

Connecting the health of country with the health of people: application of "caring for country" in improving the social and emotional well-being of Indigenous people in Australia and New Zealand



Yaqoot Fatima,^{a,b,c,*} Yongbo Liu,^{a,b} Anne Cleary,^a Julie Dean,^a Valance Smith,^d Stephanie King,^c and Shaun Solomon^c

^aInstitute for Social Science Research, The University of Queensland, Indooroopilly, Queensland, Australia

^bARC Centre of Excellence for Children and Families over the Life Course (The Life Course Centre), The University of Queensland, Indooroopilly, Queensland, Australia

^cMurtupuni Centre for Rural and Remote Health, James Cook University, Queensland, Australia

^dAuckland University of Technology, Auckland, New Zealand



Summary

Emerging evidence from the western literature suggests an increasing focus on applying nature-based interventions for mental health improvements. However, in Indigenous communities, caring for country has always been central to the Indigenous way of life. Knowing that nature-based interventions effectively improve mental health outcomes, this review collated evidence on the application of caring for country in improving social and emotional well-being (SEWB) of Indigenous peoples in Australia and New Zealand. Three studies from Australia and one from New Zealand, explored the role of *country* or *whenua* (*land*) in the lives of Indigenous people. Participation in caring-for country activities was associated with lower levels of psychological distress and strengthened guardianship relationship with country, which positively affected SEWB. This systematic review offers preliminary evidence on the role of caring for country activities in improving the SEWB of Indigenous peoples and highlights the need for strengths-based approaches to improve the SEWB of Indigenous peoples.

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Introduction

The relationship between nature and health

Drawing from a predominantly western perspective, the benefits of spending time in nature and health have been explored with increasing attention and effort over the past few decades.¹ This has resulted in well-established evidence on the positive relationship between exposure to nature and physical and psychological health.^{2–4} The human–nature relationship is explored from multiple perspectives, such as the biophilia hypothesis,⁵ therapeutic landscapes,^{6–8} and place attachment.⁹ Also, it has been labelled in many ways, for example, love and care for nature,¹⁰ connectivity with nature,¹¹ nature relatedness,¹² and emotional affinity toward nature.¹³

Multiple scales and tools, predominantly informed by a western perspective, are commonly used to measure an individual's nature connection, for example, the inclusion of Nature in Self Scale¹⁴ and Connection to Nature Scale,¹⁵ Nature Relatedness Scale,¹² and Love and Care for Nature scale.¹⁰ Traditionally, these measures have assessed the cognitive, emotional or experiential aspects of nature connection, although more recent conceptualisations have attempted to include identity and philosophical domains of the human–nature relationship.¹⁶

In contrast to western (non-Indigenous) perspectives, the Indigenous perspective of the human relationship with nature and its connection to health tends to be more holistic, extending beyond cognitive, emotional or experiential domains to encompass broader cultural, genealogical, spiritual and custodian connections to land and nature.¹⁷ Indigenous understandings of their relationship with *country* or *whenua* also tend to be linked across time and

*Corresponding author. Institute for Social Science Research, University of Queensland, Indooroopilly, Queensland, Australia.

E-mail address: fatima.yaqoot@uq.edu.au (Y. Fatima).

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Research in context

Evidence before this study

The emerging evidence from the western literature suggests a strong positive link between spending time in nature and mental health and well-being. However, despite the central role of the *country* or *whenua* in the lives of Aboriginal and Torres Strait Islander people from Australia and Māori people from New Zealand, there is limited understanding of the application and effectiveness of "caring for country" in their social and emotional well-being (SEWB). This systematic review explores the application of nature-based approaches in improving the SEWB of Indigenous Australian and Māori peoples. Key academic databases, e.g., Web of Science; ProQuest; Scopus; PubMed; CINAHL; AIATSIS: Indigenous studies bibliography; Social Science Database; Hauora Māori (Māori Health); Te Kaharoa; AlterNative: An International Journal of Indigenous Peoples and grey literature sources were searched for relevant studies published up till 31 December 2021. The search strategy included controlled vocabulary terms and keywords, e.g., "caring for the country"; "Nature-based intervention" and "Traditional Owners"; "Indigenous"; "First Nation People" and "well-being"; "mental health"; "emotional health."

Added value of this study

Three studies from Australia and one from Aotearoa, New Zealand, explored the role of *country* or *whenua* in the lives of

Aboriginal and Torres Strait Islander people from Australia and Māori people from New Zealand. The studies from Australia explored the views of diverse and geographically dispersed Aboriginal and Torres Strait Islander communities, while the study from Aotearoa, New Zealand, was based on the views of Māori people from Rotorua. The studies included in this review offer strong preliminary evidence on the role of "caring for country" activities in improving the SEWB of Indigenous people. Participation in "caring-for country" activities was associated with lower levels of psychological distress and strengthened guardianship relationship with *country* or *whenua*, which helped in personal growth and establishing identity.

Implications of all the available evidence

Though limited, strong evidence suggests that leveraging the untapped potential of "caring for country" can play a major role in improving the SEWB of Indigenous peoples. Our findings suggest that programs and activities focused on SEWB of Indigenous peoples from Australia and New Zealand should embed activities related to caring for *country* and *whenua* for in SEWB programs and assess their impact on program uptake and success.

generations.^{18,19} In contrast, western scholarship on nature connection focuses more on individual levels of connection at a singular point in time or within a singular life course.

In both Aboriginal and Torres Strait Islander (Indigenous peoples of Australia) and Māori (Indigenous peoples of New Zealand) cultures, the relationship between *country* or *whenua*, are interdependent. In Indigenous Australian cultures, 'country' describes the lands Indigenous people have a traditional attachment or relationship with.²⁰ The Māori term for land, *whenua* (also means placenta) reflects the importance of *whenua* in sustaining and connecting Māori people with their culture.²¹ The reciprocal beneficial relationships held between Indigenous Australians and their country are encapsulated in sayings by Indigenous people such as 'healthy country, healthy people' and 'if you look after the country, the country will look after you'.²² The practice of "caring for country" means participation in activities on Aboriginal lands and seas to promote ecological, spiritual and human health²³ and has been described as an "inherent obligation that had been passed on for generations ... intrinsic to Aboriginal identity".²⁴ "Caring for country" activities may include spending time on country, revegetation, controlling fires, weeds and feral animals; harvesting bush foods; protecting sacred areas; and monitoring and protecting threatened species.^{25,26}

Moewaka Barnes describes how in Māori culture, *whenua* (land) is a determinant of health where *whenua* is not considered as property but instead as a 'person' with rights and mana (authority) that needs to be treated with respect and integrity and which in turn provides healing and sustenance.²⁷ The bond is strengthened by Māori people participating in activities on their lands with the objectives to promote the health of individuals, community and country and achieve balance among tapu (sacred), rāhui (ritual prohibition), and noa (common).²⁸ The role as a custodian and carer of the *country* or *whenua* are of equal weight as the role of a beneficiary from connection with the country or *whenua*.

Application of connection between nature in health promotion programs

Within western cultures, there is increasing interest in the potential for nature-based interventions to reduce psychological distress and enhance well-being for a wide range of populations groups,²⁹ for example, for people experiencing mental ill-health,³⁰ young people at risk,³¹ people affected by trauma and grief³² and people with chronic health conditions.³³ Nature-based interventions tend to involve facilitated experiences with nature that aim to enhance health and well-being and span a diverse range of activities such as wilderness therapies, therapeutic horticulture and community gardens, forest

schools, green exercise (nature walks) and blue exercise (surfing), care farming, animal-assisted therapies, eco-therapy and environmental restoration.^{34,35} There is promising evidence of the impacts of nature-based interventions (e.g. social and therapeutic gardening and woodland therapy) to improve psychological health, with a recent UK study finding that participation was associated with increases in life satisfaction and happiness.³⁶

Western informed nature-based approaches to health and well-being target social interaction and physical activity as the intended pathways to delivering health outcomes.³⁷ Multiple efforts have been made to identify the pathways through which nature imparts positive effects on human health and well-being.³ The commonly cited pathways include promotion of physical activity, facilitating social interactions and reduction in stress levels via Ulrich's Stress Recovery Theory³⁸ and cognitive restoration via Kaplan's Attention Restoration Theory.³⁹

Applying nature-based approaches to Indigenous health and well-being

While Indigenous understandings of the human–nature relationship vary from western perspectives, so does the Indigenous understanding of health and well-being. Within both Indigenous Australian and Māori cultures, health and well-being are conceptualised collectively and holistically where the individual's mental health is situated within the health of families, communities, culture and place.⁴⁰

For Indigenous Australians, the term 'social and emotional well-being (SEWB)' is a holistic, culturally informed view of the foundation for physical and mental health connecting the health of an Indigenous person to the health of their family, kin, community, and their connection to country, culture, spirituality and ancestry.⁴¹ In Aotearoa, New Zealand, Māori models of health are often represented as interconnected elements, such as the four cornerstones in the Te Whare Tapa Whā model consisting of the *te taha wairua* (The spiritual side), *te taha hinengaro* (The mental side), *te taha tinana* (The physical side), and *te taha whānau* (The extended family side).⁴² Building on this⁴³ Indigenous model of health promotion encompasses four areas of health ('ora'); Waiora refers to the natural environment and environmental protection; Mauri Ora is about cultural identity and access to the Māori world; Toiora includes well-being and healthy lifestyles, and Whaiora encompasses full participation in the wider society.

For Māori, *māra kai* is a form of Indigenous food sovereignty that promotes growing kai for self-sufficiency and whānau resilience.⁴⁴ The concept of *māra kai* embodies the *whakataukī* 'he kai kei aku ringa' – 'abundance provided by my own hands' taking its message as a directive. The act of tending a food garden, learning the knowledge related to horticulture, participating in traditional gardening practices – all relate to food sovereignty,

self-determination and emancipating whānau from dependency.⁴⁵ Several Maori studies have highlighted the potential for community garden practices that promote growing *māra kai* - food for self-sufficiency whanau resilience –to promote food sovereignty and self-determination of SEWB among Māori individuals, extended families and communities.⁴⁴

Whether understood as *country* or *whenua*, the relationship with land and environment is an integral part of the Indigenous Australian and Māori models of health and well-being. This suggests that nature-based approaches may be an effective approach to improve the SEWB of Indigenous peoples. Despite the central role of the *country* and *whenua* in SEWB of Indigenous Australians and Māori peoples, there is limited understanding of the application and effectiveness of "caring for country" in SEWB programs. There is a need for a comprehensive review of the state of evidence on the application and effectiveness of nature-based approaches to ensure culturally appropriate and effective programs for SEWB improvement.

Study aims

The current study explores the application of nature-based approaches in improving the well-being of Indigenous Australian and Māori peoples from New Zealand. The review encompasses research with Indigenous Australians and Māori peoples for several reasons, including their shared histories of colonisation and historical trauma with consequent impacts on mental health and well-being.⁴⁶ The review will mainly focus on the application of Indigenous Australian and Māori cultural activities for connecting to *country* or *whenua*, environmental sustainability and biodiversity management in improving the SEWB of Indigenous peoples in Australia and New Zealand.

Methods

Guiding framework

This review, which aims to study and report on the Indigenous Australians' and Māori peoples' relationship with the *country* and *whenua* and associated implications for SEWB, was guided by a strengths-based approach.^{47,48} This review was also guided by the personal and professional experiences and expertise of the authors who are Indigenous Australians (SS, SK), and Māori (VS) to ensure that the conduct and reporting of this review are consistent with guidelines for culturally respectful conduct of Indigenous health research.

Definition and meaning of key terms included in the review

Relationship with country and whenua

The Indigenous Australian relationship with the *country* and Māori relationship with *whenua* denote

interdependent and reciprocal relationships between Indigenous people and their ancestral lands and seas.⁴⁹ The bond is strengthened by participation in activities on their lands that promote the health of individuals, families, and communities and the health of the *country* or *whenua*.^{28,50} Examples of these activities that relate to the relationship with *country* and *whenua*, may include spending time on *country*, carrying out custodian and land management activities such as revegetation; control of fires, weeds and feral animals; monitoring and protecting threatened species; protecting sacred lands as well as Indigenous food sovereignty activities such as harvesting of bush foods, gardening or *māra kai*.⁵¹

For this review, we are only focussing on those elements of the relationship with *country* and *whenua* which involve direct interaction with nature. We acknowledge that our approach has limitations and doesn't fully capture the true essence of the Indigenous relationship with the *country* and *whenua*. However, this is required to align with our research question of exploring the application of nature-based approaches in SEWB of Indigenous people.

Social and emotional well-being (SEWB)

For Indigenous people, health and well-being are understood as a holistic concept of mental health that recognises culture, cultural identity and relationships between individuals, family, kin and community and their role in health and well-being outcomes.^{52,53} For this review, we term this broader Indigenous conceptualisation of mental health and well-being as SEWB, in line with the Wharerātā Declaration.⁵⁴

Literature search

The authors (YL, YF, AC, JD) jointly identified the approach for a systematic search of the literature to retrieve English language literature on Indigenous relationship with *country* and *whenua* and SEWB of Indigenous people from Australia and Aotearoa New Zealand. One of the authors (YL) searched the key academic database (Web of Science; ProQuest; Scopus; PubMed; CINAHL; AIATSIS: Indigenous studies bibliography; Social Science Database; Hauora Māori (Māori Health); Te Kaharoa; AlterNative: An International Journal of Indigenous Peoples) for relevant studies published up till 31 December 2021. The search strategy included controlled vocabulary terms and keywords, e.g., "caring for the country"; "Nature-based intervention" and "Traditional Owners"; "Indigenous"; "First Nation People" and "well-being"; "mental health"; "emotional health" (Supplementary Fig. S1). In addition, grey literature search was conducted to retrieve government reports, theses, and conference proceedings. Also, reference lists of relevant articles and related reviews were checked for any missing studies.

Inclusion criteria

Studies were included in the review of the study if they:

- focused on the relationship with *country* or *whenua* as a health promotion program/activity involving **direct interactions** with *country* or *whenua*
- **and** assessed effectiveness of activities/programs/interventions on participants' SEWB
- **and** focused on Indigenous people from Australia and Aotearoa, New Zealand.
- **and** published as empirical research using quantitative, qualitative or mixed-method approaches.

Exclusion criteria

Studies were excluded if they were.

- Published in Non-English language
- Contained no reference to the effects of the relationship with *country* or *whenua* on SEWB of Indigenous communities
- Reported physical health outcomes with no results on mental health and well-being
- Included both Indigenous and non-Indigenous participants but did not report the results for Indigenous participants separately
- Focused on the relationship with *country* or *whenua* practices were not explicitly related to direct interactions with nature (e.g., cultural dance, singing)
- Were book reviews, review articles, letters to the editor, commentaries or perspective pieces

Screening and data extraction

To screen the search results, one of the authors (YL) imported the search results into the web-based management software Covidence (Veritas Health Innovation, Melbourne, Australia). After duplicate removal, two reviewers (YL, YF) screened the title and abstract of the remaining records and read the potentially relevant papers' full texts. Studies meeting the inclusion criteria were selected. Next, two investigators (YL, YF) independently evaluated the selected studies to extract the following data: (i) general information (author's name, publication year), (ii) study aims, (iii) study and participants characteristics (design, sample size, demographics), (iii) data collection methods/tools (v) findings and (vi) limitations. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart diagram shows the number of articles retrieved, screened, excluded and selected during the literature review process (Supplementary Fig. S2).⁵⁵

Quality assessment

For observational cross-sectional studies, evidence quality was assessed using the US National Heart, Lung and Blood Institute checklist for observational cohort

and cross-sectional studies.⁵⁶ The NIH tool comprises 14 items assessing the selection and non-response bias (external validity), measurement bias and analysis bias (internal validity). For qualitative studies, evidence quality was assessed using the CASP Qualitative Studies Checklist.⁵⁷ The CASP checklist comprises ten items (three broad domains) evaluating the validity of the findings, key outcomes, and local relevance. For the purpose of this review, we decided to use a cut-off of 60% positive scores for categorising studies as “high” or “low” quality. This cut-off was based on the rationale if the study has introduced safeguards to ensure quality for more than half of the items it will be assessed as “high quality.” This cut-off is subjective only and doesn’t suggest that studies scoring high will be devoid of bias. Two reviewers (YL, YF) independently assessed the risk of bias, using consensus or other reviewers (AC, JD) consultation to resolve disagreements.

Indigenous leadership and involvement in research

Since this review exclusively focussed on Indigenous populations, we decided to assess each study against Indigenous leadership and involvement (beyond participation) in research. This assessment is important to ensure that Indigenous people lead and guide research on Indigenous communities’ health and well-being, local cultural protocols are followed, and the participating community benefits from the research. We used the adapted version of the Aboriginal and Torres Strait Islander Quality Appraisal Tool to assess Indigenous involvement and leadership in research.⁵⁸ This tool comprises 14 items assessing the compliance with ethical and methodological standards specific to Indigenous research through an Indigenous lens. Two reviewers (YL, YF) independently assessed Indigenous leadership and involvement, Disagreements regarding the assessment scores were discussed and resolved in consultation with Indigenous co-authors and cultural mentors (SS, VS).

Results

Characteristics of studies included in the review

From a pool of 2978 research articles, four studies, i.e., one qualitative study and three quantitative studies published between 2009 and 2021, met the inclusion criteria.^{59–62} Three studies were from Australia,^{59–61} and the remaining one was from Aotearoa, New Zealand.⁶² The studies from Australia explored the views of diverse and geographically dispersed Aboriginal and Torres Islander communities from the Northern Territory^{59,60} as well as a national study.⁶¹ The study from Aotearoa, New Zealand, was based on the views of Māori people from Rotorua.⁶²

The qualitative study was based on focus groups and interviews with community members to explore the

perceived effectiveness of participating in “caring for country” activities on SEWB.⁶² The quantitative studies utilised purposive sampling based cross-sectional surveys to assess the association between “caring for the country” and SEWB outcomes.^{59–61}

Through qualitative and quantitative data, the studies explored the perceived and observed association between “caring for the country” and participants’ SEWB. The key features and findings of the studies included in the review are summarised in [Table 1](#).

Role of caring for the country activities in improving the social and emotional well-being of Indigenous people

Preliminary evidence from observational studies suggest the role of caring for country activities in the SEWB of Indigenous people.^{59–61} The results from the Arnhem land community study highlight that participation in caring-for the country activities is associated with greater physical activity and a range of positive outcomes for physical and mental health, e.g., lower Body Mass Index, lower blood pressure, lower risk of diabetes and cardiovascular problems, and lower levels of psychological distress ($\beta = -0.97$; 95% CI: $-1.64, -0.31$).⁵⁹

Another study by Jones et al. was based on the Rangers programs, where Aboriginal and Torres Strait Islander people were recruited to draw on their cultural knowledge and practices of “caring for country” for land management activities such as protection of culturally significant sites; endangered species and water bodies, weed control and fire management.⁶⁰ Multivariable regression analyses suggest that compared with their counterparts Rangers reported higher life satisfaction (PR = 1.69, 95% CI: 1.29, 2.20) family wellbeing (PR = 1.47, 95% CI: 1.13, 1.90). Though statistically non-significant, some associations were found for general health (PR = 1.35, 95% CI: 0.95, 1.92), and psychological wellbeing (PR = 1.04, 95% CI: 0.82, 1.33).

Building on the findings of the study by Jones et al., baseline data from a national study, “Mayi Kuwayu”, was analysed to assess the impact of participating in the Rangers program and wellbeing.⁶¹ The authors found a significant link between participation in the Ranger program and life satisfaction (PR 1.31, 95% CI 1.09–1.57) and family well-being (PR 1.17, 95% CI 1.01–1.36). The association was robust to adjustment for key covariates such as age, gender, remoteness, family financial status, employment, education, health risk factor score, and health condition score. However, the association between Ranger status and psychological wellbeing was statistically non-significant (PR: 1.05, 95% CI 0.92, 1.21).

The evidence from Aotearoa New Zealand highlighted that activities such as walking in the forest (ngahere), gathering food (kai) from the land (*whenua*), or canoeing (waka) in a lake strengthened guardianship

Author (year)	Study aims	Participants	Data collection method/tools	Findings	Limitations
Qualitative studies					
Ryan et al. (2019)	Exploring the self-perceived effectiveness of a health education programme, facilitating connection to the environment through activities such as walking in the ngahere (forest) while gathering kai from the whenua (land), or on a waka in a lake, encourages a spiritual relationship to the land, of kaitiakitanga (guardianship) and indoor teaching sessions, in Māori males from New Zealand	Nine Māori males participating in the Tāne Takitu Ake program in Rotorua	Focus group discussion	Participation in the program led to increased health literacy, understanding of self-identity/ko wai ahāu (who am I), and the rediscovery of culture	Small sample size limits extrapolation of findings, challenging to gauge the sustainability of post-program lifestyle modifications
Quantitative studies					
Burgess et al. (2009)	A cross-sectional study assessing the link between participation in caring for country activities and healthy lifestyle and better health outcomes in Indigenous people from Northern Territory, Australia	298 Aboriginal and Torres Strait Islander people (59% males, 15–54 years) from Arnhem Land community in the Northern Territory	Exposure: Validated questionnaire to assess participation in caring for country activities Outcome: Modified Kessler scale (K5) to assess psychological wellbeing Objective assessment of anthropometric and cardio-metabolic indicators	After controlling for sociodemographic factors, place of residence and health behaviours, involvement in caring-for-country activities was significantly associated with more high physical activity, bush food consumption, lower psychological distress score (β : -0.97; 95% CI: -1.64 to -0.31) and better physical health, i.e., lower BMI, abdominal obesity, systolic blood pressure, diabetes, HbA1c, CVD risk and higher HDL cholesterol	Non-representative sample, cross-sectional design limits assessment of the cause-effect relationship
Jones et al. (2018)	A cross-sectional study exploring the association between caring for country, through participation in Indigenous Ranger program, and wellbeing in Indigenous people in Australia	203 Aboriginal and Torres Strait Islander people (43 Rangers and 160 non-Rangers, 37% males, 16–77 years) working in Central Australia	Exposure: self-reported information on participation in Ranger program (full time, part-time) Outcome: Self-reported general health and life satisfaction Western Australian Aboriginal Child Health Survey family functioning scale to assess family wellbeing Modified Kessler scale (K5) to assess psychological wellbeing	After controlling for education, income, employment, health risk factors and health conditions participation in the Rangers program was significantly associated with very high life satisfaction (PR:1.69, 95% CI: 1.29, 2.20) and high family wellbeing (PR: 1.47, 95% CI: 1.13, 1.90). The association was non-significant for psychological wellbeing (PR: 1.04, 95% CI: 0.82, 1.33)	Non-representative sample, self-reported measures to assess health and wellbeing, cross-sectional design limits assessment of the cause-effect relationship
Wright et al. (2021)	A cross-sectional study (based on the baseline data from the Mayi Kuwayu), exploring the association between caring for country, through participation in Indigenous Ranger program, and wellbeing in Indigenous people in Australia	9691 Aboriginal and Torres Strait Islander people (266 rangers: 9425 non-Rangers, 37.9% male, 61.1% aged 16–54 years) Across two geographic locations (Central Australia, non-Central Australia)	Exposure: self-reported information on participation in Ranger program Outcome: Self-reported general health and life satisfaction Western Australian Aboriginal Child Health Survey family functioning scale to assess family wellbeing Modified Kessler scale (K5) to assess psychological wellbeing	After controlling for age gender, remoteness, family financial status, employment, education, health risk factor scores, participation in the Rangers program was significantly associated with very high life satisfaction (PR 1.31, 95% CI 1.09, 1.57) and family wellbeing (PR:1.17, 95% CI 1.01–1.36) in Central Australia as well as non-Central Australia. The association between Ranger status and psychological wellbeing was non-significant in Central Australia (PR: 0.87, 95% CI: 0.66,1.15, and non-Central Australia (PR: 1.05, 95% CI 0.92, 1.21)	Non-representative sample, self-reported measures to assess health and wellbeing, cross-sectional design limits assessment of the cause-effect relationship

BMI: Body mass index, HDL: High-density lipoprotein, CVD: Cardiovascular diseases, PR: Prevalence ratio.

Table 1: Characteristics of the four studies included in the systematic review of caring for the country and social and emotional wellbeing of Indigenous people from Australia and New Zealand (based on references 58–61).

(kaitiakitanga) relationship with the land and facilitated personal growth and establishing identity.⁶²

Quality assessment results

The overall quality rating of the qualitative studies and cross-sectional observational studies was high. For qualitative studies, the deductions in quality rating were mainly due to the lack of information on whether the relationship between researcher and participants was adequately considered⁶² (Supplementary Table S1). Both quantitative studies mitigated the risk of bias by having a well-defined research question, pre-specified eligibility criteria, controlling for key confounding variables, among others.^{59–61} Deductions in quality rating were due to the lack of information on the participation rate and sample size justification (Supplementary Table S2).

Indigenous involvement and leadership in research

Though Indigenous research paradigms guided all studies, the studies from Aotearoa, New Zealand, offered more explicit information on the application of the Kaupapa Māori approach, decolonising methodologies, control of research and commitment to transformative research.⁶² However, apart from two studies,^{60,61} it was difficult to gauge whether there were appropriate agreements regarding rights of access to Aboriginal and Torres Strait Islander/Māori peoples' existing intellectual and cultural property.

Furthermore, it wasn't clear whether the research provided two-way learning opportunities for participants and researchers (Supplementary Table S4). Omitting this information from manuscripts makes it challenging to adequately assess Indigenous involvement and leadership in research. It is also possible that the research team engaged well with the community, but due to a lack of clear reporting guidelines, word limit constraints etc., the information on community engagement was not adequately presented in the papers. Therefore, there may be reporting issues rather than any study design or conduct issues. Based on our experience, we strongly recommend changes in the current reporting template for research focusing on Indigenous communities so that there is clear information on community engagement, leadership and involvement in research beyond participation.

Discussion

This review sought to assess the current evidence on the application and effectiveness of nature-based approaches that aim to enhance Indigenous SEWB by understanding the Indigenous relationship with the *country* and *whenua*. The studies included in this review provide "proof of concept" that participation in caring

for country activities, specifically combining cultural knowledge with land conservation, benefits Indigenous people's health and well-being. Unfortunately, despite the clear articulation from Australian Indigenous and Māori people of the strong link between well-being and relationship with *country* and *whenua*, the application of this knowledge within SEWB programs is currently limited. Our review only identified three studies that met our selection criteria, signalling the need for more consideration of the relationship with *country* and *whenua* within Indigenous health and well-being services and the need to evaluate such nature-based approaches to assess their effectiveness in achieving the intended well-being outcomes.

Despite geographical and cultural diversity, Indigenous Australian and Māori community members have certain overlaps in how the relationship with the *country* or *whenua* benefits well-being. *Country* or *whenua* is a place to connect with ancestors in a stress-free environment, fulfil cultural obligations and pass down the cultural knowledge and values to young people.^{24,63} *Country* or *whenua* also has healing powers and offers emotional, cultural, and spiritual connections, following a physically active lifestyle, and keeping away from alcohol and drug issues, thus promoting health and well-being in a holistic way.^{45,63} The community's efforts in caring for country activities are perceived as vehicles for re-engaging, re-establishing, and strengthening communities.⁴⁵ The absence of these cultural connections to land and community can lead to drugs, alcohol, or domestic violence problems.²⁴ Indigenous people have emphasised the empowering role of Indigenous land management in building 'pride' and 'self-worth' and giving a sense of achievement to contribute to the well-being of the country, find employment and take control of their future.^{24,45}

Pioneering research with Indigenous Australians on the benefits of nature-based approaches in physical health has shown promise; for example, Burgess et al., 's 2009 study in Arnhem land, Northern Territory, Australia found people with greater involvement in caring for country practices were more likely to engage in frequent physical activity, had lower BMI, and reduced disease severity for diabetes, renal disease and hypertension.⁵⁹ In addition, evidence from qualitative studies highlights participants' views that being out in the bush and participating in activities related to caring for the country strengthens their spiritual and cultural identity and empowers the community.^{24,63}

When visiting the *country* or *whenua*, Australian Indigenous and Māori peoples experience various emotions that affect their SEWB. For example, the positive emotional experiences were "sense of welcome", "belongingness," and "getting answers from nature" while negative feelings such as a "warning not to be there" or "sadness" referred to visiting the burial sites, and damaged sacred places.²⁴ In addition, "caring

for country" activities helped strengthen guardianship relationships with the land.⁶² However, some participants suggested that natural environments outside the country do not provide the same experience as their own country.²⁴

In addition to health promotion programs, the application of "caring for country" in clinical encounters, care planning and delivery based on "Indigenous ways of knowing and being" are central to the success of the Western approach to health interventions. The reflective case report by Vance et al. highlights that the "Indigenist approach" in providing clinical acknowledgment of patients' connection with the country leads to improved compliance with cognitive behaviour therapy and medication programme.⁶⁴ The authors emphasised that clinicians' awareness of Indigenous people's interconnection with the community and the country is essential for initiating genuine and explicit dialogues and evincing greater faith in the clinical management process.⁶⁴

It is worth highlighting that any discourse on the Indigenous relationship with the *country* or *whenua* and associated SEWB needs to understand the historical and ongoing impact of colonisation and prevailing western health and land management systems. Colonisation in Australia and Aotearoa, New Zealand, has transformed the human relationship with the environment to one of utilisation, creating substantial barriers and disruptions to opportunities for Indigenous people to experience and express their relationship with the *country* or *whenua*. Consequently, any efforts to understand the relationship with the *country* and *whenua* within health promotion services need to be proactively aware of these ongoing barriers that impact Indigenous relationships with the *country* or *whenua*.

The consideration of nature-based approaches to fostering SEWB in Indigenous Australians and Māori has the potential to identify untapped opportunities in this underdeveloped area of study. The focus of this review was on nature-based approaches that include direct interactions with nature. However, there are other ways. Indigenous people can experience and benefit from their relationship with the *country* or *whenua* that doesn't necessarily require direct contact with nature. For example, cultural practices such as dance, song, art and painting, weaving and carving (whakairo), totems and lineage may all relate to and build on a sense of connection with *country* and *whenua*. Furthermore, excluding studies published in languages other than English is a limitation of this review that could have affected the information reported in this review. Further research is required to explore the diverse and complementary ways Indigenous people form and sustain a relationship with the *country* and *whenua*, and how this connection can inform appropriate and meaningful approaches for promoting Indigenous well-being.

The lack of research on "caring for country" and SEWB of Indigenous people is a major gap in the extant literature. Furthermore, the existing evidence has several limitations, such as sample size, evidence from only a few Indigenous groups, limits in covering the diversity of the cultural groups and cross-sectional design providing only a snapshot of the contribution of "caring for country" in SEWB of Indigenous peoples. Evidence from large population longitudinal studies, such as the Mayi Kuwayu, will help understand the connection between the country and Indigenous peoples' SEWB.⁶⁵

Conclusion

Despite the integral role of connection with *country* or *whenua* in Indigenous conceptualisations of health, incorporating nature-based approaches into mainstream mental health systems in Australia and Aotearoa New Zealand remains underutilised. However, recognition of the importance of the relationship between health and connectedness to *country* or *whenua* is growing. While recent mental health policy has sought to integrate Indigenous understandings and models of health and well-being, there is still a concern about whether these efforts will be sufficient to transform persisting Indigenous health disparities. Application and assessment of connection to *country* and *whenua* in improving the SEWB of Indigenous peoples offers an untapped opportunity to design effective health programs rooted in the holistic concept of health and well-being and community ownership.

Contributors

YF and AC conceived the idea for the study and led the development of the writing for the study protocol and abstract. YL, JD, SS, SK, and VS also had input into developing the study protocol and manuscript preparation. YL undertook the database searching; screening of all titles, abstracts, and full texts; and data extraction. AC, YF and JD undertook independent screening and data extraction. Indigenous authors on the team (SK, SS and VS) contributed to developing the search strategy, identifying relevant databases, defined the key terms used in the study, developed data extraction tool, reviewed quality assessment and supported in manuscript development and information sharing from Indigenous perspectives. All authors made a substantial contribution to the writing of the abstract and have seen and approved the final version for publication.

Declaration of interests

We declare no competing interests.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.lanwpc.2022.100648>.

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