messaging impact.

Whilst the need for culturally safe and appropriate health education materials, artwork, voices, and images have previously been identified as enabling the delivery of chronic disease prevention and management programmes with First Nations peoples in primary care (Yadav *et al.* 2024), this current study provides further insight into how, what, and why connecting to cultural, community, health, and modality aspects furthers the potential impact of health messaging. The artistic, language, and storytelling components embedded within the Re-imagined F.A.S.T message offer a striking auditory and visual appeal to the message, but at a deeper level, attend to cultural identity and spiritual factors known to benefit First Nations people's health and well-being (MacLean *et al.* 2017, Salmon *et al.* 2018). Additionally, embracing and incorporating Indigenous ways of knowing, being, and doing throughout the conceptualization, development, and delivery of health messaging can help build trust in health systems that may otherwise be perceived as lacking understanding of cultural needs (Webster *et al.* 2017). The message may be more highly regarded when developed and codesigned by local elders and community members (Simpson *et al.* 2022), including recognized lived experienced knowledge holders who provide authenticity to messaging.

Whilst it is acknowledged that local cultural influences, traditions, and knowledges will vary from Country to Country, connecting to message is more likely to gain traction when First Nations peoples are involved in all phases of health messaging, including identification of the health issue, message development, and dissemination. By ensuring inclusion of First Nations peoples with lived experience of their health condition throughout every layer of decision making, self-determination is foregrounded, further supporting a strength-based approach influencing health and well-being outcomes (Behrendt *et al.* 2017, Salmon *et al.* 2018). The Re-imagining F.A.S.T project provides a living example of a 'bottom-up' approach to First Nations health and well-being promotional activity, centred around community-driven design. By design, a bottom-up approach acknowledges and respects diversity in relationships, cultural significance of Country, and local customs and traditions (Bulloch *et al.* 2019), offering a strength-based approach to Indigenous health messaging. The approach, as enacted by the Dunghutti stroke group throughout this project, further supports the need for health and well-being promotional messaging to look beyond Westernized mainstream perspectives of health, which prioritize physical symptoms, to include holistic elements such as spiritual, social, cultural, and environmental aspects of well-being (Hampton and Toombs 2013, Curtin *et al.* 2020).

Attending to local cultural traditions and structures and the use of established community and peer-to-peer communication pathways have previously been identified as important aspects influencing participation in First Nations health and promotion programmes (Barnett and Kendall 2011, Winch et al. 2017). Extending that knowledge, this research project incorporated a community-led approach throughout all stages of health message development, ultimately providing ownership over messaging outputs, thus maximizing health messaging impact. Strength-based approaches to health service provision and research are recognized as ways to foreground self-determination, drawing on valued resources and capabilities of First Nations peoples (Fogarty et al. 2018, Bulloch et al. 2019, Bryant et al. 2021). Similar to previous First Nations health promotion projects, local art, language, and storytelling were considered essential inclusions, designed to engage and sustain attention to message in a culturally appropriate way (Davis et al. 2004, Schoen et al. 2010). Compared to projects located in other parts of Australia, resource type varied in perceived relevance to the community. For example, promotional magnets were left behind, deemed irrelevant by those developing and participating in a diabetic foot-care educational programme in Western Australia, whereas the Dunghutti stroke group saw the benefit of a magnet adhering to a fridge door, providing a daily visual reminder of the early warning signs of stroke message. The inclusion of local community members should not be undervalued, as they bring understanding of environmental, social, and cultural needs of their local community, ensuring suitability of promotional resources. By connecting to Country and connecting messaging to health and well-being at a local level, through locally recognized relevant content messaging means, the Re-imagining F.A.S.T message itself evolved over time, connecting community to messaging in a meaningful way.

Whilst not directly addressing the intersecting historical, environmental, political, psychosocial, or cultural issues impacting the underlying drivers of cardiovascular health inequalities for Australia's First Nations peoples (Vallesi et al. 2018), this research project assumed a strength-based approach, led by and with Dunghutti stroke survivors, to develop a culturally relevant early warning signs of stroke message. It is important to acknowledge that this project was conducted on Dunghutti Country with a small group of community members, and as such, caution should be taken when applying findings across other First Nations communities.

With a view to scale the Re-imagining F.A.S.T concept beyond Dunghutti Country, our group have met with health services and First Nations stroke survivors across NSW, where we aim to continue to raise stroke awareness and support the development of culturally relevant early warning signs of stroke messages unique to each location.

CONCLUSION

This study offers health and well-being promotion services and practitioners insight into three key elements deemed necessary to support the development of culturally relevant health messages within First Nations communities. Through a community-led approach, health messages that connect to Country, connect to local understandings of health and well-being, and connect to content are likely to resonate within community, thus maximizing health messaging impact within First Nations communities. When considering future health

message development focussed on First Nations health and well-being, it is essential that First Nations peoples are involved in all stages of message ideation, development, and dissemination, including opportunities to identify local issues and solutions, thus ensuring a community-led, strength-based approach.

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Supplementary data

Supplementary data is available at [Health Promotion International](#) online.

Conflict of interest

No potential conflicts of interest are reported by the authors.

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Data availability

The data underlying this article will be shared on reasonable request to the corresponding author.

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