



## Review Article

## The development of a model of community garden benefits to wellbeing

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## ARTICLE INFO

## Article history:

Received 29 February 2016

Received in revised form 13 April 2016

Accepted 20 April 2016

Available online 21 April 2016

## Keywords:

Knowledge translation

Community

Gardens

Wellbeing

Health promotion

## ABSTRACT

Community gardens contribute to community wellbeing by influencing the nutritional and social environment. The aim of this research was to develop a model that communicates the many benefits of community garden participation as described in the academic literature, to a diverse audience of laypersons. This model is an example of effective knowledge translation because the information is able to be more than simply understood but also practically applied. From April to August 2015, a model depicting the many benefits of community garden participation was prepared based on a global, critical literature review. The wellbeing benefits from community garden participation have been grouped into factors influencing the nutritional health environment and factors influencing the social environment. The graphic chosen to form the basis of the model is a fractal tree of life. In October 2015, to test the models comprehension and to obtain stakeholder feedback this model was presented to a diverse group of community members, leaders and workers from the Tāmaki region of Auckland, New Zealand. The model we present here effectively and clearly translates knowledge obtained from the academic literature on the benefits to wellbeing from community garden participation into a tool that can be used, adapted and developed by community groups, government agencies and health promoters.

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## 1. Introduction

Community gardens are sections of land collectively gardened for the specific purpose of growing fruits, vegetables and/or herbs for self-consumption; and include allotments, school gardens as well as

teaching/demonstration gardens. Contemporary community gardens first became widespread across the United Kingdom, Europe and North America during the First and Second World Wars to supplement war-time food shortages (Ginn, 2012). These gardens played an important role in national food security, by supplementing rations and providing essential nutrients that were unable to be otherwise supplied by the food environment of the time (Buckingham, 2005). Community gardens today are often established by volunteers in the hope they will function as alternatives to the current food environment, providing

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opportunities for food and income generation and for urban residents to engage in outdoor physical and social activities.

Wellbeing is a multidimensional construct that is becoming an increasingly popular measure for health promoters, government agencies and academics as an indicator of societal contentedness and population progress. Wellbeing is more than the absence of disease; it encompasses optimal physical and mental functioning with resilience, positive emotional experiences and overall life satisfaction (Huppert and So, 2013). Wellbeing is important to consider in the context of community gardens because while wellbeing may not be the intended end goal of community gardens, many of the outcomes of community garden participation positively influence wellbeing.

Community gardens often occupy spaces of contested land use (Schmelzkopf, 1995) and are commonly run by layperson volunteers. Community gardens regularly require advocacy to secure funding needed for garden establishment and expansion, when obtaining or reobtaining permission for land use and in the face of public opposition (Schmelzkopf, 2002; Staeheli et al., 2002). Many articles on the health and social benefits of community garden participation have been published in the academic literature. To date this information has not been summarised in a form that effectively communicates the key messages to a wide audience of laypersons.

This research involved the development of a model that succinctly summarises the key findings from the literature. This model is an example of effective knowledge translation, where large quantities of academic research have been synthesised into an attractive format applicable for use and adaptation by community groups, health promoters and government agencies.

## 2. Methods

A literature review was conducted using the following databases: MEDLINE, PubMed, Scopus and PsycINFO with the keywords ‘community garden\*’, ‘allotment\*’, ‘school garden\*’ and ‘teaching garden\*’. In order to prevent publication bias, manual searches of references lists were also carried out. Only articles that had undergone peer-review were selected. Articles were excluded if they related to soil contamination and/or plant health, or were not published in English. Conference abstracts, dissertations, letters, and books were excluded, however reference lists of these information sources were checked for additional relevant publications. Searches were not restricted by date of publication.

Articles were read by the corresponding author and themes identified. Themes were grouped initially into two tiers: (Ginn, 2012) major themes (i.e. these themes included concepts that were multidimensional e.g. food security, healthy body weights, and physical activity) and (Buckingham, 2005) minor themes (i.e. these themes included specific concepts that, while complex, contributed to a major theme e.g. the economic benefits (minor theme) of community garden participation, receiving fruits and/or vegetables at little to no financial cost, can contribute to better food security (major theme) for the individual, their family and the community overall). What emerged from the grouping of themes were two distinct sets of major and minor themes. To encapsulate both sets of themes and to place them within an environmental context the following descriptive terms were chosen, the nutritional health environment and the social environment. Decisions on wording and grouping of themes occurred with advice and guidance from the additional authors.

For graphical representation, searches were conducted for nature or garden related images that could be modified into a diagram depicting the benefits to wellbeing from participation in community gardens. A range of sources was examined including: art and graphic design print media available in the Auckland City Library and AUT University Library collection, as well as photographs, infographics, and flow-charts publicly available on social media and through Internet search engines. The criteria for choosing the final graphic were: nature or garden

themed, eye-catching, and able to be understood by a wide lay audience without the need for accompanying text.

To test comprehension and to obtain stakeholder feedback a black and white version of the model was presented to a diverse group of community members in the East Auckland Region of Tāmaki New Zealand in October 2015. 24 stakeholders comprising community, religious, and cultural leaders, members of local community garden organisations, local council representatives and community health workers. Tāmaki was chosen as an appropriate location to test the model's comprehension, as it is young and culturally diverse with a high level of engagement and participation in existing community projects. Two of the three authors<sup>a,c</sup> have ties to the community.

## 3. Results

Articles meeting the inclusion criteria were read by the lead author and grouped inductively into themes. The themes were not predetermined but arose from the literature. A table of themes including how the major and minor themes are grouped can be seen in Table 1. The main themes included: healthy body weights, physical activity, food security, ownership and pride, urban beautification and community cohesion. The minor themes, where there was a contribution to each of the major themes was grouped as follows: fruit and vegetable consumption (Alaimo et al., 2008; Hanbazaza et al., 2015; Litt et al., 2011) and the influence of social networks (Zick et al., 2013) into healthy body weights; nature contact (Maller et al., 2006) and regular movement (Park et al., 2014) into physical activity; economic benefits (Litt et al., 2011; Wang et al., 2014) and shortened supply chains (Wang et al., 2014) into food security; crime reduction and decreased stress (Art McCabe, 2014) into ownership and pride; civic engagement (Saldivar-Tanaka and Krasny, 2004) and political activism (Litt et al., 2011) into urban beautification; and cultural identity (Graham and Connell, 2006; Li et al., 2010) and shared goals and experiences (Buckingham, 2005) into community cohesion.

Of the graphics that met the aforementioned inclusion criteria images based on trees and spirals were selected. Trees form an appropriate skeleton for this model as they are both nature and garden themed and easily recognisable globally. Spirals effectively symbolise infinite recursion and commonly occur in nature (e.g., pinecones, snails, sunflowers). The graphic chosen to base the model on was the fractal Tree of Life, essentially combining both trees and spirals.

The term community gardens were placed on the trunk of the tree to form the foundation of the branches of benefit to wellbeing. The two descriptive terms, the nutritional health environment and the social

**Table 1**  
Grouping of major and minor themes that arose from the literature.

Major theme	Minor theme	Reference
<i>Nutritional Health Environment</i>		
Healthy body weights	Fruit and vegetable consumption	Alaimo et al., 2008; Hanbazaza et al., 2015; Litt et al., 2011
	The influence of social networks	Zick et al., 2013
Physical activity	Nature contact	Maller et al., 2006
	Regular movement	Park et al., 2014
Food security	Economic benefits	Litt et al., 2011; Wang et al., 2014
	Shortened supply chains	Wang et al., 2014
<i>Social Health Environment</i>		
Ownership and pride	Crime reduction	Art McCabe, 2014
	Decreased stress	Art McCabe, 2014
Urban beautification	Civic engagement	Saldivar-Tanaka and Krasny, 2004
	Political activism	Litt et al., 2011
Community cohesion	Cultural identity	Graham and Connell, 2006; Li et al., 2010
	Shared goals and experiences	Buckingham, 2005

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