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Original Article

Health promotion and sustainability programmes in Australia: barriers and enablers to evaluation

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Abstract: In an era characterised by the adverse impacts of climate change and environmental degradation, health promotion programmes are beginning to actively link human health with environmental sustainability imperatives. This paper draws on a study of health promotion and sustainability programmes in Australia, providing insights to evaluation approaches being used and barriers and enablers to these evaluations. The study was based on a multi-strategy research involving both quantitative and qualitative methods. Health promotion practitioners explained through surveys and semi-structured interviews that they focused on five overarching health and sustainability programme types (healthy and sustainable food, active transport, energy efficiency, contact with nature, and capacity building). Various evaluation methods and indicators (health, social, environmental, economic and demographic) were identified as being valuable for monitoring and evaluating health and sustainability programmes. Findings identified several evaluation enablers such as successful community engagement, knowledge of health and sustainability issues and programme champions, whereas barriers included resource constraints and competing interests. This paper highlights the need for ecological models and evaluation tools to support the design and monitoring of health promotion and sustainability programmes.

Keywords: evaluation, environmental sustainability, ecological health promotion, mixed methods, health promotion

Introduction

There is a plethora of evidence that underscores the negative human health impacts of climate change and environmental degradation (1,2). Leading health and environmental science authorities, including the Intergovernmental Panel on Climate Change and World Health Organization (3,4), identify multiple social, economic and environment consequences of climate change and impacts on global burden of disease. The association between poor health outcomes related with degraded environments exacerbate existing health inequities evident in low-income and disadvantaged communities (4,5).

Since the 1980s, Western constructs of health have evolved from purely medical origins, shifting to approaches that recognise environmental and social determinants of health (6). Health promotion mandates have supported this, as is evident in the Ottawa Charter for Health Promotion and the Bangkok Charter of Health Promotion in a Globalized World (7,8). The Ottawa Charter advocated for stable ecosystems and sustainable resources to inspire a holistic, inter-sectoral approach to health (7). One theoretical framework moving towards a holistic, systems thinking and sustainability imperative is the ecological model of

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health, encapsulated within the Mandala of Health Model (9). This model emphasises the intertwining of natural, medical and social sciences and their impacts on individuals and communities (10). Health from an ecological perspective acknowledges that the health of individuals and communities are dependent upon the health of the planet (11).

Despite critiques that health promotion has not fully embraced an ecological perspective (12–14), there is evidence to suggest the field is engaging with relevant global environmental and social challenges and strategies like participatory governance, risk assessment and inter-sectorial partnerships (15–17). As such a paradigm appears to be emerging, that recognises the significance of our ecosystems (18,19), which may be broadly defined as ecological health promotion, public health ecology or ecosystem approaches to health (20–22). Within this paradigm, strategies to promote environmental sustainability are seen as integral to promoting human health, equity and wellbeing (23,24).

However, to date there is scant documentation of where health promotion and environmental sustainability have merged and therefore embraced these ecological perspectives in practice and within planning and evaluation processes. Research in Australia has documented the benefit of the merging of health promotion and sustainability programmes (23–25). This research demonstrated that community level health promotion practitioners are endeavouring to incorporate concerns for the environment, in particular climate change, into their practice. This research also revealed a number of barriers to this work, including: a limited evidence base for effective health and sustainability strategies; a lack of health and sustainability planning and evaluation tools ; and practitioner knowledge of relevant evaluation indicators and measures (23).

This paper identifies health promotion and sustainability programmes across Australia, highlighting the evaluation approaches being used and barriers and enablers to evaluating such initiatives. The paper aims to stimulate thinking and debate about the extent to which ecological models are guiding health promotion practice and evaluation design.

Methodology

This study, which was guided by the principles of ethnography (26), applied multi-strategy research combining both quantitative and qualitative methods (27). This approach enabled data triangulation and an understanding of programme evaluation strategies being applied within health promotion and sustainability programmes at a community level in Australia (28). The research project was conducted with approval of the Human Research Ethics Committee (Human Research Ethics Committee of Deakin University: Code H96_2013).

Purposeful sampling strategies, namely snowball and maximum variation sampling, guided participant recruitment. Snowball sampling leverages existing networks to recruit study participants was appropriate given the database of contacts developed in the author's previous studies (29). Maximum variation sampling supported the researchers in attempting to gain the widest range of participant diversity in the sample population (i.e. participants working in different types of agencies, settings and geographical locations of Australia), and because it has been recommended for health promotion research (28). Participation in the survey and interviews was open to health promotion practitioners delivering health and sustainability programmes at the community level in Australia.

Survey

The survey was a cross-sectional design (28,31), developed from the variables and patterns identified within the authors qualitative case study research previously implemented in Victoria, Australia (references withheld). The survey design was based on a combination of structured, semi-structured and demographic questions (32). The survey instrument was pre-tested by five colleagues (fortnightly over two months) to check for meaning and measure its effectiveness in responding to the aims of the study. The pre-test participants included three academics with qualifications in ecological health promotion and experience working in the sector and two health promotion practitioners working in the sector. The 23 questions were structured across five themes: consent to participate; demographic information; organisational priorities; programme profiles; and evaluation tools and indicators. Once all inter-observer reliability tests were complete the final 23-question survey instrument was launched via Survey Monkey.

Survey participants were recruited via the research team's existing database of health and sustainability professional associations in Australia. Working

from an initial list of thirty, the researchers contacted each association to request that they distribute the survey to their membership list. Fifteen organisations/associations agreed to distribute the survey, including the national and state level branches of the professional associations working in the health promotion and public health space. The survey was open online for eight weeks with 82 individuals participating in this component of the study. The final sample consisted of:

- Gender: 21 males; 61 females
- Age ranges: 4 (18–25 years); 28 (25–35 years); 16 (35–45 years); 19 (45–55 years); 13 (55–65 years); 2 (65+)
- Locations: 33 Victoria; 17 New South Wales; 10 Queensland; 2 Australian Capital Territory; 6 Tasmania; 6 Western Australia; 4 Northern Territories; 4 South Australia
- Agency types: 33 non-government (e.g. primary health care agencies); 34 government (e.g. local government); 15 other (including health and sustainability consultancy).

After the data collection period the data was cleaned, tested on SPSS and Excel. Due to a statistically low number of participant responses (and a decline in response rate as the survey progressed) the data was handled as and used for descriptive purposes only to develop a broader understanding of the topic. The results were analysed, coded in tables and for participant quotes, NVivo was applied.

Interviews

Semi-structured interviews were applied to strengthen the survey results and build a richer picture of health and sustainability programmes and evaluation approaches. Potential interview participants were identified via three mechanisms: invitation to participate at the end of the survey; through direct contact with potential participants from the researchers' existing database; and referrals from other participants. Twenty participants were contacted in order to assess their interest and suitability for participation, with 11 interviews undertaken. Although the sample was intended to be nationwide participants were all from eastern states. The participant profiles consisted of:

- Gender: 5 males; 6 females
- Age ranges: 3 (25–35 years); 6 (35–45 years); 2 (45–55 years)
- Locations: 6 Victoria; 2 New South Wales; 2 Queensland; 1 Australian Capital Territory
- Agency types: 4 non-government; 5 government; 2 other.

Eight interviews were undertaken via telephone and three face-to-face at the participant's agencies. The semi-structured interview schedule included demographic and open-ended questions to understand the experiences of participants. The interview questions were structured around five themes: participant demographics; current or planned health and sustainability programmes; evaluation activities/tools for these programmes; barriers and enablers to programme evaluation; and evaluation framework recommendations. All interviews were audio-recorded and transcribed verbatim. De-identified transcripts were then sent to individual participants for 'member checking' (31). Transcripts were then uploaded too and analysed within NVivo.

The analysis was guided by techniques used in ethnographic analysis, for example, the identification of 'patterned regularities' and 'rich points' (33). Wolcott's ethnographic framework for data analysis was applied (26), including description, analysis and interpretation. The *description* stage involved developing a profile of each programme and the evaluation techniques being used by reading transcripts, highlighting themes and making notes. The *analysis* stage highlighted themes based on 'patterned regularities' emerging from the various data sources (33), including overarching programmes types. This process resulted in the identification of several 'rich points' (e.g. contradictions, departures from expectations, repackaging of ideas and repetition) (33), which were considered to inform the findings. These findings were then represented as a thematic narrative supported by participant quotes.

After analysis of the qualitative component was completed the data from the survey and interviews was triangulated using thematic and content analysis (28,29). The outcome was a representation of the programmes and evaluation approaches being used within Australia through a narrative, replete with tables and participant quotes. In the

interpretation stage, the triangulated data was considered in relation to evaluation and health promotion literature.

Results

Programme types

The interview and survey data revealed five overarching health and sustainability programme types in Australia:

- Sustainable and healthy food (community gardens; food co-operatives; farmers' markets; and food security initiatives);
- Active transport (cycling and walking initiatives in schools, workplaces and public housing estates; and cycling infrastructure/policy);
- Energy efficiency (household and organisation energy efficiency programmes; renewable energy; and greenhouse gas (GHG) emission reduction campaigns);
- Contact with nature (green volunteering; environmental stewardship initiatives; and health promotion in open space); and
- Capacity building (partnerships; and workforce/organisational development).

Five survey questions prompted descriptions of these programmes and the interviews provided the context. The results indicated that populations targeted were based on variable geographies (urban, rural and regional), age (children and the elderly) or socio-economic status (public housing residents). 'Geographical community' was the primary setting but some participant's specified schools, workplaces or health services. Strategies spanned risk assessments and traditional community level 'midstream' health promotion approaches like behaviour change, education and training. 'Upstream' interventions including community action, policy development and advocacy were also described.

Evaluation approaches

The survey revealed that most evaluations of health and sustainability programmes were conducted in-house by programme staff (48%). Approximately 29% of programme evaluations were undertaken by academics from research institutions, 14% by evaluation consultants and 19% led by the community. Interview participants indicated a similar range of inputs to evaluation. One participant highlighted the complexity and variability surrounding who leads these evaluations:

> Typically get an independent third party to do it, a research institution like a university, or occasionally a consultancy. There were some that we did in-house when we didn't have the required resources to engage a research institution. (Practitioner 5)

The research highlighted that surveys were the most popular evaluation tool followed by qualitative approaches like interviews, case studies and administering focus groups. Participatory research techniques (characterised by active involvement of programme participants in research planning, design and outcomes) were used by 38% of the survey respondents. This quote from a practitioner highlights multiple methods were often applied:

> We use a mix of pre and post surveys, participant interviews or sometimes focus groups. We are now starting to look more to participatory methods. (Practitioner 3)

Survey questions demonstrated that most evaluations were mixed methods. The majority of participants reported the collection of quantitative data (86%) followed by qualitative data (69%) and case studies (62%). Anecdotal evidence (48%), document reviews (43%) and narratives (38%) were also popular whereas only 17% of data was collected on a longitudinal basis. The survey questions identified the types of indicators used in these evaluations (Table 1) with demographic, health and social indicators prioritised over environmental and economic indicators.

The interview data also established the range of key indicators and tools being used to evaluate health and sustainability programmes. Common to all interviewees testimonies were the use of 'process' (reach of the programme, participant satisfaction) and 'impact' (short to medium term effects on

Table 1. Indicators used in health and sustainability programme evaluations.

Health	*Social*	*Environmental*	*Economic*	*Demographic*
Physical health; Walkability; Human wellbeing; Social health; Mental health	Access to affordable healthy food; Human capital; Access to local food and produce; Social capital; Increasing equity and reducing inequalities	Sustainable transport; Use of green spaces; Environmental burden of disease; Pro-sustainability behaviour change and attitudes; Energy conservation and efficiency (GHG emissions)	Economic benefits from participants; Costs of living/use of utilities; Economic capital; Regional development and protection	Demographic profiles of participants; Programme reach; Participation rates; Rates of volunteerism

humans and environment) indicators. This participant quote demonstrates that programme logic was a popular tool:

> Our evaluations are guided by programme logic because it's still the preferred framework. (Practitioner 1)

Table 2 demonstrates the methods being used by participants as categorised by five overarching programme types. Table 2 suggests that the common method for evaluations were surveys that measured participation and satisfaction rates along with changes in behaviour and knowledge.

Barriers and enablers to programme evaluation

In both the survey and interviews, participants were asked to identify barriers and enablers to health and sustainability programme evaluations. In the survey the key enablers were: 'interest from the community, agency, partners, team' (61%: n = 50); 'knowledge and awareness of key health and sustainability issues' (59%: n = 48) and 'programme champions' (50%: n = 41). The major barriers to evaluation were 'resource constraints' and 'competing priorities' (83%; n = 68). Participants were unsure whether 'understanding of climate science' (46%; n = 38) was an enabler or barrier to evaluation. 'Planning/evaluation tools & frameworks', 'evidence base' and 'organisational mandate to do this work' were factors that were primarily considered as enablers but none-the-less more evenly spread across 'not sure' or 'barrier to evaluation'.

The interview participants' responses elicited more detailed explanations of the conditions that support evaluation. Table 3 highlights themes that emerged with indicative quotes (refer parenthesis). The table demonstrates interview participants oscillated between describing generic barriers and enablers to health promotion evaluation and more specific challenges of the nexus between health promotion and environmental sustainability programme evaluation work.

Table 3 suggests there are multiple barriers to evaluation that sit outside of the current influence of health promotion practitioners. For this work to become embedded, larger scale system/structural level barriers need to be overcome. The findings emphasise the need for greater collaboration across sectors and disciplines.

Discussion

The study illustrated in ecological health promotion practice there were five overarching programme types through which practitioners were engaging with individuals, communities and systems that applied biomedical, lifestyle and social-environmental approaches (34). This research was consistent with previous studies (23,24,35,36), which emphasised that community-level health promotion programmes were beginning to address sustainability and climate change imperatives, however, there were barriers to this incorporation. These same barriers make evaluation of these initiatives challenging.

Practitioners in the study were transferring or extending existing health promotion frameworks, including evaluation mechanisms, to support work at this nexus. The evaluation tools (surveys, interviews, observations) and methods (qualitative,

Table 2. Programme type versus evaluation methods and indicators used.

	Evaluation methods and tools	*Process indicators*	*Impact and outcome indicators*
Active transport	Staff surveys (attitudes and behaviour); Randomised control trials; Case studies; Pedometers; Active transport applications; Workplace travel planning & evaluation tools	On time and within budget; Reach of programme or policy; Participation rates	↑ safety and number of people cycling, physical activity; ↑efficacy of workplace travel plans for improving employee health; ↓ transport congestion; Changes in transport mode
Healthy & sustainable food	Pre and post surveys; document analysis; interviews; Programme logic model; Community kitchen evaluation toolkit	Participant satisfaction; Participation rates; Reach to vulnerable population groups	Rates of nutrition; ↓ hunger and poverty; ↓ food miles; Social relationships; Cultural wellbeing; Access to resources; Ability to access local foods; Community resilience; Skill development; ↑ mental health, local & fresh foods; Cooking skills
Contact with nature	Key informant interviews; Focus groups; Most significant change	Participation rates; Programme uptake	Pro-citizenship behaviour; pro-environmental behaviours and attitudes; ↑ social inclusion, contact with green space, mental health
Energy efficiency	Phone interviews; Pre and post surveys; Document analysis	Reach to vulnerable population groups; Participant satisfaction	Use of subsidies; ↑comfort, social inclusion; Household energy efficiency; Community resilience to heatwaves; ↓ GHG emissions, energy use
Capacity building	Media analysis; Programme event logs; RE-AIM (reach, efficacy, adoption, implementation, maintenance) reporting on energy, water and waste; Pre and post surveys; Focus groups; Action research	Number of staff trained and people joining the campaign; Participant satisfaction	↓ resource use; Knowledge and behaviour change; ↑ energy efficiency; ↓ carbon emissions; Skill development; Pro-environmental attitudes; Perceived capacity to promote sustainability, equity and community participation

quantitative, experimental, participatory) were atypical of the diversity and richness of conceptualisations and methods currently used in health promotion evaluation (37). Evaluation designs reflected the plurality of accepted practices in the field of evaluation and those applied in the complex and value-based practice of health promotion (37). Not surprisingly, given its status in Australian government evaluation practice and within public health traditions, the programme logic-based approach to programme evaluation was a commonly used framework. Participants also reported the routine collection of demographic information and the use of traditional health promotion impact indicators linked to physical, mental and social health.

Perhaps more pertinent though, was that participants testified to grappling with 'sustainability' indicators (Table 1) conveying their endeavours to build in 'environmental domains' into their health and sustainability programme evaluations. This was significant given calls by ecological public health practitioners, Brown and colleagues (38), to observe the complex and interactive health-environment system over time, allowing for feedback throughout the programme delivery (formative evaluation) as

Table 3. Enablers and barriers to evaluation of health promotion and sustainability programmes.

	Enabler	*Barrier*
Tools & frameworks	**Exiting frameworks and guidelines:** 'we draw from a list of multi-faceted indicators that span social, health, economic and environmental dimensions' **Transferable tools:** 'we use the same ecological frameworks that we use to guide the initial steps of good health promotion practice'	**Lack of indicators:** demonstrating impacts and outcomes **Difficult to show causality** between intervention and multiple impacts **Lack of tools** 'to measure GHG emissions and sustainability outcomes' **Lack of explicit indicators:** 'environmental sustainability objectives are implicit and difficult to measure'
Evidence	**Desire for evidence:** 'it helps practitioners when the decision-makers want evidence' **Availability of evidence from other programmes** 'improves the perception that this is worthwhile, doable'	**Consultation and evaluation fatigue:** 'our approach is to gain maximum information with minimal input' **Design and recruitment issues**
Prioritisation	**Organisation prioritises health and sustainability:** 'here they are seen as linked and inter-dependant priorities'	**Delivery & outputs prioritised over evaluation:** 'there is a focus on targets & pressure to keep delivering' **Differences between practitioners versus managers priorities** **Competing priorities:** 'what is measured is driven by priority health areas, not sustainability'
Valuing	**Organisational leadership valuing evaluation:** 'It's critical to have top-down and bottom-up support'	**Evaluation not valued by decision-makers:** 'a perception that evaluation findings don't influence decision-making processes' **Lack of appreciation for research & evaluation:** 'it's sometimes perceived as a promotional activity… there is a cyclic valuing of evaluation… it's currently out of favour'.
Resources	**Allocated evaluation resources:** existence of a research officer, an evaluation budget and time allocation in staff workloads	**Funding timeframes:** '12–36 months is insufficient to demonstrate outcomes' **Lack of grant success to support evaluation:** 'grant fatigue' **Lack of resources:** skills, information and funding **Inadequate level of personnel and time:** 'to collect data'

(Continued)

Table 3. *(Continued)*

	Enabler	*Barrier*
Professional competencies	**Evaluation experience and knowledge:** 'practitioner knowledge of how to apply and adapt tools, make conceptual leaps, be flexible and creative in their approach and/or knowledge of good evaluation design'.	**Relative power and competencies issues:** 'Project officers are tasked with driving implementation and evaluation of complex interventions' **Competencies in designing and implementing evaluation:** health promotion practitioners being able to do evaluation in practice **Skills and understanding of complex multi-benefit evaluation:** 'lack of competencies to build tools and research designs to evaluate environmental sustainability' **Health promotion practitioners not trained in environmental sustainability:** 'It's an emerging area – health promotion practitioners are still confused about where it fits'.
Policies & mandates	**Supportive policies and mandates:** 'its helps if you have supportive government departments prioritising systems evaluation… policy documents that guide practice or supportive political environment for climate change and environmental sustainability work'	**Insufficient co-benefit evaluation mandates:** 'it's difficult merging environmental sustainability into the Health Promotion planning and evaluation agenda' **Lack of direction or mandate:** 'lack of policy and guidelines means senior managers can't get the link between sustainability and health promotion'
Systems	**Existing data:** 'it's useful to have access to databases and existing data' **Organisations who have established, local reporting processes:** that extend beyond funder requirements	**Broader structural problems:** 'departmental silos and lack of alignment of knowledge of what others are doing means indicators get devolved into different programme areas' **Evaluation not built into KPIs**
Partnerships	**Established partnerships:** with government departments, academic institutes and independent evaluation groups **New partnerships:** 'we have actively sought inputs from the community, sustainability experts, local planners and people that are thinking holistically'	**Partner priorities:** 'not interested in measuring environmental sustainability' **Lack of appropriate inter-agency and cross-disciplinary partnerships causing different 'evaluation speak' across sectors:** 'Expertise stills sits in universities but lack of capacity to practice in community'

well as evaluation of the final outcome (summative evaluation). Notably some participants in the study were actively fostering new partnerships, bringing together multiple experts and community stakeholders in an attempt to devise a more holistic set of programme indicators. These practitioners were doing what numerous authors believed was essential when working in the nexus of health and sustainability (21,24,38), i.e. incorporating different constructions of knowledge through constructive collaboration and the development of socio-ecological based evaluation frameworks which more adequately embrace complexity.

Worthy of note was the fact that in their endeavours to organise the complexity, participants were plagued by familiar concerns for 'certainty' in collecting evidence, in that they prioritised deductive thinking in an attempt to quantify programme results (38). These were considered existing barriers to evaluation and the participants' opinions were consistent with the argument that there are numerous methodological issues inherent to the health promotion evaluation that reach beyond the normal problems of programme evaluation (37). Participants testified to multiple barriers (Table 3), which were further complicated by the new layer of complexity presented by designing and resourcing programme evaluation at the nexus of health and sustainability. Participants implicitly acknowledged that existing approaches to evaluation fall short in addressing future-oriented and complex problems – which is characteristic of health and sustainability work (38).

There were various enablers identified in this study. The main enablers included: stakeholder interest/understanding of key issues and evaluation design; programme champions willing and able to make the conceptual leaps; and practitioners committed to working collaboratively with diverse stakeholder. The enablers identified were also consistent with research (23,36) that found a range of enablers across the health system (individual professional competencies through to supportive government policy) were required to positively reinforce programme planning and evaluations.

A strength of the present study was that it provided a snapshot of health and sustainability programs in Australia by using a mixed methods approach. Conversely, limitations of the study were that the authors were unable to obtain an overall response rate for the survey; and ensure representation nationwide (the findings were skewed to eastern states). The study findings would have been strengthened had the study been able to garner the views of practitioners equally across Australia.

Conclusion

It is promising that health promotion practitioners in Australia are engaging with health and sustainability issues. However, this study identified a triple layer of difficulty in evaluation practice (conducting basic evaluation is difficult and when coupled with health promotion and then sustainability, it becomes more complex) and the need for holistic ecological models to guide practice. Even with compelling scientific evidence and the emergence of ecological health promotion, there is no codebook to guide early adopters. Practitioners are faced with the monumental task of problem-solving and solution generation for complex health and sustainability issues inside a system oriented toward linear thinking and single issue approaches. To achieve the necessary shift in practice, there needs to be continued commitment to developing holistic ecological models that are both theoretically sound and can be readily applied to support practice. This could be enabled through increased engagement between health promotion and sustainability practitioners and the development of evaluation tools to support monitoring of community level programmes.

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Conflict of interest

The authors declare that there are no conflicts of interest.

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References

1. Patz JA, Gibbs HK, Foley JA, Rogers JV, Smith KR. Climate change and global health: quantifying a growing ethical crisis. EcoHealth. 2007; 4: 397–405.
2. Strand LB, Tong S, Aird R, McRae D. Vulnerability of eco-environmental health to climate change: the views of government stakeholders and other

specialists in Queensland, Australia. BMC Pub Health 2010; 10: 441–450.
3. Intergovernmental Panel on Climate Change. Fifth Assessment Report Climate Change 2013: The Physical Science Basis, 2013. Available from: http://www.ipcc.ch/report/ar5/wg1/
4. World Health Organization. Climate Change and Health. Geneva: WHO; 2014. Available from: http://www.who.int/mediacentre/factsheets/fs266/en/
5. Arabena K, Kingsley J. Climate change: impact on country and Aboriginal and Torres Strait Islander culture. In: Walker R (ed) Climate Change Adaptation for Health and Social Services. Canberra: CSIRO; 2015: 141–158.
6. Park JJ, O'Brien L, Roe J, Ward-Thompson C, Mitchell R. The natural outdoors and health: assessing the value and potential contribution of secondary public data sets in the UK to current and future knowledge. Health Place. 2011; 17: 269–279.
7. World Health Organization. The Ottawa Charter for Health Promotion. Paper presented at the First International Conference on Health Promotion. Ottawa: WHO; 1986. Available from: http://www.who.int/healthpromotion/conferences/previous/ottawa/en/
8. World Health Organization. The Bangkok Charter for Health Promotion in a Globalized World. Bangkok: WHO; 2005.
9. Hancock T, Perkins F. The mandala of health: a conceptual model and teaching tool. Health Promot. 1985; 24: 8–10.
10. Nicholson R, Stephenson P. Environmental determinants of health. In: Keleher H, Murphy B (eds) Understanding Health: A Determinants Approach. Melbourne: Oxford University Press; 2004: 23–39.
11. Dustin DL, Bricker KS, Schwab KA. People and nature: toward an ecological model of health promotion. Leis Sci. 2009; 32: 3–14.
12. Butler CD, Friel S. Time to regenerate: ecosystems and health promotion. PLoS Med. 2006; 3: e394.
13. Masuda JR, Poland B, Baxter J. Reaching for environmental health justice: Canadian experiences for a comprehensive research, policy and advocacy agenda in health promotion. Health Promot Int. 2010; 25: 453–463.
14. Coutts CJ, Taylor C. Putting the capital "E" environment into ecological models of health. J Environ Health. 2011; 74: 26–29.
15. Fidler D. Health as foreign policy: harnessing globalization for health. Health Promot Int. 2006; 21(Suppl. 1): 51–58.
16. McMichael AJ, Butler CD. Emerging health issues: the widening challenge for population health promotion. Health Promot Int. 2007; 21(Suppl. 1): 15–24.
17. Lee K. Global health promotion: how can we strengthen governance and build effective strategies? Health Promot Int. 2007; 21(Suppl. 1): 42–50.
18. Rapport DJ, Howard J, Lannigan R, McCauley W. Linking health and ecology in the medical curriculum. Environ Int. 2003; 29: 353–358.
19. Hansen-Ketchum PA, Marck P, Reutter L. Engaging with nature to promote health: new directions for nursing research. J Adv Nurs. 2009; 65: 1527–1538.
20. Parkes MW, Horwitz P. Water, ecology and health: ecosystems as settings for promoting health and sustainability. Health Promot Int. 2009; 24: 94–102.
21. Bunch MJ, Morrison KE, Parkes MW, Venema HD. Promoting health and well-being by managing for social–ecological resilience: the potential of integrating ecohealth and water resources management approaches. Ecol Soc. 2011; 16: 6–23.
22. Patrick R, Kingsley J, Capetola T. Health-related education for sustainability: workforce needs and the role of higher education. Aust J Environ Educ. 2016 ; 32: 192–205.
23. Patrick R, Capetola T, Townsend M, Hanna L. Incorporating sustainability into community-based healthcare practice. EcoHealth. 2011; 8: 277–289.
24. Patrick R, Capetola T. It's here! Are we ready? Five case studies of health promotion practices that address climate change from within Victorian health care settings. Health Promot J Aust. 2011; 22, 61–67.
25. Rance A, Fünfgeld H, Brown J. Rural People; Resilient Futures Pilot Project-Building Blocks of Rural Community Resilience. Melbourne: RMIT University; 2015. Available from: https://www.researchgate.net/publication/281264945_Building_blocks_of_rural_community_resilience_Rural_People_Resilient_Futures_Pilot_Project_Final_Report
26. Wolcott H. Transforming qualitative data: description, analysis and interpretation. In: Creswell J (ed.) Qualitative Inquiry in Research Design: Choosing Among Five Traditions. Thousand Oaks, CA: Sage Publications; 1994.
27. Bryman A. Social Research Methods. Oxford: Oxford University Press; 2004.
28. Creswell JW, Plano-Clark VL. Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: Sage Publications; 2007.
29. Minichiello V, Sullivan G, Greenwood K, Axford R. Handbook of Research Methods in Nursing and Health Science. 2nd ed. Victoria: Prentice Hall Health; 2004.
30 Patrick R, Capetola T. It's here! Are we ready? Five case studies of health promotion practice that address climate change within Victorian health care settings. Health Promot J Austr 2011; 22: 61–67.
31. Creswell JW. Qualitative Inquiry and Research Design: Choosing among Five Traditions. Thousand Oaks, CA: Sage Publications; 2007.
32. Gay L, Mills G, Airasian P. Educational Research: Competencies for Analysis and Applications. New Jersey: Pearson Education; 2006.
33. Agar M. How to ask for a study in qualitatisch. Qual Health Res. 1999; 9: 684–698.
34. Labonte M. Health Promotion and Empowerment: Practice Frameworks. Toronto: Centre for Health Promotion and ParticAction; 1993.
35. Rowe R, Thomas A. Policy signpost #3: climate change adaptation: a framework for local action, Southern Grampians and Glenelg Primary Care

Partnership. Melbourne: The McCaughey Centre, VicHealth Centre for the Promotion of Mental Health and Community Wellbeing; 2008.
36. Olaris K. Community health services and climate change: exploring the sector's capacity to respond. Environ Health. 2008; 8: 8–41.
37. Rootman I, Goodtadt M, Hyndman B, McQueen DV, Potvin L, Sringlett J, et al. Evaluation in Health Promotion: Principles and Perspective. Geneva: WHO regional publications. Europena series; No. 92, 2001. Available from: http://www.euro.who.int/__data/assets/pdf_file/0007/108934/E73455.pdf
38. Brown VA, Gootjans J, Ritchie J, Jordan H. Scoping: designing and monitoring sustainability and health programs. In: Brown V, Grootjans J, Ritchie J, Townsend M, Verrinder G (eds) Sustainability and Health: Supporting Global Ecological Integrity in Public Health. Crows Nest: Allen & Unwin; 2005: 164–189.