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Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples: Development of a culturally appropriate evidence-based online community toolkit about crystal methamphetamine

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Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples: Development of a culturally appropriate evidence-based online community toolkit about crystal methamphetamine

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Abstract

Background: Crystal methamphetamine ('ice') is a drug of significant concern across Australia, however, access to culturally appropriate, community-led, and co-developed resources is limited for Aboriginal and Torres Strait Islander communities. To meet this need, the Cracks in the Ice Resources for Aboriginal and Torres Strait Islander peoples web-based toolkit was developed to support Aboriginal and Torres Strait Islander peoples, families, and communities affected by crystal methamphetamine.

Objective: This paper describes co-development and beta-testing of the Cracks in the Ice Resources for Aboriginal and Torres Strait Islander peoples web-based toolkit

Methods: The community-led development of the toolkit was overseen by an Expert Advisory Group and involved a broad-reaching, inclusive, and iterative process, with three phases over a 6-year period (from funding in 2016 to launch in 2021). The development phases with, and for, Aboriginal and Torres Strait Islander communities involved: (1) initial focus groups (30-45 mins, n = 15) conducted by an Aboriginal researcher across 6 locations including metropolitan cities, rural regional towns, and towns servicing remote Aboriginal communities across Australia; (2) content and web development in collaboration with First Nations digital agencies; and (3) beta-testing of the web-based toolkit via a 15-25 min online survey among website end-users and experts to evaluate the toolkit's acceptability, relevance, and usability.

Results: Themes identified through Phase 1 community consultations (n = 166) highlighted the need for culturally appropriate information and resources about methamphetamine use harms, impacts, and support options. This guided Phase 2, where resources were developed to address knowledge gaps (e.g., drug effects) and practical needs of communities (e.g., yarning about drugs). Phase 2 also guided development of content specific meaningful First Nations artwork and designs, interactive features, and other resources in response to Phase 1. Overall, Phase 3 beta-testing results were positive with Aboriginal and Torres Strait Islander end-users (n=73) reporting that the toolkit was easy to navigate and provided appropriate and relevant information. The

majority (67/73, 91.8%) of participants reported that it was clear what information the toolkit provided, and most (54/73, 73.9%) were “very likely” to recommend the website to others. Areas for improvement were identified (e.g., content explaining the artwork development, improving the clarity of text) and addressed prior to launch. The web-based toolkit (cracksintheice.org.au/aboriginal-and-torres-strait-islander-peoples) was officially launched on 21 July 2021(reach as of June 2025: >2.74M page views, >1.44M unique website users, >366K hardcopy resources distributed to >1,793 organisations across Australia).

Conclusions: It is critical that health resources for First Nations people are community-led and iteratively co-developed with experts and health workers supporting communities. Conducted over 6 years and involving > 240 Aboriginal and Torres Strait Islander community members, elders, experts, researchers, and health workers, such a process was used to develop this culturally appropriate, relevant, and acceptable web-based toolkit about crystal methamphetamine for Aboriginal and Torres Strait Islander peoples. Whilst focussed on an area of high need within Australia, this process provides an effective and strengths focused roadmap to achieve this in other areas of health and in other countries working with First Nations peoples.

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Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples: Development of a culturally appropriate evidence-based online community toolkit about crystal methamphetamine

Abstract

Introduction

Crystal methamphetamine (‘ice’) is a drug of significant concern across Australia, however, access to culturally appropriate, community-led, and co-developed resources is limited for Aboriginal and Torres Strait Islander communities. To meet this need, the *Cracks in the Ice Resources for Aboriginal and Torres Strait Islander peoples* web-based toolkit was developed to support Aboriginal and Torres Strait Islander peoples, families, and communities affected by crystal methamphetamine. This paper describes co-development and beta-testing of this resource.

Methods

The community-led development of the toolkit was overseen by an Expert Advisory Group and involved a broad-reaching, inclusive, and iterative process, with three phases over a 6-year period (from funding in 2016 to launch in 2021). The development phases with, and for, Aboriginal and Torres Strait Islander communities involved: (1) initial focus groups (30-45 mins, n = 15) conducted by an Aboriginal researcher across 6 locations including metropolitan cities, rural regional towns, and towns servicing remote Aboriginal communities across Australia; (2) content and web development in collaboration with First Nations digital agencies; and (3) beta-testing of the web-based toolkit via a 15-25 min online survey among website end-users and experts to evaluate the toolkit’s acceptability, relevance, and usability.

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Results

Themes identified through Phase 1 community consultations (n = 166) highlighted the need for culturally appropriate information and resources about methamphetamine use harms, impacts, and support options. This guided Phase 2, where resources were developed to address knowledge gaps (e.g., drug effects) and practical needs of communities (e.g., yarning about drugs). Phase 2 also guided development of content specific meaningful First Nations artwork and designs, interactive features, and other resources in response to Phase 1. Overall, Phase 3 beta-testing results were positive with Aboriginal and Torres Strait Islander end-users (n=73) reporting that the toolkit was easy to navigate and provided appropriate and relevant information. The majority (67/73, 91.8%) of participants reported that it was clear what information the toolkit provided, and most (54/73, 73.9%) were "very likely" to recommend the website to others. Areas for improvement were identified (e.g., content explaining the artwork development, improving the clarity of text) and addressed prior to launch. The web-based toolkit (cracksintheice.org.au/aboriginal-and-torres-strait-islander-peoples) was officially launched on 21 July 2021(reach as of June 2025: >2.74M page views, >1.44M unique website users, >366K hardcopy resources distributed to >1,793 organisations across Australia).

Conclusion

It is critical that health resources for First Nations people are community-led and iteratively co-developed with experts and health workers supporting communities. Conducted over 6 years and involving > 240 Aboriginal and Torres Strait Islander community members, elders, experts, researchers, and health workers, such a process was used to develop this culturally appropriate, relevant, and acceptable web-based toolkit about crystal methamphetamine for Aboriginal and Torres Strait Islander peoples. Whilst focussed on an area of high need within Australia, this process provides an effective and strengths focused roadmap to achieve this in other areas of health and in

other countries working with First Nations peoples.

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Introduction

Methamphetamine is a global health concern with rates of use increasing. The 2024, UN World Drug Report estimated that 30 million people worldwide use amphetamine (including methamphetamine) (UNODC, 2024). In Australia, harms associated with methamphetamine use are high due to the fact that crystal methamphetamine, often the more pure and potent form of the drug, is the most common type of amphetamine used (Australian Institute of Health and Welfare, 2024). There are indicators that methamphetamine use is more prevalent among some Aboriginal and Torres Strait Islanders communities than non-Indigenous Australians (Snijder & Kershaw, 2019). For example, in 2022-2023, it was estimated that Aboriginal and Torres-Strait Islander people were 2.3 times more likely to use methamphetamine and amphetamine than non-Indigenous people (Australian Institute of Health and Welfare, 2024). Whilst population prevalence estimates are limited by small sample sizes, research suggests that Aboriginal and Torres Strait Islander people can experience a disproportionate burden of harm from methamphetamine use. This may be due to the concurrent psychosocial and health stressors driven by the historic, political, and structural disadvantages that shape Aboriginal and Torres Strait Islander peoples' everyday lives (Gendera et al., 2022; Sivak et al., 2023). These harms are further exacerbated by a lack of accessible, evidence-based, and culturally appropriate resources for Aboriginal and Torres Strait Islander people directly or indirectly affected by methamphetamine use (Reilly et al., 2020; Sivak et al., 2023; Snijder & Kershaw, 2019). Despite these ongoing historical and structural challenges, Aboriginal and Torres Strait Islander communities demonstrate ongoing strength and resilience as evident in sustained advocacy for culturally grounded, community-led healing and systemic change in health policy and practice (Fogarty et al., 2018). Health resources and interventions that draw on the existing strengths, knowledge, and experiences of Aboriginal and Torres Strait Islander peoples are critical in empowering communities affected by methamphetamine use and enacting meaningful and sustainable change in health

outcomes. Web-based and digital technology enables health information, resources, and support to reach large groups of vulnerable and geographically diverse communities, such as Aboriginal and Torres Strait Islander peoples (Jones et al., 2017; Povey et al., 2016; Reilly et al., 2020; Whitehead et al., 2023). The National Aboriginal and Torres Strait Islander Health Plan (Department of Health and Ageing, 2013) highlighted the importance of e-Health technology and online services to ensure Aboriginal and Torres Strait Islander peoples have affordable and reliable access to evidence-based health information. In 2014-15, the most recent data available, 73.5% of Aboriginal and Torres Strait Islander peoples aged over 15 years, reported accessing the internet in the past 12 months (Productivity Commission, 2023). However, it is likely this figure has increased given improved access and affordability of digital technologies across Australia (Thomas et al., 2023), suggesting a web-based format is a viable avenue for disseminating health information on a large-scale. Further, engagement with social media for health resources and help-seeking has increased significantly amongst Aboriginal and Torres Strait Islander people in recent years (Carlson et al., 2021; Ellway et al., 2019; Rice et al., 2016). Despite widespread agreement on the need for accessible, reliable health education, there is a lack of evidence-based, community-led and co-developed resources available online regarding methamphetamine, particularly the crystal form. To address this resource gap, the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit was developed through a broad-reaching, inclusive, and iterative process, involving multiple phases over a 6-year period (2016 – 2021).

The resources described in this paper are an extension of the *Cracks in the Ice* web-based toolkit (cracksintheice.org.au), developed in 2015-2016, and launched in 2017, to provide evidence-based, credible, and up to date information, resources, and support to Australian families and communities affected by crystal methamphetamine (Birrell et al., 2018; Champion et al., 2018; Kershaw et al., 2021). During the development of *Cracks in the Ice*, it was recognised that a separate community-led and driven, culturally appropriate resource regarding methamphetamine for Aboriginal and Torres

Strait Islander peoples was needed. To meet this need, the Australian Government Department of Health provided additional funding to develop the community-led culturally appropriate web-based toolkit, the first of its kind nationally and internationally.

Engaging in community-led processes and collaborating with Aboriginal and Torres Strait Islander communities in a genuine and meaningful way is crucial in developing health resources that are trustworthy, relevant, and reflect cultural values, beliefs, and traditions (Jones et al., 2017). Previous research has detailed the importance of developing digital health resources and services with Indigenous communities, not only to ensure that the technology is acceptable and useful, but also to 'decolonise' the development process (Davies et al., 2015; Dreise & Maszurski, 2018; Gilbert et al., 2021). This involves engaging with a range of stakeholders at all stages of development to enable and empower people to tailor resources to their needs. For example, this can include, but is not limited to, people with lived experience, family, health professionals and elders or original knowledge keepers (as appropriate). Research has shown that health resources and interventions that have Aboriginal and Torres Strait Islander leadership in this way are more likely to be holistic in nature, needs-based, and culturally appropriate, and therefore more readily trusted, adopted, and shared amongst communities who will benefit most (Bainbridge et al., 2015; Harding & Oetzel, 2019; MacLean et al., 2015).

This paper summarises the three phases involved in developing the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit: 1) community consultation, 2) co-development of resources, and 3) beta-testing. The overall aim of the project was to undertake community-led development of culturally appropriate resources. The specific aims were to:

1. Identify and understand the most important information and digital resource needs of Aboriginal and Torres Strait Islander peoples regarding crystal methamphetamine use and its harms (Phase 1).
2. Develop a wide range of resources in response to diverse community needs (Phase 2).

3. Assess the acceptability, functionality, usability, and compatibility of the toolkit among community members via beta-testing prior to launch (Phase 3).

Methods

Overview of the Co-development Process

Development of the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit adopted a collaborative, community-led and driven approach across all phases (see Figure 1). The co-development process from project start to launch took place over six years (including disruptions to the project due to COVID lockdowns and natural disasters). Similar to methods followed in the development of *Cracks in the Ice* (Champion et al., 2018), project directions, aims and methodology were overseen by an Expert Advisory Group (EAG) consisting of Aboriginal elders, senior Indigenous and non-Indigenous researchers in the Alcohol and Other Drug (AOD) field, as well as senior health professionals, from a majority of Australian states and territories (except one state and one territory). The EAG provided, and continues to provide, guidance and advice throughout all phases of the toolkit development, maintenance and dissemination. The EAG facilitated collaborations with people with lived experience of methamphetamine use to provide guidance throughout the development process. Partnerships were also established with Aboriginal Community Controlled Health Organisations (ACCHO's) across Australia in a range of geographic areas.

Phase 1 was led by the National Drug Research Institute (NDRI) at Curtin University. Phases 2 and 3 were led by the Matilda Centre for Research in Mental Health and Substance Use at The University of Sydney with the NDRI team continuing in an advisory capacity (see Figure 2).

Phase 1: Initial End-User Consultation

Ethics

Ethics approval was obtained through the [committee name withheld for review] ([approval number withheld for review]), [committee name withheld for review] ([approval number withheld for review]), [committee name withheld for review] ([approval number withheld for review])in the case of Broome, [committee name withheld for review] ([approval number withheld for review])and Cairns by [committee name withheld for review] ([approval number withheld for review]). Ethics approval was also obtained for [committee name withheld for review] ([approval number withheld for review]).

Sample and Procedure

In 2018, focus groups (30-45 minutes; n = 15) were conducted in a variety of locations that covered metropolitan cities, rural regional towns, and towns servicing remote Aboriginal communities. These locations included Adelaide (1 group), Perth (3), Cairns (5), Albany (1), Alice Springs (2) and Broome (3). Local Aboriginal Community Controlled Health Organisations (ACCHO's) assisted in recruiting community members with insights from their own lived experience and that of their families, communities, or role as health workers.

In each location the number of focus groups and participants varied due to local factors at the time of the site visits.

The focus groups were facilitated by an Aboriginal researcher (ST) to ensure cultural safety with the assistance of a non-Aboriginal researcher (KC). While funding was available to reimburse the substantial work of the Aboriginal facilitator, funding to reimburse focus group participants was not available. This was then explicitly incorporated into future grants. Thus, participation in the focus groups was voluntary, although transport assistance could be organised by focus group facilitators where needed.

The first three focus groups across two locations (Adelaide and Alice Springs) involved participants identifying community needs with respect to crystal methamphetamine resources as well as viewing the existing *Cracks in the Ice* web-based toolkit. After reviewing insights from these focus groups,

the EAG highlighted that, in addition to adapting existing resources, it would be valuable to develop new resources that are not anchored to existing resources that were developed for non-Indigenous communities. Thus, the remaining 12 focus groups (Perth, Carins, Albany, and Broome) adopted a variation of the World Café model (Brown, 2002, 2010) which incorporated appreciative inquiry, mind-mapping, and small group discussions and activities. This work focused on identification of community needs without reviewing existing *Cracks in the Ice* resources.

Data Analysis

Focus group sessions were audio recorded and transcribed verbatim by members of the research team (KC and ST). Participant responses to focus group questions were also recorded on paper. Qualitative responses were analysed using thematic analysis (Braun & Clarke, 2006) by an independent researcher (DG) not involved in the focus groups. The raw data were reviewed line by line and coded into 72 categories based on similarity of words, phrases, and content. These categories were then conceptualised into 10 broad groupings to identify major themes. Themes were then independently reviewed and validated by KC and ST with the recordings and transcripts. The final themes were discussed among DG, KC and ST and amended based on consensus.

Phase 2: Content and Web Development

Design and Procedure

The development of content for the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit began with a literature review and scoping exercise to identify existing resources (web-based and hard copy) for Aboriginal and Torres Strait Islander peoples about crystal methamphetamine. Overall, the review identified limited availability of culturally responsive and co-developed resources on methamphetamine use developed in partnership with Aboriginal and Torres Strait Islander communities in Australia. Resources were developed or adapted to meet the community needs identified in Phase 1 as well as to fill existing gaps identified by the scoping

review. Resource development was conducted by the research team in collaboration with several Aboriginal-owned and led organisations specialising in creative design, website development, and language translations (e.g., IB creative, Iwiri, Garuwa). The development process included adaptation of key fact pages (e.g., what are the effects of ice?) to be culturally specific and appropriate, along with the development of new resources addressing community concerns including fact pages (e.g., social and emotional wellbeing, stages of change), animated videos, and other resources (including an interactive online community poster builder, as well as online and hardcopy brochures). To assist with wider dissemination and cultural accessibility of resources, key content was translated into 3 Aboriginal and Torres Strait Islander languages, Warlpiri, Torres Strait Islander Creole by IB Creative, and Pitjantjatjara by Iwiri. These languages were chosen in consultation with the EAG.

Phase 3: Beta Testing of the Web-Based Toolkit

Ethics

Ethics approval was obtained through [committee name withheld for review] ([approval number withheld for review]), [committee name withheld for review] ([approval number withheld for review]), the [committee name withheld for review] ([approval number withheld for review]), and [committee name withheld for review] ([approval number withheld for review]).

Design and Procedure

Prior to launch, a beta version of the toolkit was tested with end-users (November 2020 – March 2021) to ensure the toolkit aligned with the needs identified by community in Phase 1. Due to time constraints and ethical approvals, beta-testing in every state and territory was not feasible. Thus, South Australia, Western Australia, and New South Wales were selected in consultation with the EAG to incorporate feedback across metropolitan, regional, and remote areas.

The study was advertised through the *Cracks in the Ice* Facebook, Twitter/X pages and e-newsletter, as well as through paid Facebook advertising to the general community but targeted to Aboriginal and Torres Strait Islander peoples (See Appendix 1 for example advertisement). The study was also shared with networks by the EAG, networks, and emails to Aboriginal Medical Services in respective states.

Participants were invited to complete an online REDCap survey (Harris et al., 2019; Harris et al., 2009) and provide feedback on an embedded beta-version of the toolkit along with different information and design options. The survey was open to Aboriginal and Torres Strait Islander peoples residing in South Australia, Western Australia, and New South Wales, aged 18 years or over.

In the survey, participants responded to questions asking if they identified as a person who has used or uses methamphetamine, are a family member or friend of someone who has used or uses methamphetamine, are a health worker, and/or are part of a community where methamphetamine use is a concern. If participants respond 'yes' to these questions, they were directed to questions related to the respective toolkit content for that group, otherwise they were directed to the end of the survey.

The EAG provided ongoing input throughout the beta-testing phase of the toolkit, at annual EAG meetings, through regular email correspondence, and surveys on both the beta-version and the 'live' web-based toolkit (one month prior to launch).

Measures

Respondents completed demographic questions about their age ("How old are you?"), gender ("Which of the following best describes your current gender identity? Female, male, non-binary/gender fluid, different identity (please provide)"), Aboriginal and Torres Strait Islander background ("Are you of Aboriginal or Torres Strait Islander origin?", geographical location ("What is your postcode?" and "From the map above, select the number that is closest to where you live"), and computer literacy ("How would you rate your skill in using a computer? Beginner, Intermediate, Advanced," and "How do you usually access the internet? PC/Desktop Computer, Smart Phone,

Laptop, Tablet”).

Respondents were also asked to respond to closed (e.g., “Is it easy to see what information you can get from this page? Yes, No, why not - free text”) and open-ended (e.g. “Please write any comments about what can be improved on the page for community members. For example, how the page looks, the use of artwork, pictures, graphics and names of headings”). Questions about the design and cultural artwork, accessibility, and usefulness of content including fact pages and brochures were also included. In addition, the target groups for the toolkit (e.g., people who use crystal methamphetamine, families and friends, health workers, community members) were asked to provide feedback on specific resources designed for their respective needs. All participants were invited to provide further feedback and to share their story via an anonymous semi-structured telephone interview conducted by Aboriginal or Torres Strait Islander members of the research team.

Results

Phase 1: Initial End-User Consultation

Participants

In total, 15 focus groups were attended by 166 participants (54.8% female), with 10 participants attending 2 groups each. Participants included members of the communities where the focus groups were held; people with lived experience, health workers who attended as community members; and community members who attended as representatives of health service organisations. A small number of non-Indigenous service providers who worked closely with Aboriginal and Torress Strait Islander people attended some of the groups.

Key Areas of Community Concern

Whilst there was a wide range of diverse thoughts and ideas, four key themes emerged and were agreed upon as important by the majority of participants: 1) harms to those who use crystal

methamphetamine, 2) impact of crystal methamphetamine on families and communities, 3) availability and accessibility of services, and 4) supply and consumption of crystal methamphetamine. Within these themes, common topics related to early intervention and prevention, the need for success stories and messages of hope, overcoming stigma and structural barriers to accessing help, and need for culturally appropriate services.

Reflections on what resources were needed

Content

The focus groups indicated resources in the toolkit should be tailored to health workers, family and friends, people who use crystal methamphetamine and community members, rather than generic information across all groups. Key information needs related to effects and signs of use, prevalence of use, stages of change, and impacts of use on families. There was also feedback that the toolkit should provide information about locally based support services and how to navigate the health system.

Participants also provided suggestions for resources to assist with community-based prevention and harm reduction strategies including practical information on how to prevent, or reduce the harms associated with crystal methamphetamine use, managing acute behavioural incidents and information or stories that break down stigma associated with crystal methamphetamine use to highlight a narrative of hope.

Presentation

Focus groups emphasised the importance of a culturally appropriate visual/pictorial format with interactive aspects including, artwork and imagery, links to practical and relevant external websites and local services; ease of navigation; videos (e.g., personal stories of hope); and localisation through Aboriginal language.

Phase 2: Content and Web Development

Driven by the findings from Phase 1, the beta-version version of the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit was developed in partnership with Aboriginal artists and/or designers, Aboriginal-led design agencies and overseen by the EAG. The key content included in the beta-version is summarised in Table 1 below. See Appendix 2 for a screenshot of the toolkit homepage prior to beta-testing.

Table 1. Summary of key content developed for *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit beta-version in response to identified community needs along with rationale and partnered organisations.

Community Need Identified	**Content Developed**	**Rationale**	**Partnership with creative agency (details)**
Aboriginal artwork throughout toolkit	A suite of design elements developed by an Aboriginal artist including a "story behind the artwork" video (Gilimbaa, 2021) detailing the design journey and the meaning behind the artwork available to watch on the homepage.	To increase cultural connection, enhance written content and provide a cohesive, culturally relevant and appropriate theme across the toolkit	Gilimbaa (Jenna Lee, Larrakia)
Audio-visual medium	Six animations covering topic areas including 'What is ice', 'The person behind the substance', 'Using ice with other drugs', 'How to start a yarn', 'Co-occurring conditions' & 'Stigma and shame'	To increase accessibility and engagement with content for a diverse range of literacy abilities	Gilimbaa
Facts about methamphetamine, prevalence, effects and harms, how to help and respond	Twenty-eight fact pages adapted, or developed, on relevant topics with many key pages also translated into three Aboriginal and Torres	To increase accessibility and assist with dissemination of resources to diverse communities and languages	IB Creative (Warlpiri and Torres Strait Islander Creole) Iwiri (Pitjantjatjara)

	Strait Islander languages (Warlpiri, Torres Strait Islander Creole, and Pitjantjatjara)		
Hard-copy materials and resources	Four hard copy brochures, one for each of the end-user target groups (people who use crystal methamphetamine, family and friends, community members and health workers) to be downloaded, or ordered and delivered for free anywhere in Australia	To overcome digital and technological barriers and unreliable access to internet services, particularly for remote and rural and communities	Gilimbaa
Interactive and adaptable elements	A 'Build your own poster' feature that allows community groups or organisations to create their own printable poster and fact pages with key evidence-based messages about crystal methamphetamine and its effects; an interactive embedded quiz on key facts about methamphetamine, its effects, and the law, with feedback and explanations for each question	To increase engagement and enable communities including educators and health workers to tailor information and resources to meet the unique needs of their communities.	IB Creative, Netfront
Visual elements and localised images	Aboriginal designed visual elements, graphics, and images of Aboriginal and Torres Strait Islander peoples, land and place to accompany and enhance the text content on the toolkit	To increase cultural connection and engagement, create visual interest, and reduce text-load of web pages.	IB Creative, Netfront

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Phase 3: Beta Testing of the Web-Based Toolkit

Participants

In total, 116 participants provided consent and started the beta-testing survey. Eighty-eight participants completed the full survey with 52 (44.8%) of these participants identifying as Aboriginal and/or Torres Strait Islander. An additional 28 people partially completed the survey (21 identifying as Aboriginal or Torres Strait Islander). No differences were found between the partially completed data and the completed data. Of the participants who identified as Aboriginal and Torres Strait Islander, 11 also completed a telephone interview. This paper presents only data of Aboriginal and/or Torres Strait Islander participants (n = 73; mean age: 47; 68% female) as they are the primary target audience. Partial completions by Aboriginal and/or Torres Strait Islander participants were also included to capture as much relevant data as possible. Survey participants included people who had used crystal methamphetamine (n = 19), family members and friends of people who use crystal methamphetamine (n = 44), health workers (n = 7), and community members (n = 2). See Table 2 for breakdown of participants and their experience with methamphetamine.

Table 2. Summary of Aboriginal and Torres Strait Islander participants and their reported experience with methamphetamine.

Experience with crystal methamphetamine	Yes: N (%)
Have you ever used crystal methamphetamine (ice)?	19 (26.4%)
Do you have a family member or friend who you think may be using ice?	44 (61.1%)
Are you a health worker?	7 (9.7%)
Has your community been affected by ice or are you concerned about ice use in your community?	2 (2.8%)
None of the above	1 (1.4%)
TOTAL	73

Most participants were from inner regional areas (28.8%), followed by major cities (23.3%) and

outer regional areas (20.5%), and 13% of participants indicated that they spoke an Australian Indigenous language. Forty-one percent of participants learned about the survey via social media. Participants accessed the internet primarily via smart phone (60%), with 33% using a laptop or desktop computer. Most participants (66%) rated themselves as being at an 'intermediate' skill level in using a computer.

Feedback

Overall feedback from the survey was positive and (92%) of participants reported that it was clear what information was available on the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit. Fifty-eight percent (58%) of participants reported they were more likely to use this toolkit because of the cultural artwork. Most participants (74%) indicated they would be 'very likely' to recommend the toolkit to others. Sixty-six percent (62%) of participants rated the cultural artwork as appropriate ("a little bit" or "very much so") on a 5-point Likert scale. In providing feedback about the fact pages, one participant said,

"*Well made & written. I think they have the potential to help a lot of people*." (Female with lived experience of methamphetamine use)

Another participant said,

"*Love that theres information on not just the effects of ice, but how to cut down on use and what happens, as well as how to stay safe and practical help*." (Female, family member). Feedback on the brochures was positive with all participants reporting they liked how the brochure looked and found the information easy to read and understand. One participant said about the brochures, "*particularly in Aboriginal community, hard copy is good, something that is visual…*" (Male, health worker).

For the health worker section, the majority (86%) of health workers thought the landing page would be helpful for a health worker looking for resources about crystal methamphetamine to assist them in their practice. The majority (57%) of health workers indicated that the information was relevant to them in their day-to-day work 'every day' and 35% indicated that it was relevant 'most days'.

There were several areas identified for improvement. For example, highlighting the importance of acknowledging the origin and story of the artwork and artist,

"As an Aboriginal person, I do get concerned that we are using artwork which is interpreted differently depending on where you come from and cultural group. I always think it is good to acknowledge where the artwork comes from as it means different things to different cultural groups and could reduce confusion." (Male, health worker).

In response to this feedback, a video of the artist detailing the story of the cultural elements was developed and placed prominently on the home page (see Figure 3).

Another area for improvement identified was the need to increase accessibility of information through language and different formats,

"I think the fact sheets are appropriate in the length of time needed to read and digest the information. Some people may need support when going through the fact sheets so an audio option was able to be made that would also help those with low literacy and numeracy. Also if you are going to target remote communities it may be best to provide the audio in language where possible." (Male, health worker).

"It is easy to understand for someone who has already got some knowledge of how drugs work. For the target audience it may be difficult to understand or too long winded" ((Female with lived experience of methamphetamine use).

Summary boxes to accompany the longer fact pages in the health worker section were also included.

Additionally, videos of stories from real people impacted by methamphetamine use were highlighted as valuable by several participants. For example, one participant suggested, *"You could put some personal stories on the effect's of drug's on themselves and their families"* (Female with lived experience of methamphetamine use). Another participant suggested, *"Need stories from our mob who successfully give up the ice"* (Female, family member). The research team has since developed (with permission) scripted videos of lived experience stories based on the stories collected via

telephone interviews using actors in collaboration with GARUWA, a First Nations led creative agency, launched February 2025 (Cracks in the Ice, 2025).

Overarching themes identified from the telephone interviews were fear of stigma and shame related to crystal methamphetamine use, impact of use on family and community, negative experiences seeking support, the need for culturally appropriate and holistic services, feelings of helplessness in relation to accessibility of treatment and support, importance of connection with family and community in recovery, and cultural obligations and expectations on family members' roles and responses.

On the beta-version of the toolkit, the EAG reported that the health workers page and the family and friends landing page were 'very' relevant for their respective intended end-users. Suggested improvements included using less stock photography pictures, more images of real people, and more use of the cultural artwork across the toolkit. After viewing the 'live' toolkit, EAG members reported they thought it was likely that people interacting with the toolkit will find the information 'very useful'. One suggested improvement was for more support services to be listed. In response, the toolkit features the National Aboriginal Community Controlled Health Organisation members list to ensure all support services listed are Aboriginal community controlled. In very remote areas where these may not be easily accessible, Alcohol and Other Drug specific services have also been listed.

Usage Statistics

The web-based toolkit was officially launched on 21 July 2021. As of May 2025, the toolkit has had >1.44 million unique website users, >2.74 million page views, >366,000 hard copy resources distributed to >1,793 organisations across Australia including range of both government run services and Aboriginal Community Controlled Health Services. See Appendix 3 for screenshots of the toolkit landing pages for people as of May 2025.

Discussion

Summary of Findings

This paper described the community-led co-development of *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples*, a web-based toolkit designed to provide accessible, evidence-based, culturally appropriate information and resources about crystal methamphetamine for Aboriginal and Torres Strait Islander people and their communities. The co-development process took place over six years and engaged more than 240 Aboriginal and Torres Strait Islander community members, elders, leaders, and researchers across all phases of development.

Initial community consultations (Phase 1) highlighted the significant impact of crystal methamphetamine on Aboriginal and Torres Strait Islander families, communities, services, and individuals and the need for accessible and culturally sensitive information around methamphetamine. These findings are consistent with previous research indicating the significant impacts of methamphetamine use on Aboriginal and Torres Strait Islander individuals and communities, compounded by historic, social, and structural disadvantages (Gendera et al., 2022; MacLean et al., 2017; Sivak et al., 2023; Snijder & Kershaw, 2019). Focus group participants provided valuable insight into the information and resources that were lacking for communities around methamphetamine, and highlighted the complex layers of culture, localisation, empathy, and interactivity required to develop a resource toolkit that is accessible, appropriate, and acceptable for

Aboriginal and Torres Strait Islander peoples and their community.

The key considerations for development identified from Phase 1 were firstly, information and content that is relevant to community, secondly, localised visual elements including pictures, artwork, and videos, and thirdly, accessibility and ease of understanding for Aboriginal and Torres Strait Islander peoples. In terms of content, community members highlighted the need for practical information (e.g., what is methamphetamine, how to prevent and reduce harms associated with methamphetamine use) as well as resources drawing on lived experience to combat stigma (e.g., empathic and hopeful lived experiences stories from Aboriginal and Torres Strait Islander peoples). Community members emphasised the need for toolkit content, structure, and presentation to be culturally appropriate through increased visual elements including local imagery, video and audio mediums, as well as interactive components such as quizzes and links to Aboriginal and Torres Strait Islander-owned and run services.

It is of note that while this project was funded to develop a national portal, it is imperative to acknowledge the limitations of a universal ‘national’ resource. Whilst content and resources were developed to focus on overall issues identified by communities, localisation was incorporated where possible. For example, the ‘build your own poster’ activity aims to embed interactivity and flexibility by allowing people to tailor content for their communities’ needs. Similarly, the interactive service map allows people to select their local area. Further, we partnered with Aboriginal and Torres Strait Islander artists and creative agencies to develop visual design elements and artwork to be relevant to and reflect different Aboriginal and Torres Strait Islander communities. Along with this, a variety of images of Aboriginal and Torres Strait Islander people and Country were also included. In consultation with the EAG and Aboriginal organisations specialising in language translation, 28 fact pages were adapted or developed into 3 Aboriginal languages (Warlpiri, Torres Strait Islander Creole, & Pitjantjatjara) to assist with resource dissemination. The web-based toolkit also features a feedback loop with opportunities for end-users to contact the research team, submit feedback on the

toolkit, and suggest content they would like to see included in the toolkit. This feedback, along with input from the EAG and new evidence and research is used to guide ongoing development to the toolkit to better meet the needs and reflect the strengths of Aboriginal and Torres Strait Islander peoples affected by methamphetamine.

Community Response and Future Directions

Overall, the beta-testing results were positive, with the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit demonstrating acceptability among Aboriginal and Torres Strait Islander end-users. The hardcopy brochures were also positively received by community members as a valuable resource to overcome limitations such as low digital literacy and unreliable access to internet in remote and rural communities. Feedback was used to refine the toolkit to further enhance its relevance and appeal. For example, based on feedback on the length and density of information in health worker section, summary sections at the top of fact pages were added. In response to requests for context and story behind the artwork, a video featuring the artist who designed the visual elements across the toolkit was developed and placed on the toolkit homepage to acknowledge the artist and the cultural significance of the art.

The toolkit continues to be expanded and improved, for example, through the distribution and evaluation of lived experience videos featuring stories from Aboriginal and Torres Strait Islander people which were co-developed with an Aboriginal-owned and led media agency. Launched in March 2025, these videos aim to address key consultation and beta-testing feedback on the importance and value of lived experience stories and voices from community to dispel stigma and shame around methamphetamine use, instil hope for recovery and encourage help-seeking. A novel implementation study is in development to evaluate the efficacy of interacting with the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit (including the Lived Experience videos) on knowledge and attitudes towards methamphetamine among Aboriginal and

Torres Strait Islander peoples (Kershaw et al., in development).

Strengths and Limitations

This project should be considered in light of some limitations. Firstly, the use of focus groups in Phase 1 brings both advantages and caveats. In terms of limitations, since focus group discussions depend on participant dynamics, there is a risk of social-desirability bias, group think, and biasing certain dominant views over others (Grimm, 2010). This may be a particular issue around discussion of sensitive and stigmatised topics such as illicit substance use within small or tight-knit communities. However, focus group discussions are also a valuable way to efficiently gather beliefs, attitudes, and insights into community needs from diverse participants, generating debate and encouraging participants to explore and clarify their perspectives (Clarke, 1999; Kitzinger, 1995). Secondly, the sample for Phase 3 beta-testing was relatively small and recruited via convenience sampling, limiting generalisability particularly considering the diversity of Aboriginal and Torres Strait Islander peoples across Australia. This further highlights the importance of ongoing input from Aboriginal and Torres Strait Islander peoples to enhance the cultural responsiveness and usefulness of the toolkit. Finally, it is important to acknowledge the cultural caveats of the research and co-development processes behind the toolkit. Whilst the team adopted a culturally sensitive and Indigenous-led approach to all stages of developing the toolkit which prioritised Aboriginal and Torres Strait Islander voices and perspectives, there are limitations and inherent biases that arise from the involvement of non-Indigenous researchers leading certain aspects of development. This includes the role of the (Indigenous and non-Indigenous) researchers influencing the final decision-making around the prioritisation of toolkit content and features, impacting the extent to which community members were able to determine the final features of the toolkit. Further, interpretation and write-up of the data was led by a mix of Indigenous and Non-Indigenous researchers and the authors acknowledge the structural power imbalances, sociocultural privilege and biases that may

inadvertently influence this approach to analysis of Aboriginal and Torres Strait Islander Peoples' talk and text (McCartan et al., 2022).

Despite these limitations, the Aboriginal and Torres Strait Islander leadership at both the academic and community level (including research team, staff and focus group facilitators) was critical to the successful development of the toolkit and offers important lessons for future research with and for Indigenous communities both in Australia and internationally. The EAG and Aboriginal and Torres Strait Islander researchers and experts provided leadership and oversight across all stages of the development of the toolkit from the conception of the toolkit to content development to the collection, analysis, and interpretation of beta-testing data. Adopting this community-led approach of co-development in health research and translation is critical to shifting the power and authority to Aboriginal and Torres Strait Islander communities and closing the gap in Aboriginal health (Dudgeon et al., 2010). This approach reflected the focus of the team (guided by the EAG) on decolonising research and development practices, prioritising and respecting Aboriginal and Torres Strait Islander voices and perspectives across all stages of research. Cultural safety and sensitivity were actively promoted through key safeguards, including employing Aboriginal facilitators and interviewers, hosting focus groups within Aboriginal Community Controlled Health Organisations, and ensuring participants were aware of culturally appropriate support services for any distress or concerns arising during participation. Whilst this project reflects a step towards a more culturally responsive and representative research landscape, there remains significant progress to be made in relation to Aboriginal leadership in research. Time constraints, short funding cycles, and staff turnover highlighted the pressing need for capacity building in Aboriginal professional and academic research roles and the ongoing challenges of integrating Indigenous knowledge, authority, and community expertise within the structural limitations of academic research. Finally, given the ongoing concerns around reliable access to services and information for Aboriginal and Torres Strait Islander peoples, particularly for those in remote and rural locations, a key strength of the *Cracks in the Ice resources*

for Aboriginal and Torres Strait Islander peoples toolkit is accessibility as it offers digital 24/7, free, and confidential source of information. Further, considering the significant barrier of stigma and shame that Aboriginal and Torres Strait Islander peoples continue to face around methamphetamine use, the option for private and confidential access to reliable information is crucial in overcoming barriers to health education and access to resources. The *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* toolkit addresses an area of high need, filling the gap in evidence-based, reliable information about methamphetamine developed by and for Aboriginal and Torres Strait Islander peoples and their communities.

Conclusions

This study describes the community-led, in-depth, and iterative process of development and beta-testing of the *Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples* web-based toolkit. The toolkit provides culturally appropriate, evidence-based, and reliable information about crystal methamphetamine tailored to Aboriginal and Torres Strait Islander peoples, community members, family and friends, and health workers. Feedback from end-users highlighted the important role of the culturally appropriate toolkit in meeting the needs of isolated and at-risk Aboriginal and Torres Strait Islander communities across Australia. The development of the *Cracks in the Ice Resources for Aboriginal and Torres Strait Islander peoples* demonstrates the strengths of community-led research and implementation, ensuring health information and education is co-developed with communities, for communities.

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Supplementary Files

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Figures

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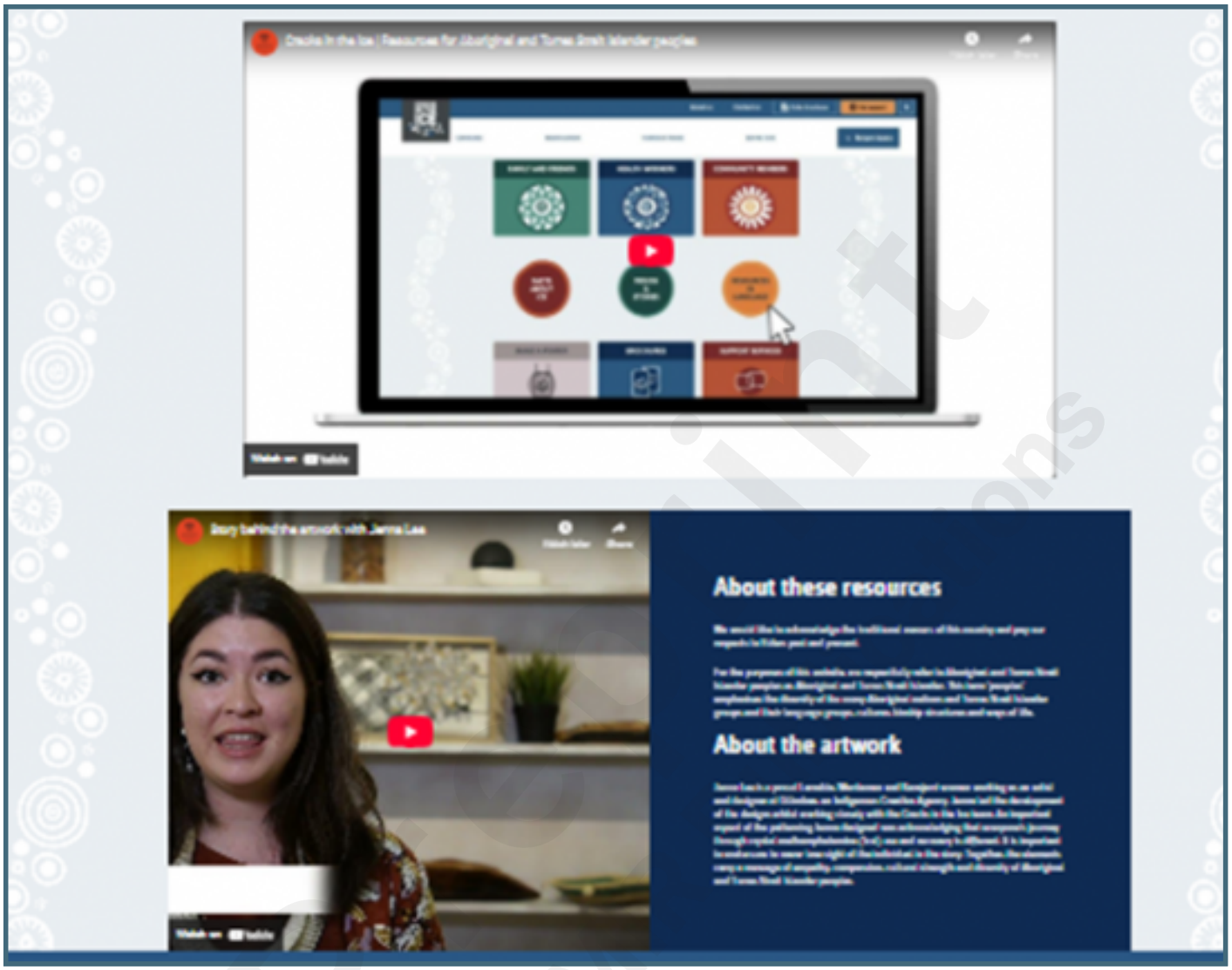
Overview of the development of the Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples toolkit.

Co-development process of the Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples toolkit and study procedure.

Screenshot of the bottom half of the Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples toolkit home page displaying video of story behind the artwork.



Multimedia Appendixes

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Recruitment advertisement.
URL: http://asset.jmir.pub/assets/0bdb877173fad9e4f1cb309f246093d5.docx

Screenshot of Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples toolkit home page (at time of beta testing).
URL: http://asset.jmir.pub/assets/2912a5c63af4c1ff225a5e5d6043a21e.docx

Screenshot of Cracks in the Ice resources for Aboriginal and Torres Strait Islander peoples toolkit home page, family and friends landing page, health workers landing page, and community landing page (as of May 2025).
URL: http://asset.jmir.pub/assets/ed7788a3a9e20e8761a473875d820039.docx

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