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Enhancing Māori food security using traditional *kai*

Christina McKerchar¹, Sharron Bowers², Craig Heta³,
Louise Signal² and Leonie Matoe⁴

Abstract: **Issue:** Lack of food security is one of the major nutrition issues facing Māori today. Loss of traditional *kai* (food) gathering places and practices following colonisation and urbanisation has impacted negatively on food security for Māori. This paper explores the role of Māori in enhancing Māori food security through revitalising traditional *kai*.

Methods: A narrative literature review of peer reviewed and grey literature on revitalising traditional *kai* for Māori was conducted. The focus was on two areas: increasing the availability of traditional *kai* to Māori households (such as through replenishing fish stocks, and gardening projects) and increasing the financial means available to Māori households to purchase food (by economic development of traditional *kai* industries and employment creation).

Results: A range of activities to improve food security for Māori by revitalising traditional *kai* was identified in the literature. Māori are now significant players in New Zealand's fishing industry, and are developing their horticultural resources. Gardening initiatives have also grown considerably in Māori communities. Enabling factors included: the return of traditional *kai* resources by the Crown, and successful pursuit by Māori of the legal rights to develop them; development of Māori models of governance; government policy around Māori economic development and healthy eating; and Māori leadership on the issue. Barriers to revitalising traditional *kai* that remain to be addressed include: tensions between Government and Māori goals and models of resource management; economic pressures resulting in severely depleted fishing stocks; and pollution of marine and freshwater fish.

Conclusion: Revitalising traditional *kai* has considerable potential to improve food security for Māori, both directly in terms of food supply and by providing income, and warrants policy and practical support. These findings have implications for other indigenous cultures who are struggling to be food secure.

Keywords: food security, Māori, public health nutrition, health promotion policy

Introduction

Lack of food security for Māori

Food security has been defined in mainstream nutrition research as the assured access to sufficient

food that is nutritious, of good quality, safe, meets cultural needs and has been acquired in socially acceptable ways (1). Lack of food security is a major public health nutrition issue internationally, including

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in developed countries (2–4). People who experience food insecurity tend to have lower intakes of fruit and vegetables and eat a less varied diet (5,6). Food insecurity has been associated with adult obesity (7,8), type 2 diabetes, poor academic development and poor mental health (5). Indigenous peoples tend to experience food insecurity at higher rates than other population groups (9,10). In the New Zealand context it is a major issue facing Māori today, and is associated with detrimental health outcomes such as obesity and diabetes (11,12). Māori are the indigenous people of New Zealand, making up 15% of the population in 2006 (13). In 2008/09, only a third of Māori households reported being *fully* or *almost* food secure, while 16% reported *low* food security. This compares to 59% of the total population reporting being *fully* or *almost* food secure, and 7% reporting *low* food security (3).

Higher rates of food insecurity for Māori are a reflection of the unequal access to the determinants of health experienced by Māori, for example in education, employment income and housing (14). Household income directly determines food availability (12) and Māori households tend to have lower incomes than other population groups in New Zealand (15).

Māori concept of food security

As in other indigenous cultures, food security has a more integrative meaning in Māori culture (16,17). Food security is integral to several cultural concepts and practices for Māori such as *mana* (authority) (16,18), *manaakitanga* (reciprocity of kindness, respect and humanity), and *mahinga kai* (traditional food gathering places and practices) (16). *Mahinga kai* encompasses relationships between environment and health (19), and reinforces *whakapapa* (genealogical ties), cultural identity and resilience (20).

Traditionally, the ability to provide ample *kai* (food) was a fundamental measure of wealth, representing economic and social power (18), and hence bestowing *mana*. The serving of traditional *kai* at *marae* (meeting places) events was an expression of *manaakitanga* (21). As noted by the Ministry of Health, ‘the practices that were developed for gathering and conserving *kai* served as protective health measures’ (16) for example not taking birds when they were nesting (22).

Historical background to decline of traditional kai

In pre-European times, Māori hunted and gathered *kai* from the bush, the sea and the rivers and cultivated a variety of crops (23). Many different customs governed the gathering, planting, harvesting, cooking, preservation and storage of foods. Food was distributed communally.

European colonisation resulted both in the introduction of new foods such as wheat and potatoes and new ways of living (18). Land loss through legislation and war meant the loss of traditional food gathering places and practices. Land being cleared for farming and increased pollution due to industry development also impacted on traditional food gathering sites (24). For many Māori today the loss of access to traditional foods, as a result of both colonisation and urbanisation (25), impacts negatively on food security (16,20,26).

It could be argued that Māori have experienced a nutrition transition over a 200 year period, ‘whereby traditional food and food habits have been progressively replaced by the globalised food system of the multinational corporations’ (9).

The rationale

Recent New Zealand research examining potential solutions to food security for Māori (the Enhancing Food Security and Physical Activity for Māori, Pacific and Low-Income Peoples [ENHANCE] project) recommended the revitalisation of traditional *kai* by Māori (12,27). Two solutions were identified from focus groups with communities and workshops with key stakeholders: increasing the availability of traditional *kai* to Māori households, for example through the replenishment of fish stocks or gardening projects; and increasing money available to households through the development of traditional food-based industries and employment opportunities for Māori (12).

There has been a resurgence of interest and activity by some Māori to revitalise traditional *kai* in recent years (19). This has occurred through a number of processes including: settlement of historical grievances by the government, resulting in return of economic resources; political activism; *marae* projects; and the activities of *whānau* (families) and individuals (19).

Given this interest among Māori, and the recognised potential of revitalising traditional *kai* to improve food security for Māori, it is timely to investigate this area. In this paper we use the term traditional *kai* to refer to food that Māori have traditionally gathered or grown, and non-traditional foods obtained using traditional methods such as introduced vegetables grown in a *māra kai* (vegetable garden).

This paper aims to explore the role of Māori in enhancing Māori food security through revitalising traditional *kai*. It attempts to do so using a Māori-centred research approach through Māori research leadership, applying Māori analysis and focusing on Māori development (28). In doing so, it aims to shed light on enhancing food security for other indigenous peoples.

Methods

The narrative literature search included both peer reviewed and grey literature due to the limited amount of published literature in this field, a common limitation for indigenous research (29). Peer reviewed literature was identified by searches conducted in the electronic databases Embase, Proquest, Scopus, and Index NZ. The databases were searched for all available years for each database, up to and including September 2012. Key authors were also followed up using Google Scholar.

Three sets of search terms, outlined in Table 1, were used to cover: 1. Definitions of food security for Māori; 2. Economic development in traditional *kai* industries; and 3. Community development in traditional *kai* practices.

Grey literature was initially identified by the research team and subsequently by snowball method drawing on local networks and connections. Google and Google Scholar were used to find websites containing information about organisations and individuals. Relevant links were followed from these websites to identify organisations, projects or key people not covered in the peer reviewed or other grey literature. The search was supplemented by reviewing references cited in each of the articles located in the peer reviewed and grey literature and retrieving all additional relevant references. Journals commonly cited were also hand searched. Thematic analysis (30) was used to analyse the data in the context of Māori centred research (28). The search strategy yielded literature on two overarching themes:

Table 1. Search terms.

Set 1: Defining food security for Māori

Food security OR food sovereignty OR resource management

AND

Māori OR indigenous

Set 2: Economic development in traditional kai industries

Each of the following terms: horticulture; agriculture; fisheries; marine fisheries; freshwater fisheries; aquaculture; polyculture; mataitai reserves*; agroecology**

AND

Mahinga kai OR *kai* OR traditional food OR food security

AND

Māori OR indigenous

Set 3: Community development in traditional kai practices

Each of the following terms: community gardens; organic gardening

AND

Mahinga kai OR *kai* OR traditional food OR food security

AND

Māori OR indigenous

*Areas for Māori customary food gathering which local Māori manage.

**The study of ecological processes that operate in agricultural production systems.

increasing availability of traditional *kai* to households and increasing *whānau* income as a result of subsequent economic development. Through a process of reading and re-reading the literature, led by the Māori researchers on the team CM, CH and LM, the authors agreed on a number of emerging sub-themes, including restoration of traditional *kai*, replenishing fish stocks, gardening projects, fisheries, aquaculture, horticulture and impact on *whānau* income. Further analysis also yielded the themes of enablers and constraints on the development of traditional *kai*. Throughout this process the focus was on the strengths of Māori in this domain, emphasising Māori development. The analysis attended to aspects of food security of importance to Māori, as identified from the earlier phases of the ENHANCE research (12,27) and from the experience of the Māori researchers leading the process.

Results

We present a narrative summary of the key themes identified, presenting each in turn.

Increasing availability of traditional kai to households

Restoration of traditional kai

Māori have long fought to protect traditional *kai* through legal means (31–33). Significantly, in 1984, the Ngati Pikiao *iwi* (tribe) prevented the local council polluting with sewerage the Kaituna river, from which they gathered *kai*. The council then developed a land-based method of disposal (31). As a result, the *iwi* now have a greater input into the management of the river resulting in improvements to the ecosystem, and an increase in shellfish at the river estuary at Maketu (personal communication, Eruera Maxted).

The loss of traditional *kai* areas throughout the South Island was a significant part of Ngāi Tahu's (the local tribe) grievance with the Crown. Te Waihora (Lake Ellesmere) was once a treasured fishery, but was polluted as farming intensified in the catchment area. As a result of the 1998 settlement, Ngāi Tahu had their property rights partially recognised with ownership of the lakebed, and a joint management role with the Department of Conservation was created. However, because this does not extend to a decision-making role over matters relating to water quality and catchment land use, Māori values can only be partially recognised (34).

The rights of Māori to take part in managing freshwater resources are recognised as part of the Resource Management Act including the recognition of *kaitiakitanga* (guardianship) (34,35). A cultural health index has been developed by the Ministry for the Environment for *tangata whenua* (local people) who wish to exercise *kaitiakitanga* and work with resource managers to improve the freshwater resources in their area (35). However, recent legal action on the part of the Māori Council (a national Māori organisation) against the Crown, with regard to water rights, would suggest Māori are not satisfied with the current situation and would like their proprietary rights to water recognised (36).

Māori are also involved in research in indigenous agroecology, in order to understand how *matauranga*

Māori (indigenous knowledge) can inform farming practices to achieve cleaner waterways (37).

Replenishing fish stocks through customary management

As a result of fisheries settlements in the 1990s, Māori interests in fisheries in New Zealand were divided along commercial and non-commercial lines. The commercial side was managed with the creation of Māori-owned Aotearoa Fisheries Ltd, whose profits are shared between *iwi*. However, at a local recreational fishing level, resource management tools (Taiapure and Mataitai Reserves) were developed as part of the Māori Fisheries Act 2004 to enable *iwi* to be involved in the management of the seafood resources in their *rohe moana* (coastal area). Under Regulation 27A of the Act, *tangata tiaki* (guardians nominated by *iwi*) can authorise seafood to be taken for the purpose of events at marae (38). *Iwi* can also apply to have rights to rehabilitate fish stocks.

Taiapure are local fishery areas, recognised as of special significance to Māori, where *tangata whenua* have a role in managing the resource along with other interested parties including commercial and recreational fishers (39). Commercial fishing is still allowed within *taiapure*; however, the management committee can make recommendations to regulate the species and quantities of seafood that may be taken and the methods used. *Taiapure* allow greater Māori involvement; however, decision-making power remains with the Minister of Fisheries (40). It is a long process to establish a *taiapure* as there are often objections from other sectors, including commercial fishing (39). Despite 30 registrations of interest (39), there are only eight *taiapure* currently in place (41).

Mataitai provide greater control than *taiapure* since they empower *tangata tiaki* to make bylaws within *mataitai* for the purposes of the sustainable harvesting of *kaimoana* (seafood) (39). *Mataitai* ban commercial fishing, but allow recreational fishing within limits set by *tangata tiaki*. Currently there are around 20 such reserves in the country, the majority in the South Island (41). Most are along the coastline, with the one exception of the Mataura River in Southland, where the *mataitai* was established to protect the local speciality of *kanakana* (lamprey eel) (42). Through *mataitai* reserves it is hoped that fish, shellfish and eel stocks will replenish (43).

Gardening projects

There has been a resurgence in gardening initiatives within the Māori community (44). Gardening projects have particular appeal to Māori because, as well as providing food, they are a medium for passing on traditional knowledge, bringing together *whānau* and expressing values such as *rangatiratanga* (self-determination) and *mana whenua* (ancestral links with land) (44,45).

Significantly, the Māra Kai initiative launched in 2009 by the Māori Economic Taskforce assists Māori communities to meet the establishment costs of setting up small non-commercial Māra Kai on *marae* and in Māori communities. At the time of writing, more than 450 Māra Kai projects have been funded (46). The Healthy Eating – Healthy Action strategy of the previous Labour-led Government (47) also funded gardening projects within Māori communities (48,49).

An outcome of community gardening projects is that they can lead to an increase in home gardens (44). There have been several examples of small projects to assist *whānau* to start home gardens, such as Kai in the Yard by Māori Women's Welfare League (50,51), and the Kapai Kai project in Maraenui (52).

Increasing whānau income: economic development

Fisheries

In the 1980s, the government of New Zealand introduced a 'quota' system to manage the country's declining commercial fishing stocks. As a result, Māori argued for commercial rights to be part of this quota. In 2004, Māori became significant players in New Zealand's fishing industry through the Māori Fisheries Act, which transferred control to *iwi*, of around half of an estimated NZ \$750m in assets (53).

Approximately half of those assets were allocated directly to *iwi* and half are managed centrally through Aotearoa Fisheries Limited, which was originally given an interest in about a third of New Zealand's NZ \$1.2b commercial fishing industry. By reinvesting the profits to buy more quota, Aotearoa Fisheries is now one of the country's largest seafood exporters, achieving NZ \$152m in sales in 2011 to return a total dividend of NZ \$11.3m (54). *Iwi*, as

shareholders, receive dividends from the company's profits. *Iwi* owners gave Aotearoa Fisheries a six year 'period of grace' to develop its business. In 2010, the first dividend was paid to *iwi* (54).

Aquaculture

With the world's wild fisheries production limited due to declining stocks, there has been increased interest in aquaculture. Aquaculture already supplies an estimated 47% of the world's fish supply and is expected to become a major export earner for New Zealand (55). The main species farmed in New Zealand are mussels, salmon and oysters. However, *paua* (abalone), *kina* (sea urchin), scallops and *inanga* (whitebait) have also been farmed (56).

In 2001, due to increasing demand for water space, the government introduced a management system where aquaculture would only be able to take place within Aquaculture Management Areas (AMAs) defined by regional councils under the Resource Management Act 1991 (57). *Iwi* objected to this and sought and won a declaration that these changes would breach indigenous rights under the Treaty of Waitangi (New Zealand's founding document). In 2004, the Māori Commercial Aquaculture Claims Settlement Act was passed. As a result, *iwi* with a coastal area are now entitled to a share of 20% of all new AMAs created in their area (57).

Freshwater aquaculture has been identified as an area of interest to *iwi*, both for commercial and sustainability purposes. In 2011, the Ngati Kahungunu *iwi* farmed juvenile *paua* to reseed stocks along their coastline (58). Māori are especially concerned about the protection and sustainable management of *tuna* (eel), *koura* (freshwater crayfish) and *inanga*. However, there are many technological challenges to the development of profitable aquaculture ventures for these species (55).

Horticulture

The loss of land resources available to Māori has resulted in relatively less Māori land suited to horticulture (59). Nevertheless, there are examples of successful Māori entities within horticulture, such as the Wakatu Trust in Nelson and the Wi Pere Trust in Gisborne (59). Increasing the productivity of Māori land is a current government strategy, and new links between Māori landowners, private sector

industry groups and researchers have recently been formed (60).

In 2006, Tahuri Whenua Inc., a national Māori vegetable growers' collective, was established to support Māori involvement in the horticulture industry, including supporting business development (23). The commercial production of *taewa* (Māori potatoes) is of special interest to this group.

Many Māori horticulturists have chosen to align with the organics sector because, conceptually, it is closer to Māori ideals of land management (59). Te Waka Kai Ora, a Māori organics' collective, has been established to support Māori commercial and non-commercial organic growers. The collective has developed a produce label to identify Māori organic food products called 'Hua Parakore'.

Evidence of increased whānau income

It is too soon to establish whether income at a *whānau* level has increased as a result of these economic developments. There are certainly many Māori training in the fishing/seafood industry (974 in 2009) and the horticulture industry (509 in 2009) (61). One example of benefit for *whānau* from economic development has been the creation of the Whairawa scheme established by Ngāi Tahu. This scheme is a savings scheme contributed to by the *iwi*, to encourage members to save for education, their first home or retirement. The scheme also encourages greater financial literacy. So far 16,700 members have registered (62). The scheme is a result of Ngāi Tahu's increased wealth from a number of investments post settlement with income from fisheries assets as part of the mix.

Enablers and constraints to the development of traditional kai

Factors enabling the revitalisation of traditional *kai* identified in the literature include: the settlement of historical grievances between Māori and the Crown resulting in the return of resources, including access to and management of traditional *kai* resources (63); the successful pursuit by Māori of their legal rights to develop their customary resources (36); and support for the development of Māori models of governance (64). Supportive government policy around healthy eating (47) and

economic self-sufficiency (61) has also helped. Collectively, this has facilitated growth in Māori community garden projects (62), Māori collectives (65,66) and research groups (67), bringing together multidisciplinary and cross-sectoral expertise in matters relevant to traditional *kai*. The above actions have been the result of Māori leadership and energy at both political and community levels (19,46).

Constraints were identified around tensions between government and Māori goals and models of resource management, especially around propriety water rights (36) and customary fisheries resource management tools (19). Economic pressures have resulted in increased dairy farming at the expense of waterways, and severely depleted fishing stock due to over fishing (19), as well as the pollution of marine and freshwater fish (68,69). Off shore deep sea drilling poses a new potential threat to customary fishing (70).

Discussion

This paper explores the role of Māori in enhancing Māori food security through revitalising traditional *kai*. The reviewed scientific and grey literature illustrates that a wide range of activity is occurring to increase the availability of traditional *kai* and develop traditional food-based industries.

In terms of increasing availability, initiatives include the restoration of traditional *kai*, replenishing fish stocks through customary management, and local gardening projects. At the economic level there are increasing initiatives in fisheries, aquaculture and horticulture. It is likely that these initiatives have improved food security for some Māori, but the degree to which this is so remains unclear. These initiatives have also contributed to maintaining and enhancing Māori cultural knowledge and practice and promoting Māori values.

Significant enabling factors include the successful pursuit by Māori of their legal rights to resources, Crown settlement of historical grievances by the return of resources to Māori, Crown support for Māori governance, supportive government policy, and Māori leadership and energy. Despite this, there are also constraints as a result of tensions between the Crown and Māori goals and models of resource management, especially around propriety water

rights and customary fisheries (19). Economic pressures continue to act as constraints. These include increased dairy farming at the expense of waterways, severely depleted fishing stocks (19) and the pollution by industry of marine and freshwater fish (68,69).

While we have presented the areas of increasing availability of traditional *kai* and economic development of traditional *kai* separately, in reality they are intertwined. Development in one area can impact positively or negatively on the other. The core values of community and economic development can conflict with each other (71). For example, the restoration of traditional food sources such as fish and shellfish for customary purposes may place restrictions on commercial fishing.

Internationally, indigenous cultures have challenged definitions of food security that do not take into account indigenous food practices (17). Traditional food acquisition and food sharing continue to be important to indigenous communities (72,73). As Pehi *et al.* observe, 'the central role that the process of traditional *kai* plays in Māori culture is reflected in the history and reclamation of cultural practice in other indigenous cultures' (19). Globally, many of the solutions to indigenous food insecurity are inherently political because the root causes are linked to land and treaty rights and a shared history of colonisation (74).

Therefore, from a policy and practice perspective, there is much that could be done to support the revitalisation of traditional *kai* and to address the barriers and promote the enablers. Certainly this is an area that Māori are pursuing, as outlined in this paper, and could expand. It is also an area where the government can support Māori with treaty settlements, Māori governance arrangements, supportive policy and attention to the impacts of globalisation on traditional *kai*. There is also a role for the health promotion community, particularly the Māori health promotion community, in supporting or facilitating community initiatives, and for workers of all ethnicities to advocate for policy change.

Areas requiring further research include: evaluating the extent of traditional *kai* initiatives; further exploration of the enablers and constraints to the development of traditional *kai*; an exploration of the potential for conflict or cooperation between community and economic development in this area; and linking economic development through

traditional *kai* to impact on food security and cultural development.

In conclusion, it appears from this research that revitalising traditional *kai* has considerable potential to improve food security for Māori, both directly in terms of food supply and indirectly by providing income from economic development and job creation. In doing so, it has the potential to reduce inequity between Māori and non-Māori peoples in New Zealand, to improve access to the determinants of health, and to contribute to the enhancement of *te ao Māori* (the Māori world). This paper acknowledges the range of activities which currently exist and identifies both enablers and constraints to further development. These findings point the way for further policy practice and research in New Zealand and have implications for other indigenous cultures struggling to address food security.

Author contributions

CM took the lead role in the literature review and drafting the manuscript; SB conducted the literature search and participated in the literature review and drafting the manuscript; CH contributed to the literature review and the manuscript; LS was co-principal investigator on the wider study and provided research oversight, participated in the literature review and writing of the manuscript; LM provided research oversight and advice on implications of findings for Māori. All authors read and approved the final manuscript.

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Conflict of interest

There were no conflicts of interests.

Ethics approval

Ethics approval for the ENHANCE study was granted by the University of Otago Human Ethics Committee.

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