



ISSN: (Print) (Online) Journal homepage: <u>www.tandfonline.com/journals/tcld20</u>

Climate change, mental health and wellbeing: privileging Pacific peoples' perspectives – phase one

Jemaima Tiatia, Fiona Langridge, Christina Newport, Yvonne Underhill-Sem & Alistair Woodward

To cite this article: Jemaima Tiatia, Fiona Langridge, Christina Newport, Yvonne Underhill-Sem & Alistair Woodward (2023) Climate change, mental health and wellbeing: privileging Pacific peoples' perspectives – phase one, Climate and Development, 15:8, 655-666, DOI: <u>10.1080/17565529.2022.2145171</u>

To link to this article: <u>https://doi.org/10.1080/17565529.2022.2145171</u>

9	© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group	+	View supplementary material 🔀
	Published online: 05 Dec 2022.		Submit your article to this journal 🕝
111	Article views: 2907	Q	View related articles 🕑
CrossMark	View Crossmark data 🗹	ආ	Citing articles: 3 View citing articles 🗹

RESEARCH ARTICLE

OPEN ACCESS Check for updates

Climate change, mental health and wellbeing: privileging Pacific peoples' perspectives – phase one

Jemaima Tiatia ^{a*}, Fiona Langridge ^{b*}, Christina Newport ^a, Yvonne Underhill-Sem ^a and Alistair Woodward ^c

^aTe Wānaga o Waipapa, School of Māori studies and Pacific Studies, Waipapa Taumata Rau, The University of Auckland, Auckland, New Zealand; ^bDepartment of Paediatrics: Child and Youth Health, Waipapa Taumata Rau, University of Auckland, Auckland, New Zealand; ^cSection of Epidemiology and Biostatistics, School of Population Health, Waipapa Taumata Rau, University of Auckland, Auckland, New Zealand

ABSTRACT

Impacts of climate change in the Pacific are far reaching and include effects on mental health and wellbeing. Pacific concepts around the interrelation of these global giants are yet to be described. The aim of this study was to seek consensus amongst Pacific mental health and/or climate change experts on key principles underpinning mental health and wellbeing, and climate change, and the intersection of the two, for Pacific peoples. The Delphi method included forming a panel of 70 experts. Two rounds of online questionnaires sought their views on mental health and wellbeing, and climate change and the impact upon Pacific peoples. Of the panel 86% identified with one or more Pacific ethnicities. Six themes emerged, 92% of items reached consensus and 36% reached strong consensus of >95%. Recurring subthemes included culture and spirituality, family and community, connection to ancestors, connection to the environment, resilience, disasters, livelihoods, government, education, workforce, migration and stigma. This is the first time these concepts have been explored and described for, and by Pacific peoples in this format. It is a necessary first step towards development of responses in preparedness of mental health services, in the Pacific region, and Aotearoa New Zealand.

Introduction

According to the Secretariat of the Pacific Community (2013), many islands in the region are experiencing both rapid and slow onset changes in sea-levels, a higher frequency of devastating cyclones and associated floods and unprecedented changes to seasonal weather (Regional Climate Consortium for Asia and the Pacific, 2021; Secretariat of the Pacific Community, 2013). Sea-level rise has resulted in coastal erosion, loss of land and damage to property. Increased severity of cyclones and floods has brought damage to infrastructure, accidental death and risk of epidemics. Droughts threaten local crops, undermine food security, and impact on livelihoods, and these effects may be aggravated by the intrusion of saltwater. Coral bleaching has negative effects on fisheries and tourism (Cissé et al., 2022; Filho et al., 2019). Regional patterns in the proximity of Pacific people to the coast are dominated by Papua New Guinea. Overall, ca. half the population of the Pacific resides within 10 km of the coast but this jumps to 97% when Papua New Guinea is excluded. A guarter of Pacific people live within 1 km of the coast, but without PNG, this increases to slightly more than half. Excluding PNG, 90% of Pacific Islanders live within 5 km of the coast (Andrew et al., 2019). The health impacts of climate change have been well documented (Costello et al., 2009), with significant implications for Pacific peoples considering already existing inequities perpetuated by poverty, underdevelopment, political rigidity, dependency and geographic isolation. Much of the health research and climate change focus in the Pacific has been dominated by physical health challenges; and more recently mental health and wellbeing impacts of climate change in the region have been considered (Rice & McIver, 2016; Tiatia-Seath et al., 2020; Yates et al., 2021). Given that the Pacific is highly susceptible to disasters, it is logical to explore the interconnection between climate change and mental health and wellbeing outcomes.

The World Health Organization (WHO) identified that the main climate change-related health risks in the Pacific included the increasing risk of mental health challenges (McIver et al., 2016). Previous studies of the relationship between climate change and mental wellbeing have resulted in terms such as climate anxiety, eco-anxiety, eco-guilt, ecopsychology, ecological grief, solastalgia and biospheric concern (Albrecht et al., 2007; Cianconi et al., 2020; Clayton, 2020). Although western framed, these terms indicate the growing attention to climate change as not just an environmental threat, but also a complex psychological issue (Clayton, 2020). Note that mental health and wellbeing, mental health and mental wellbeing have been used interchangeably throughout this paper as these terms overlap.

Pacific peoples are disproportionately represented in mental health statistics in Aotearoa New Zealand. The last National Mental Health Survey – the outdated Te Rau Hinengaro –

ARTICLE HISTORY

Received 17 December 2021 Accepted 3 November 2022

KEYWORDS

Climate change; mental health; wellbeing; pacific population; Delphi; equity; indigenous people; vulnerability; coping



CONTACT Fiona Langridge Stlangridge@auckland.ac.nz Department of Paediatrics: Child and Youth Health, Faculty of Medical and Health Sciences, The University of Auckland, Private Bag 92019, Auckland 1142, New Zealand m www.linkedin.com/in/fionaangridge @ @FionaLangridge *Co-first authors: J.T. and F.L. contributed equally to this work.

B Supplemental data for this article can be accessed at https://doi.org/10.1080/17565529.2022.2145171.

^{© 2022} The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

indicated that Pacific peoples have higher 12-month prevalence rates of mental disorder in comparison to the general Aotearoa New Zealand population (Foliaki et al., 2006). More recent evidence suggests that Pacific peoples living in Aotearoa New Zealand experience higher rates of mental distress than other population groups, but are least likely to access mental health services (Tiatia-Seath, 2014). In the Pacific region, mental distress and addictions are the leading cause of disability (Charlson et al., 2015). Attention to individual mental health challenges is important, but so too is the need to understand sociocultural responses to climate change (Clayton, 2020; Pihkala, 2019, 2020a, 2020b). This is particularly important given that the linguistic and environmental diversity of the Pacific region exists alongside sociocultural similarities borne from long-standing relationships.

Since colonization, Eurocentric biomedical models have tended to dominate Pacific peoples' perceptions of themselves and of the region (Jones, 2019; Yates et al., 2021). This issue is especially important with regard to conceptions of mental wellbeing and climate change. There has also been a tendency to compartmentalize the two, conceptually and practically, in how services are considered, delivered and distributed (Tiatia-Seath et al., 2020). For most Pacific peoples, there is a deep and inseparable connection to land; beyond that of belonging, to that of an 'embodiment' of place (Tiatia-Seath et al., 2020). Climate change is a threat to that deep tie, which can result for some in psychological distress (Albrecht et al., 2007).

This study involves two phases: the first, a consensus approach drawing on a panel of experts, and the second, a qualitative approach using Pacific methods to capture the narratives of Pacific peoples, with a particular focus on Niue, the Cook Islands and Aotearoa New Zealand given their unique constitutional arrangements with New Zealand. In this paper, we report on our attempts in the first phase to create a space which privileges Pacific peoples' views via a panel of experts. Not only does this contribute to scholarship by and for Pacific peoples, but the study also demonstrates the importance of transdisciplinary research designs for substantive, innovative and insightful scholarship. The findings from this first phase were also important in informing the questions asked in the second phase (qualitative approach).

This paper reports on findings from phase one of the study. The aim of this first phase was to seek consensus amongst a group of Pacific climate change and/or mental health and wellbeing experts on key principles underpinning climate change and mental wellbeing, and the intersection between the two for Pacific peoples.

Method

Focus and constructs

Our focus was on the interconnections between climate change and mental wellbeing for Pacific peoples. We refer in this paper to Pacific people, cognisant that this study focussed primarily on Pacific peoples in Cook Islands, Niue and Aotearoa New Zealand. Our aims were to: (1) Explore links between climate change and mental wellbeing, and the impact of climate change upon mental health outcomes for Pacific peoples; (2) Conceptualize these linkages and how they may be defined in Pacific contexts; and (3) Investigate current unmet need and practical solutions.

Ethics

Ethical approval was obtained from the University of Auckland Health and Ethics Committee Ref. 023725 on 17 January 2020. Research permits were gained from the Office of the Prime Minister in the Cook Islands, Ref. 501.3, 25 August 2020 and the Ministry of Health in Niue, 22 September 2020.

Study design

The Delphi method is an approach frequently used to determine the degree of consensus amongst a sample of experts. It is based on the assumption that group opinion has greater validity and reliability than individual opinion (Keeney et al., 2011). It is a structured and iterative process, involving a panel of experts and utilizing a series of questionnaires that are repeated until consensus is reached. An advantage of this method is that a large number of people across diverse locations and areas of expertise can participate anonymously (Boulkedid et al., 2011, 2013). The first round generally involves a series of open-ended questions with subsequent rounds based on Likert scale responses. For this study, panellists were emailed two rounds of online questions using © 2021 Qualtrics^{*} software (Qualtrics, Provo, UT). Acceptable consensus was based on (Langridge et al., 2020) and pre-set at:

- 1. \geq 70% panel members agree or strongly agree and
- 2. Median of ≥ 4 and
- 3. Interquartile range of ≤ 1 , on a five-point scale.

Panel selection: Careful selection of panel members is important, as heterogeneity in a panel has been found to lead to improved results (Boulkedid et al., 2011). The research team comprised of five Pacific-based scholars of which three were of Pacific heritage. A structured purposive selection process was used to create a panel of experts in Climate Change and/or Mental Health and wellbeing fields, with a predominant focus on members from Niue, the Cook Islands and Aotearoa New Zealand.

Potential panellists were identified by the team and were selected using the following Inclusion criteria:

Essential:

- 1. Recognized by the research team as having expertise in mental health and/or
- Recognized by the research team as having expertise on climate change.
- Criteria 1–2 could be researchers, professionals, public servants, clinicians, policy makers, knowledge holders or community leaders.

High priority:

- 1. Pacific ethnicity, particularly from Niue or the Cook Islands.
- 2. Based in Niue, the Cook Islands or Aotearoa New Zealand.

Panel members were contacted via electronic mail with a personalized invitation letter and accompanying participant information sheet. Once agreement to participate was obtained, potential panellists were sent a consent form to complete and return.

Round one: Questions for round one were developed by the research team based on a literature review of pertinent issues relevant to climate change and mental wellbeing for Pacific peoples (Tiatia-Seath et al., 2020), as well as the overarching study aims and objectives. Considering the unique contextual timing of COVID-19 during the course of this Delphi process, an additional question was included, so as to capture the implications of COVID-19 with climate change and mental wellbeing. Round one included 16 open-ended questions (Supplementary Appendix 1). The panel was also sent seven questions pertaining to demographics, that being: residing country; gender identity; age range; ethnic group(s); highest level of education; years of experience and area of expertise.

Round two: Once analysis of the first round was complete, second-round questions were developed based on 6 themes and 49 subtheme statements derived from round one. Panel members were asked to rate each according to how much they agreed or disagreed with each statement using a fivepoint Likert scale. Panel members were able to respond to round two irrespective of their participation in round one.

For both rounds, dates for returning responses were set, with follow-up reminder emails sent prior to the deadline. Panellists were sent a summary of results after each round.

Analysis

Round one open-ended questions were analysed using content and thematic analysis in order to identify and categorize important themes using NVivo (QSR International Pty Ltd., 2020). Triangulation of analysis was completed by the researchers. Results were grouped into high-level themes and subthemes, coupled with rich discussion between researchers to validate. Demographics, response rates and round two results were analysed using descriptive statistics in R software (R Core Team, 2020). Distributions were described using medians and interquartile ranges (IQR) for Delphi panel scores on a five-point Likert scale for each domain (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree or Disagree, 4 = Agree, 5 = Strongly agree). Consensus was deemed to be reached regarding acceptance of the statement when at least 70% of respondents agreed or strongly agreed with a subtopic and a median rating of ≥ 4 and interquartile range of ≤ 1 achieved. In this study, subtopics with a consensus level >95% were considered to have reached a strong consensus. If more than 90% of statements reached consensus in round two, no additional rounds would take place.

Results

Expert panel profile

Figure 1 shows the flow of panellists through the Delphi process. Table 1 presents the demographic information for the panellists. There were more females than males and panellists' ages were evenly distributed between 20 and 60+ years of age. The majority of panel experts lived in Aotearoa New Zealand, the Cook Islands or Niue and self-identified with one or more Pacific Island ethnicities, specifically Cook Islands or Niue. Over a third of the panel self-identified with at least two ethnicities and over half of the panel had qualifications at least at master's degree level. There was a range of experience, distributed evenly from 1 to 30+ years' experience, and almost equal numbers of panellists with experience in Mental Health and/or Climate Change.

Content and thematic analysis of Round one questions resulted in six finalized themes and 49 subthemes as follows

- 1. Climate Change experiences, impacts and influences.
- 2. Mental Health experiences, impacts and influences.
- 3. Links between climate change and mental wellbeing in the Pacific.
- 4. Unmet need in mental health services to deal with climate change impacts on mental wellbeing.
- 5. Responding to mental wellbeing impacts of climate change.
- 6. Impact of COVID-19 on climate change and mental health and wellbeing in the Pacific.

In addition to the set of themes and subthemes, analysis also identified 12 subtopics reoccurred across a number of the themes. These were: culture and spirituality, family and community, connection to ancestors, connection to the environment, resilience, disasters, economics and livelihoods, government and legislation, education, workforce, migration and mental health as a hidden and stigmatized issue (Table 2).

Round one open-ended responses are presented below in themes with quotes from panellists that demonstrate the depth of insight into each theme, with reference to the subtopics also included.

Theme 1: climate change – experiences, impacts and influences

Within this theme, the impact on the environment was outlined and detailed descriptions of the effects on the economy, food supply and livelihoods were highlighted. One panellist explained this in the Cook Islands context:

We are witnessing the impacts of sea level rise, with salt water intrusion of agricultural land that people can no longer plant, salt water inundation from storm surges or king tides damaging crops, constant coastal erosion with loss of significant areas and receding coastline particularly the low lying coral atolls in the northern group of the Cook Islands.

Theme 2: mental health – experiences, impacts and influences.

Panellists described mental health in the Pacific as hidden, rife with discrimination and prejudice and they mentioned the impact of interactions with Pacific perspectives:

I think mental health impacts people differently in the Pacific especially depending on how they view and perceive the world. So the impacts of mental health for people in the Pacific depends on what they view as bringing them mental health.

There was also discussion about the overlay of spirituality and its impacts on how mental health is perceived:



Figure 1. Flow chart of participants through the study.

The traditional attributions of Mental Health and wellness include spiritual and religious interpretations. Families often choose to use traditional approaches of healing over clinical. Healers are often the spiritual, religious, or cultural leaders. Much of this is captured in the traditional languages of the country.

Attitudes and behaviours around alcohol, drugs, violence and media were considered to influence outcomes and views around mental health and wellbeing; whilst family and community, alongside resilience, were believed to be protective factors. Resource, economy and legislation were also factors believed to affect outcomes around mental wellbeing in the Pacific. For instance, one participant stated:

Mental health has a big impact on Pacific people. When a parent isn't able to grow enough crops to feed the family, or even catch fish to provide for the family, this makes things very difficult for everyone and not just the parent. Children start to worry about whether they will have the same opportunities and things like other children, and in doing so, there is added pressure on the parents. Mental health is a key aspect of healthy living and being able to positively contribute to the health of the community.

Theme 3: links between climate change and mental wellbeing in the Pacific

The links between climate change and mental wellbeing in the Pacific are multifaceted. Climate change was thought to impact upon mental wellbeing by way of intensifying existing mental health challenges.

I think climate change has the capacity to exacerbate issues for those with pre-existing mental health issues. Those with preexisting mental health issues are already vulnerable members of society. I fear that challenges brought on by climate change will place these vulnerable people at an increased risk of outcomes such as homelessness and displacement, unemployment, and isolation, alongside an exacerbation of their mental health difficulties.

Panellists expressed the impact of climate change as eliciting emotions and clinical expressions of anger, grief, trauma, hopelessness, anxiety, stress, depression and fear.

Increased anxieties, hopelessness and fear around the impact of climate change and what has arguably been an underwhelming commitment by government to work towards preventing irreversible damage caused by climate change.

Disasters were mentioned as further compounding the impacts upon mental health and wellbeing, particularly with prevailing overloaded mental health services. Belonging and connection were identified as significant aspects for Pacific identities, where climate change underpins this through loss of land, sense of place, and connection to ancestors and histories through loss of graves, thus further impacting upon mental wellbeing. Climate-induced migration, impact on livelihoods and disruption to communities were also believed to intersect with climate change impacts upon mental health and wellbeing.

Pacific Island populations passionately feel connected to their land. Threat of dislodgement and displacement is unnerving for them at many levels. It challenges them to the extent of losing their identity. Low lying island nations like Tuvalu and Kiribati are now constantly living under threat of imminent dislodgement. This is negatively impacting the mental health of their communities and development of their younger ones.

		All			Round One			Round Two	
		Total			Total			Total	
		n = 70			n = 58			n = 59	
		n (%)			n (%)			n (%)	
Gender				27 (65)			26 (62)		
Female	45 (65)			37 (65) 10 (25)			36 (62)		
Missing	24 (55)			19 (55) C			22 (50) 1		
	I			Z			I		
20–29	12 (17)			12 (21)			12 (20)		
30-39	7 (10)			5 (9)			6 (10)		
40–49	19 (27)			14 (25)			13 (22)		
50–59	18 (26)			15 (26)			17 (29)		
≥60	14 (20)			11 (20)			11 (18)		
Missing	-			1			-		
Place of residence	20 (42)			26 (46)			20 (47)		
New Zealand (NZ)	30 (43) 17 (24)			26 (46)			28 (47)		
	17 (24) 12 (17)			10 (17)			15 (25) 6 (10)		
Fiii	4 (6)			3 (5)			3 (5)		
Australia	2 (3)			2 (4)			2 (3)		
NZ and UK	1 (1)			1 (2)			1 (2)		
Cooks Islands/NZ	1 (1)			1 (2)			1 (2)		
New Caledonia	1 (1)			1 (2)			1 (2)		
United Kingdom (UK)	1 (1)			1 (2)			1 (2)		
Tuvalu	1 (1)	- ·		1 (2)	- ·		1 (2)		
Ethnicity	First	Second	Third	First	Second	Third	First	Second	Third
Cook Islands Maori	18 (26)			14 (25)			16 (27)		
Niueali Sāmoan	8 (11)	1 (1)		15 (20) 8 (14)	1 (2)		7 (12)	1 (2)	
Tongan	7 (10)	1 (1)		4 (7)	1 (2)		7 (12)	1 (2)	
Polynesian	6 (9)			4 (7)			5 (8)		
Fijian	4 (6)		1 (1)	2 (4)		1 (2)	3 (5)		1 (2)
New Zealand European	3 (4)	12 (17)		3 (5)	10 (17)		3 (5)	9 (15)	
European	3 (4)	5 (7)	1 (1)	3 (5)	4 (7)	1 (2)	3 (5)	5 (8)	1 (2)
New Zealand Māori		2 (3)	1 (1)		2 (3)			2 (3)	1 (2)
Tuvaluan	1 (1)		a (a)	1 (2)		1 (2)	1 (2)		1 (2)
Indian	1(1)		1(1)	1 (2) 1 (2)		I (2)	I (2)		I (2)
Tabitian	1(1)	1 (1)		1 (2)	1 (2)		I (2)	1 (2)	
Tokelayan		1 (1)			1 (2)			1 (2)	
Other not specified	1 (1)	. (.)		1 (2)	. (=)		1 (2)	. (=)	
Number of ethnicities	()			()			()		
One	44 (63)			36 (62)			36 (61)		
Тwo	22 (31)			19 (30)			19 (32)		
Three	4 (6)			3 (5)			4 (7)		
Highest level of education	a (a)			1 (2)			1 (2)		
Diploma Bachalar's degree	() 10 (17)			I (2)			I (2)		
Bachelor's degree Bachelor's degree (hons)/post-graduate diploma	12 (17)			9 (16) 9 (16)			6 (10)		
Master's degree	25 (36)			24 (42)			24 (41)		
PhD	15 (22)			10 (18)			12 (20)		
Clinical qualifications	6 (9)			4 (7)			6 (10)		
Missing	1			1			-		
Years of experience									
1–10	18 (26)			17 (30)			16 (27)		
11-20	25 (36)			19 (34)			22 (38)		
21-3U > 20	13 (19)			10 (17)			9 (15)		
≥ou Missing	15 (19)			11 (19) 1			12 (20)		
Areas of experience	I			I			-		
Mental Health	28 (41)			22 (39)			25 (43)		
Climate Change	27 (39)			24 (43)			22 (38)		
Both	14 (20)			10 (18)			11 (19)		
Missing	1			2			1		

When considering Solastagia, panellists shared their sense of loss, hopelessness and distress as a consequence of environmental change. This deeply entrenched sense of connection to land was emphasized by the panellists.

Table 1. Demographics of panel members.

language. 80% of land is customarily owned. So land ownership and rights to land is strong, to not have it is likened to someone with no anchor or identity.

Panellist one: It is so strong, your identity in the Sāmoan context is based on your faasinomaga [identity – Sāmoan], which is – the Matai system [Chiefly Sāmoan system] and genealogy, land and

Panellist two: I am reminded of a discussion I had with an elderly resident of Kosrae in the Federated States of Micronesia. This took place many decades ago, but his words are still with me. He stated 'Take away my land, and I am nothing'.

660 👄 J. TIATIA ET AL.

Table 2. Subthemes overlapping across themes.

	Theme 1: Climate Change – experiences, impacts and influences	Theme 2: Mental Health – experiences, impacts and influences	Theme 3: Links between climate change and mental wellbeing in the Pacific	Theme 4: Unmet need in mental health services to deal with climate change impacts on mental wellbeing	Theme 5: Responding to mental wellbeing impacts of climate change	Theme 6: Impact of Covid-19 on climate change and mental wellbeing in the Pacific
Mental Health is a hidden						
and stigmatized issue						
raining and community						
Culture and spirituality						
Connection to ancestors and loss of graves						
Connection to the environment						
Resilience						
Impact of disasters						
Migration						
Economics and livelihoods						
Workforce						
Education						
Government/Legislation						

Of particular importance was the sense of loss of belonging and connection, and the multifactorial impacts on their overall wellbeing.

Without land who are we? We identify with the land where our pito'enua [Placenta/umbilical cord] is buried. The ground we walk on was walked on by our ānau [family]. If the land goes, what becomes of us? Do we become water people?

Theme 4: unmet need in mental health services to deal with climate change impacts on mental wellbeing

There was a sense that Pacific mental health services were hugely under-resourced, much less, dealing with the impacts of climate change-induced distress.

Broadly speaking, I don't see mental health services being well equipped to deal with climate change induced mental health issues (this extends to places outside of the Pacific too). Given that healthcare in general is not well resourced, I think mental health is often an afterthought as it is – so I imagine it will be difficult for various Pacific nations to deal with mental wellbeing in the face of other stressors.

This sentiment alluded to areas of the workforce, resource, post-disaster response facilities (including reference to prisons being utilized due to lack of facilities) and legislation. Services in Aotearoa New Zealand were perceived as being better resourced, however, are still considered unprepared for the influx of climate-induced migration and the mental wellbeing impacts for Pacific peoples. Panellists mentioned services in Aotearoa New Zealand were inadequate in light of cultural safety and the dominance of western biomedical models of health.

There is a greater degree of mental health services available in New Zealand and the social discourses [are] a lot more understanding – although we do have a long way to go. In saying that, the dominant model of psychology and mental health that we operate through in New Zealand is Western and misses out on important aspects of Pacific culture and practices (including pre and post migration and diaspora).

Panellists felt progress was being made, however, generally the impact of climate change, particularly migration, is not being carefully considered or well planned for services.

Theme 5: Responding to mental wellbeing impacts of climate change

Views regarding the changes needed for mental health services in response to climate change both across the Pacific and within Aotearoa New Zealand, included: health systems, education and advocacy, supporting community and families, policy and legislation, addressing stigma and the need for more resource. Workforce investment in capacity building and training was believed to be a high priority, alongside more of a Pacific lens and cultural competency.

I think cultural competency is very important in supporting Pacific peoples who are impacted by climate change. There are many tools out there that can help, Pacific frameworks that could be used for instance, Ministry for Pacific Peoples – Yavu – Foundations of Pacific Engagement. However its one thing to read about engagement and another to have people who live and breathe Pacific engagement through their core functions. With the mental health space in particular I think providers such as LeVa as a by-Pacific for-Pacific as a health and wellbeing provider could play a role in showing how they deliver their services to Pacific, and possibly how some of those key learnings can be applied into tackling climate change related mental health impacts on Pacific Peoples.

Panellists mentioned the need to further improve networks between and within countries. In relation to education and advocacy, there was a strong view for community engagement in co-design and partnership.

Definitely listen and let those directly impacted by climate change lead the way. Not just consult or engage but listen to their solutions and how they deal with their distress and grief. And centre these techniques.

Positive factors considered to buffer against the negative impacts of climate change on mental health and wellbeing for Pacific peoples included, the strength of social, community and family bonds, and the unique level of resilience in the Pacific with finding the ability to enjoy life.

Pacific people are very resilient and have a strong sense of community – further reinforced by their spirituality. There is a strong family focus as well, with families looking out for each other. The importance of culture, spirituality and responses from churches were also seen as methods to be mindful of in mitigation strategy development. In as much as connection to the environment is under threat, this connection was also revealed as a source of strength, with a need to nurture and protect that deep-seated connection.

Niue too is very healing. And the healing comes with nature. The answer thus isn't it just – in nature. At the end of a stressful day, just a day at the sea or sitting overlooking the ocean with just you – that's super healing. The air you breathe here, and you hear it all the time from Niueans that live overseas ... it's 'mana'. Just like going to the bush is very therapeutic for some.

Theme 6: impact of COVID-19 on climate change and mental health and wellbeing in the Pacific

The sudden complication of COVID-19 is an added layer to the existing complexities surrounding climate change and mental wellbeing in the Pacific. Panellists described the compounding impacts of COVID-19 on economic sustainability and livelihoods, mental health and wellbeing, as well as on freedom and isolation. More specifically, they observed the de-prioritization of climate change and modifications to carbon emissions due to less air travel.

I believe that climate change has taken a back seat and that the most pressing issue has become COVID economic survival. This economic situation also means that resources are scarce to spend on climate change building resilience.

The belief of family and community, culture and spirituality as protective factors around coping with the added stress of COVID-19 was emphasized.

Round two Likert scale rankings of subtopic statements within each theme resulted in 92% (54/59) of items reaching consensus and 36% (21/59) reaching strong consensus of >95% (Table 3).

In Theme 1: Climate Change – experiences, impacts and influences, 4/10 items reached strong consensus: Climate change has multiple impacts on the environment in the Pacific; Climate change is impacting the economy and people's livelihoods; Climate change affects people's whole wellbeing; and Good national governance is needed to help withstand the impacts of climate change.

In Theme 2: Mental health – experiences, impacts and influences, 2/8 items reached strong consensus: Our cultural and spiritual perspectives impact on how mental health is perceived in the Pacific; and Family and community supports are essential for mental wellbeing.

In Theme 3: Links between climate change and mental wellbeing in the Pacific, 4/13 items reached strong consensus: Loss of land and homes due to climate change is distressing; Migration and displacement due to climate change place significant pressure on people; Climate change impacts on livelihoods are a specific stressor for mental wellbeing; and Nurturing resilience is an essential element to buffer the impacts of climate change on mental wellbeing.

In Theme 4: Unmet need in mental health services to deal with climate change impacts on mental wellbeing, 1/6 items reached strong consensus: Mental health services in the

Pacific are not well resourced or equipped generally much less for climate change.

In Theme 5: Responding to mental wellbeing impacts of climate change, 7/14 items reached strong consensus: Education and advocacy across communities and agencies is essential in order to respond to the mental wellbeing impacts of climate change; The inclusion of community and family at all levels is important in order to respond to the mental wellbeing impacts of climate change; Good leadership at government and legislative levels is important in order to respond to the mental wellbeing impacts of climate change; Specifically addressing the issue of stigma in mental health is needed in order to respond to the mental wellbeing impacts of climate change; Resilience and the ability to enjoy life are key strengths in the Pacific which need to be leveraged in order to respond to the mental wellbeing impacts of climate change; More research is needed into this topic of mental wellbeing and climate change; Connecting people to the environment is helpful for improving mental wellbeing related to the impacts of climate change.

In Theme 6: Impact of COVID-19 on climate change and mental wellbeing in the Pacific, 3/8 items reached strong consensus: The already existing links and stressors related to economy and livelihood due to climate change are now exacerbated further by the COVID-19 global pandemic; The impact of COVID-19 is multifaceted and wide reaching; Culture is an important factor for withstanding the impacts of the COVID-19 pandemic.

Overall consensus had been reached on the majority of the statements in round two. A further round was not deemed necessary.

Discussion

This study aimed to reach consensus amongst a collective of Pacific mental health and/or climate change experts on key principles underpinning mental health and wellbeing, and climate change, and the intersection between the two for Pacific peoples. It is the first time these concepts have been explored and described for, and by Pacific peoples within this framework and format. The 70 expert panellists appropriately represented predominantly Pacific ethnicities with a broad spread of ages, years of experience and coverage across experience in mental health, climate change or both. The first round of open-ended questions resulted in six themes with 12 subtopics reoccurring across the themes. The subtopics that reached strong consensus in the second round, were similar in content to the 12 subtopics in the first round and threaded through all the themes.

The statements that did not reach consensus included multidimensional and nuanced concepts, difficult to capture in one phrase, and items on the status of health services in Aotearoa New Zealand for which it may have been challenging for those based outside of Aotearoa New Zealand to comment, hence a high number responding, 'neither agree or disagree'. These statements can be explored further and in more depth in phase two of this project.

The linkage between mental wellbeing and climate change is a recent but now well-confirmed consideration by this

Table 3. Round two items reaching consensus, not reaching consensus and reaching strong consensus >95%.

Statements	N (%)	Median	Mean	Standard	Interquartile	Consensus
Theme 1: Climate Change experiences impacts and influences	N (70,)	Median	wican		Talige (IQII)	consensus
1.1 Climate change has multiple impacts on the environment in the Pacific.	58 (98)	5	4.83	0.59	0	↑
1.2 Climate change is impacting the economy and people's livelihoods.	57 (96)	5	4.63	0.69	1	, t
1.3 Climate change affects people's whole wellbeing.	57 (96)	5	4.61	0.70	1	1
1.4 Climate change is impacting on people's connection with the land and sea.	54 (94)	5	4.53	0.77	1	1
1.5 Climate change is causing an increase in migration and displacement.	50 (85)	4	4.22	0.81	1	1
1.6 Family and community are essential to withstanding the impacts of climate	55 (93)	5	4.5	0.75	1	1
change.		-	4.61	0.77	1	
change	50 (95)	2	4.01	0.77	I	~
1.8 Cultural identity and practices are important components to withstanding the	36 (95)	5	4 66	0.71	0.5	
impacts of climate change.	50 (55)	5	ч.00	0.71	0.5	v
1.9 Places of worship and spiritual practices are important supports to help	49 (84)	4	4.15	0.71	1	1
withstand the impacts of climate change.	(,					
1.10 Good national governance is needed to help withstand the impacts of	58 (98)	5	4.76	0.63	0	1
climate change.						
Theme 2: Mental health - experiences, impacts and influences						
2.1 Mental health is a common neglected and unrecognized domain	52 (88)	5	4 46	0.75	1	1
2.2 Mental health stigmatized.	53 (90)	5	4.58	0.72	1	
2.3 Our cultural and spiritual perspectives impact on how mental health is	58 (98)	5	4.61	0.59	1	t t
perceived in the Pacific.	. ,					
2.4 There is a connection between alcohol, drugs and violence and mental health	56 (92)	5	4.54	0.65	1	1
in the Pacific.						
2.5 Family and community supports are essential for mental wellbeing.	58 (98)	5	4.85	0.41	0	1
2.6 Resilience is a key element for mental wellbeing in the Pacific.	50 (86)	5	4.42	0.72	1	
2./ There is an interconnectedness between resource/economy and mental	56 (95)	5	4.56	0.60	1	~
Weilbeing.	20 (66)	4	2 76	0.05	1	v
2.0 Mental health and mental inness are seen as one and the same thing in the Pacific	39 (00)	4	5.70	0.95	I	^
Theme 3: Links between climate change and mental wellbeing in the Pacific						
3.1 Climate change exacerbates existing mental health challenges.	54 (92)	4	4.2	0.58	1	
3.2 Climate change causes a number of emotional responses such as anger, guilt,	51 (86)	4	4.19	0.75	1	1
hopelessness, grief, fear and anxiety.	F1 (0C)	4	4 1 5	0.00	1	,
depression	51 (00)	4	4.15	0.09	I	v
3.4 The intersection of climate change and mental wellbeing includes the loss of	52 (88)	4	4 29	0.72	1	1
identity, belonging and connection.	52 (00)	•	1.20	0.72	•	·
3.5 In the Pacific, there is an inseparable connection between people and the	56 (95)	5	4.73	0.55	0	1
land and sea.						
3.6 Loss of land and homes due to climate change is distressing.	58 (98)	5	4.88	0.33	0	1
3.7 There is significance attached to losing connection to ancestors and history	55 (93)	5	4.64	0.66	1	1
due to loss of land secondary to climate change.		_				
3.8 The intercepts between climate change and mental wellbeing are	56 (95)	5	4.69	0.56	0.5	~
Multifaceted.	EA (02)	F	4.40	0.65	1	/
climate events and slow onset events	54 (92)	5	4.49	0.05	I	v
3.10 Climate disasters have a unique impact on mental wellbeing.	50 (85)	5	4.39	0.74	1	1
3.11 Migration and displacement due to climate change place significant	58 (99)	5	4.66	0.51	1	• ↑
pressure on people	()					
3.12 Climate change impacts on livelihoods are a specific stressor for mental	58 (98)	5	4.49	0.54	1	↑
wellbeing.						
3.13 Nurturing resilience is an essential element to buffer the impacts of climate	57 (97)	5	4.58	0.56	1	1
change on mental wellbeing.						
Theme 4: Unmet need in mental health services to deal with climate change impact	ts on me	ntal wellbe	eina			
4.1 Mental health services in the Pacific are not well resourced or equipped	58 (98)	5	4.75	0.48	0	1
generally much less for climate change.	. ,					
4.2 One of the main challenges for improving mental health services in the Pacific	56 (95)	5	4.59	0.72	1	1
is increasing the workforce capacity.						
4.3 New Zealand mental health services are not prepared for an influx related to	44 (75)	4	4.1	0.86	1.5	Х
climate change in the Pacific.	AF (77)		4 1 0	0.00	4	,
4.4 New Zealand mental nearth services are inadequate for Pacific peoples due to	45 (77)	4	4.19	0.88	I	1
lack of cultural safety and predominance of western biomedical models of						
4.5 The impact of climate change on mental health services in New Zealand is not	38 (64)	4	4 02	0.9	2	x
being considered.	JU (IF)	т	4.02	0.2	2	Λ
4.6 In New Zealand there has been some progress made towards adapting	37 (63)	4	3.68	0.63	1	Х
services for Pacific peoples.						

Table 3. Continued.

_				Standard	Interquartile	_
Statements	N (%,)	Median	Mean	deviation (SD)	range (IQR)	Consensus
Theme 5: Responding to mental wellbeing impacts of climate change 5.1 Mental health services in the Pacific and New Zealand require more resource and workforce capacity building in order to respond to the mental wellbeing	55 (95)	5	4.64	0.58	1	1
impacts of climate change. 5.2 The existing mental health workforce in the Pacific and New Zealand need further training and development in order to respond to the mental wellbeing impacts of climate change	55 (95)	5	4.64	0.58	1	1
5.3 Pacific lens and cultural competency are essential elements to improving mental health services ability to respond to the mental wellbeing impacts of climate change	53 (93)	5	4.68	0.6	0	1
5.4 There is a need to improve networks both within and between countries in order to respond to the mental wellbeing impacts of climate change.	52 (91)	5	4.56	0.66	1	1
5.5 Education and advocacy across communities and agencies is essential in order to respond to the mental wellbeing impacts of climate change.	55 (96)	5	4.65	0.55	1	1
5.6 The inclusion of community and family at all levels is important in order to respond to the mental wellbeing impacts of climate change.	58 (99)	5	4.69	0.47	1	1
5.7 Good leadership at government and legislative levels is important in order to respond to the mental wellbeing impacts of climate change.	58 (99)	5	4.79	0.41	0	1
5.8 Specifically addressing the issue of stigma in mental health is needed in order to respond to the mental wellbeing impacts of climate change.	56 (96)	5	4.57	0.57	1	1
5.9 Resilience and the ability to enjoy life are key strengths in the Pacific which need to be leveraged in order to respond to the mental wellbeing impacts of climate change.	55 (97)	5	4.49	0.57	1	ſ
5.10 More research is needed into this topic of mental wellbeing and climate change.	57 (98)	5	4.75	0.43	0	1
5.11 Places of worship and spiritual practises have a key part to play in responding to the mental wellbeing impacts of climate change.	51 (88)	4	4.28	0.89	1	1
5.12 Traditional indigenous practises and other alternative practises have a part to play in responding to the mental wellbeing impacts of climate change.	52 (90)	5	4.48	0.8	1	1
5.13 Connecting people to the environment is helpful for improving mental wellbeing related to the impacts of climate change.	57 (97)	5	4.64	0.52	1	1
5.14 It is difficult to be hopeful about ways to respond to mental wellbeing and the impacts of climate change at the moment.	36 (62)	4	3.78	1.03	2	Х
Theme 6: Impact of COVID-19 on climate change and mental wellbeing in the Paci	fic					
6.1 The already existing links and stressors related to economy and livelihood due to climate change are now exacerbated further by the COVID-19 global pandemic.	56 (97)	5	4.66	0.55	1	1
6.2 The global COVID-19 pandemic has further impacted on mental health and wellbeing.	55 (85)	5	4.74	0.55	0	1
6.3 One positive outcome from the COVID-19 pandemic has been lower carbon emissions.	53 (91)	4	4.31	0.68	1	1
6.4 COVID-19 restrictions have impacted on wellbeing from the perspective of loss of freedom and isolation.	50 (86)	4	4.34	0.71	1	1
6.5 The impact of COVID-19 is multifaceted and wide reaching.	58 (99)	5	4.84	0.37	0	
6.6 Climate change has been de-prioritized due to the COVID-19 global pandemic.	46 (79)	4	4.16	0.79	1	1
6.7 Culture is an important factor for withstanding the impacts of the COVID-19 pandemic.	57 (97)	5	4.72	0.45	1	1
6.8 Spirituality is an important factor for withstanding the impacts of the COVID- 19 pandemic.	48 (81)	5	4.44	0.71	1	1

x = Did not reach consensus, \checkmark = Reached consensus, \uparrow = Reached strong consensus >95%.

study and others (Berry, 2009; Page & Howard, 2010). Disasters such as flooding have been linked in other studies to mental health outcomes such as Post Traumatic Stress Disorder, anxiety, depression and suicide (Fernandez et al., 2015). A recent study from the Pacific region also confirmed climate change as a significant cause of distress in 95/100 of interviewed participants on a Tuvaluan atoll (Gibson et al., 2020). The importance of culture, family and spirituality post-disaster was previously highlighted by the success of the Asiasiga intervention implemented in Sāmoa post the 2009 tsunami (Waldegrave & Thompson, 2014). This programme involved wraparound support for families, focusing on physical, emotional and spiritual needs and integrating Sāmoan concepts of self, wellbeing, relational and spiritual values (Tamasese et al., 2020). The description of mental health being linked to stigma, discrimination and prejudice, is not uncommon for most global populations, irrespective of context (Clay et al., 2020). The descriptions of gaps in mental health capacity show the true extent of the capacity in the mental health workforce in the region is not well documented, including the role of traditional medicine in meeting mental health need (Blignault & Kaur, 2020).

A qualitative systematic review also found that internal and cross-border climate-related mobility have similar impacts on psychosocial and cultural wellbeing in the Pacific (Yates et al., 2021). Challenges for those displaced included; barriers to employment, inadequate housing, inability to access education and healthcare, and acculturation challenges, which can lead to physical health issues and distress – similar to themes found in this study. Relationship to land was another key theme for migrants who perceive threat of loss of land equivalent to the threat to the safety of their family and community. Those displaced internally had disruption to livelihoods (subsistence and crops) and loss of sociocultural integrity (Yates et al., 2021). Consensus from this study aligns with such climate change-related causes and impacts of distress and the need for support informed by culturally relevant concepts.

Solastalgia is a term coined by Albrecht, which conveys the feeling of distress caused by climate change affecting a home environment (Albrecht et al., 2007). In this study, panellists confirmed Pacific perspectives of the impacts of climate change on mental wellbeing, particularly related to loss of land and livelihoods. Losing connection to ancestors and history was emphasized, alongside the need to nurture resilience factors unique to Pacific peoples such as connection to culture and family. These elements are explored further in Phase two using Pacific methods of dialogue and conversation with individuals and groups in the Cook Islands, Niue and Aotearoa New Zealand.

The achievement of completing the consensus process with a diverse group of experts from Fiji, Tuvalu, Niue, the Cook Islands, Aotearoa New Zealand and Sāmoa was no small feat during a tumultuous 2020 year. Throughout the course of a multi-country approach of the Delphi process in 2020, we persevered through cyclones, COVID-19 lockdowns and border closures, a COVID-19 outbreak in our Aotearoa New Zealand Pacific communities and the bereavement of Pacific leaders in Niue, the Cook Islands and Aotearoa New Zealand. These challenges prevented the research team from being able to meet with key partners in our Pacific region in-person, which is important for Pacific research, as relationships are valued and in-person engagement is preferable. It also meant there was constant and careful adjustment of timelines in order to be sensitive to our panel, who were often tasked with responding to the aforementioned crises.

The strength of the Delphi method is that it provides an effective way of reaching agreement amongst a group of people (Keeney et al., 2011). It is also well aligned with Pacific values of inclusivity and centring the voices of the collective (Langridge et al., 2020). For new subject areas such as the interface between mental wellbeing and climate change for Pacific peoples, it is a useful starting point for understanding the scaffolding and framework of concepts that shape the issue.

This study provides a helpful baseline to understanding the intersection between climate change and mental health and wellbeing from the perspective of Pacific experts. It is a platform to developing Pacific-framed, island nation-centred and trans-indigenous understandings, which can assist in developing responses and interventions, particularly in preparedness of mental health services both across the Pacific region, and in Aotearoa New Zealand. These frameworks and responses must be led by Pacific peoples with the Pacific values and practices embedded (Gill, 2020; Tamasese et al., 2020; Tiatia-Seath et al., 2021). It is clear from these findings that experts believe climate change does impact upon mental wellbeing in Pacific peoples and there is a need to resource responsive and culturally safe services, and countries receiving climate migrants from the Pacific need to have a level of preparedness in light of existing inequities and barriers to access for Pacific peoples (Adger et al., 2012; Rice & McIver, 2016; Royal Society Te Apārangi, 2017). There was strong consensus from the expert

panel that good national governance, cultural and spiritual perspectives, family and community, resilience, education, advocacy and addressing of stigma are important factors related to climate change and mental wellbeing. Therefore, strategies and approaches must integrate addressing and including these factors in order to be responsive to the unique needs and context of the Pacific and Pacific peoples.

Conclusion

For the first time the consensus of Pacific experts across the region has been sought, to illuminate key principles underlying mental health and wellbeing and climate change for Pacific peoples. The recurring themes we found drew attention to mental health as a hidden and stigmatized concern, the importance of culture and spirituality, family and community, including the connections to ancestors, the environment and resilience are emphasized. Linkages are made to economics, livelihoods and workforce along with government and legislation, education, migration and the impact of disasters. Overall, these factors assist in revealing climate change as an initiator and an exacerbator of mental health concerns for Pacific peoples. They also provide the necessary first step to understand the narratives and deeper connections between the concepts. Climate change is a persistent and growing threat to mental health and wellbeing in our Pacific Island nations. Continuing to listen to the voices of our Pacific peoples, and taking meaningful action is the only way to effectively respond.

Acknowledgements

We acknowledge all of our expert panellists, the project Group of Expert Advisors (GEA) and the Health Research Council (HRC) of New Zealand for funding support. We thank leadership within the Cook Islands and Niuēan government.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by Health Research Council of New Zealand [grant number 3717312].

Notes on contributors

Jemaima Tiatia is Pro Vice-Chancellor Pacific at Waipapa Taumata Rau – The University of Auckland. She is also a board member on New Zealand's Mental Health and Wellbeing Commission. A New Zealand-born Sāmoan, her gafa (genealogy) hails from the Sāmoan villages of Tāga, Sālelologa, Vaimoso and Si'umu. Her research interests include: suicide prevention, health inequities, Pacific Studies and youth development.

Fiona Langridge is a child health researcher, clinician and advocate. Her areas of expertise are: global child health, Pacific child health, community engagement, resilience and wellbeing in children, child protection and participatory approaches to research. She is a Pacific raised Palangi.

Christina Newport is a Research Fellow in Pacific Studies at Waipapa Taumata Rau – The University of Auckland. She is a descendant of Ngati Tamāke'u and Ngati Te Tika from Rarotonga in the Cook Islands. She has experience in policy and research related to development, climate change mobility and mental health in Pacific and island contexts.

Yvonne Underhill-Sem is a Pacific feminist development geographer of Cook Island, Niuean and Pakeha descent. Her areas of expertise include: gender and development, critical population geographies, feminist political ecology, Pacific development, progressive social movements, and climate change.

Alistair Woodward is a public health doctor and epidemiologist. He has studied and written on climate change and health for more than twenty years, and has contributed to four IPCC assessments. At present he is a Professor in the School of Population Health at the University of Auckland.

ORCID

Jemaima Tiatia b http://orcid.org/0000-0003-2757-3354 Fiona Langridge b http://orcid.org/0000-0001-7594-7547 Christina Newport b http://orcid.org/0000-0001-8668-9918 Yvonne Underhill-Sem b http://orcid.org/0000-0002-7754-1329 Alistair Woodward b http://orcid.org/0000-0001-5425-6018

References

- Adger, W.N., Barnett, J., Brown, K., Marshall, N., & O'Brien, K. (2012). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change*, 3(2), 112–117. https://doi.org/10.1038/ nclimate1666
- Albrecht, G., Sartore, G., Connor, L., Higginbotham, N., Freeman, S., Kelly, B., Stain, H., Tonna, A., & Pollard, G. (2007). Solastalgia: The distress caused by environmental change. *Australasian Psychiatry*, 15 (sup1), 95–98. https://doi.org/10.1080/10398560701701288
- Andrew, N.L., Brightid, P., de La Ruaid, L., Teohid, S.J., & Vickers, M. (2019). Coastal proximity of populations in 22 Pacific Island countries and territories. *PLoS One*, 14(9), e0223249, https://doi.org/10.1371/ journal.pone.0223249
- Berry, H. (2009). Pearl in the oyster: Climate change as a mental health opportunity. Australasian Psychiatry: Bulletin of Royal Australian and New Zealand College of Psychiatrists, 17(6), 453–456. https://doi. org/10.1080/10398560903045328
- Blignault, I., & Kaur, A. (2020). Integration of traditional and western treatment approaches in mental health care in Pacific Island countries. *Australasian Psychiatry*, 28(1), 11–15. https://doi.org/10.1177/ 1039856219859273
- Boulkedid, R., Abdoul, H., Loustau, M., Sibony, O., & Alberti, C. (2011). Using and reporting the Delphi method for selecting healthcare quality indicators: A systematic review. *PLoS One*, 6(6), Article 20476. https:// doi.org/10.1371/journal.pone.0020476
- Boulkedid, R., Sibony, O., Goffinet, F., Fauconnier, A., Branger, B., & Alberti, C. (2013). Quality indicators for continuous monitoring to improve maternal and infant health in maternity departments: A modified Delphi survey of an international multidisciplinary panel) quality indicators for continuous monitoring to improve maternal and infant health in maternity departments: A modified Delphi survey of an international multidisciplinary panel. *PLoS One*, 8(4), Article 60663. https://doi.org/10.1371/journal.pone.0060663
- Charlson, F.J., Diminic, S., & Whiteford, H.A. (2015). The rising tide of mental disorders in the Pacific region: Forecasts of disease burden and service requirements from 2010 to 2050. Special Research Article on Health Policy, 2(2), 280–292. https://doi.org/10.1002/app5.93.
- Cianconi, P., Betrò, S., Janiri, L., Loganovsky, K., & Avella, M.T. (2020). The impact of climate change on mental health: A systematic descriptive review. *Article*, 11(74). https://doi.org/10.3389/fpsyt.2020.00074.
- Cissé, G., McLeman, R., Adams, H., Aldunce, P., Bowen, K., Campbell-Lendrum, D., Clayton, S., Ebi, K.L., Hess, J., Huang, C., Liu, Q., McGregor, G., Semenza, J., & Tirado, M.C. (2022). Health, wellbeing, and the changing structure of communities. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, & B. Rama (Eds.), Contribution of working group II to the sixth assessment report of the intergovernmental panel on climate change (pp. 1041–1170). Cambridge University Press.

- Clay, J., Eaton, J., Gronholm, P.C., Semrau, M., & Votruba, N. (2020). Core components of mental health stigma reduction interventions in low- and middle-income countries: A systematic review. *Epidemiology and Psychiatric Sciences*, 29(e164), 1–16. https://doi. org/10.1017/S2045796020000797.
- Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. *Journal of Anxiety Disorders*, 74(June), Article 102263. https://doi.org/10.1016/j.janxdis.2020.102263
- Costello, A., Abbas, M., Allen, A., Ball, S., Bell, S., Bellamy, R., Friel, S., Groce, N., Johnson, A., Kett, M., Lee, M., Levy, C., Maslin, M., McCoy, D., McGuire, B., Montgomery, H., Napier, D., Pagel, C., ... Patterson, C. (2009). Managing the health effects of climate change. Lancet and University College London Institute for Global Health Commission. *The Lancet*, 373(9676), 1693–1733. https://doi.org/10. 1016/S0140-6736(09)60935-1
- Fernandez, A., Black, J., Jones, M., Wilson, L., Salvador-Carulla, L., Astell-Burt, T., & Black, D. (2015). Flooding and mental health: A systematic mapping review. *PLoS One*, 10(4), 1–20. https://doi.org/10.1371/ journal.pone.0119929
- Filho, W.L., Scheday, S., Boenecke, J., Gogoi, A., Maharaj, A., & Korovou, S. (2019). Climate change, health and mosquito-borne diseases: Trends and implications to the Pacific region. *International Journal of Environmental Research and Public Health*, 5114(16), 1–12. https:// doi.org/10.3390/ijerph16245114
- Foliaki, S., Kokaua, J., Schaaf, D., & Tukuitonga, C. (2006). Twelve-month and lifetime prevalences of mental disorders and treatment contact among Pacific people in Te Rau Hinengaro: The New Zealand Mental Health Survey. *The Australian and New Zealand Journal of Psychiatry*, 40(10), 924–934. https://doi.org/10.1080/J.1440-1614. 2006.01912.x
- Gibson, K.E., Barnett, J., Haslam, N., & Kaplan, I. (2020). The mental health impacts of climate change: Findings from a Pacific Island atoll nation. *Journal of Anxiety Disorders*, 73(January), Article 102237. https://doi.org/10.1016/j.janxdis.2020.102237
- Gill, N.S. (2020). Mental health capacity-building in Pacific Island countries: Global agenda with local relevance. Australasian Psychiatry, 28(1), 5–6. https://doi.org/10.1177/1039856219895522
- Jones, R. (2019). Climate change and indigenous health promotion. Global Health Promotion, 26(3_suppl), 73-81. https://doi.org/10. 1177/1757975919829713
- Keeney, S., McKenna, H., & Hasson, F. (2011). The Delphi technique in nursing and health research (1st ed.). John Wiley & Sons.
- Langridge, F., 'Ofanoa, M., Fakakovikaetau, T., Percival, T., Wilkinson-Meyers, L., & Grant, C. (2020). Developing a child health survey for a Pacific Island nation. Integrating the Delphi method with Pacific methodologies. *Pacific Health Dialog*, 21(6), 319–334. https://doi.org/ 10.26635/phd.2020.638
- McIver, L., Kim, R., Woodward, A., Hales, S., Spickett, J., Katscherian, D., Hashizume, M., Honda, Y., Kim, H., Iddings, S., Naicker, J., Bambrick, H., McMichael, A., & Ebi, K. (2016). Health impacts of climate change in Pacific Island countries: A regional assessment of vulnerabilities and adaptation priorities. *Environmental Health Perspectives*, 124(11), 1707–1714. https://doi.org/10.1289/EHP.1509756
- Page, L.A., & Howard, L.M. (2010). The impact of climate change on mental health (but will mental health be discussed at Copenhagen?). *Psychological Medicine*, 40(2), 177–180. https://doi.org/10.1017/ S0033291709992169

Pihkala, P. (2019). MIELI Mental Health Finland, November 1-25.

- Pihkala, P. (2020a). Eco-anxiety and environmental education. Sustainability, 12(10149), 1–38. https://doi.org/10.3390/ su122310149.
- Pihkala, P. (2020b). The cost of bearing witness to the environmental crisis: Vicarious traumatization and dealing with secondary traumatic stress among environmental researchers. *Social Epistemology*, 34(1), 86–100. https://doi.org/10.1080/02691728.2019.1681560
- QSR International Pty Ltd. (2020). *Qualitative data analysis software* | *NVivo.* https://www.qsrinternational.com/nvivo-qualitative-dataanalysis-software/home
- R Core Team. (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing. https://www.r-project.org/

- Regional Climate Consortium for Asia and the Pacific. (2021). Climate change update for the Pacific – RCCAP – Regional Climate Consortium for Asia and the Pacific. Next Generation Climate Projections for the Western Tropical Pacific. https://www.rccap.org/ climate-change-update-for-the-pacific/
- Rice, S. M., & McIver, L. J. (2016). Climate change and mental health: Rationale for research and intervention planning. *Asian Journal of Psychiatry*, 20, 1–2. https://doi.org/10.1016/j.ajp.2015.12.011
- Royal Society Te Apārangi. (2017). Human health impacts of climate change for New Zealand evidence update human health impacts of climate change for New Zealand evidence summary.
- Secretariat of the Pacific Community. (2013). SPC climate change and disaster risk management support activities in Pacific Island countries and territories 2013.
- Tamasese, T.K., Parsons, T.L., Waldegrave, C., Sawrey, R., & Bush, A. (2020). Asiasiga: A Samoan intervention to address the immediate mental health needs of Samoan communities after a Tsunami. *Australasian Psychiatry*, 28(1), 31–33. https://doi.org/10.1177/1039856219866321

- Tamasese, T.K., Parsons, T.L, Waldegrave, C, & Thompson, A. (2014). Trauma, livelihoods and resilience in post-tsunami Samoa: A review for the New Zealand Aid programme. https://ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServlet?dps_pid=IE36431346.
- Tiatia-Seath, J. (2014). Pacific peoples, mental health service engagement and suicide prevention in Aotearoa New Zealand. *Ethnicity and Inequalities in Health and Social Care*, 7(3), 111–121. https://doi.org/ 10.1108/EIHSC-10-2013-0023
- Tiatia-Seath, J., McCool, J., & Nosa, V. (2021). Growing Pacific research and leadership. *Asia-Pacific Journal of Public Health*, 33(6–7), 698– 699. https://doi.org/10.1177/10105395211043314
- Tiatia-Seath, J., Tupou, T., & Fookes, I. (2020). Climate change, mental health, and well-being for Pacific peoples: A literature review. *Contemporary Pacific*, 32(2), 399–430. https://doi.org/10.1353/cp.2020.0035
- Yates, O.E.T., Manuela, S., Neef, A., & Groot, S. (2021). Reshaping ties to land: A systematic review of the psychosocial and cultural impacts of Pacific climate-related mobility. *Climate and Development*, 0(0), 1– 18. https://doi.org/10.1080/17565529.2021.1911775