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The use of rongoā in contemporary physiotherapy: An exploratory study

A report for the Health Research Council

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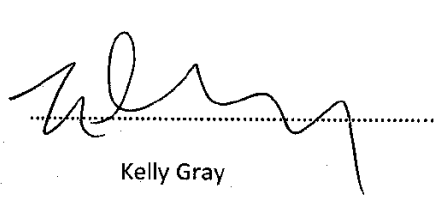
We confirm that this report represents the work of **Kelly Gray** completed as a 2011/2012 Health Research Council Summer Studentship under the supervision and direction of Associate Professor Denise Wilson, Director of Taupua Waiora Centre for Māori Health Research.



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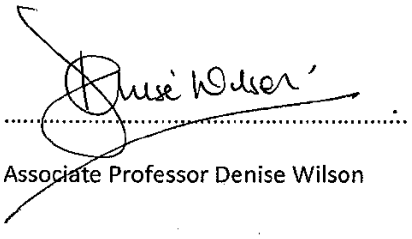

Associate Professor Denise Wilson

Contents

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Introduction

Rongoā is a modality for healing that incorporates plants and their derivatives to promote wellness (Ahuriri-Driscoll, Baker, Hepi, & Hudson, 2008). This traditional method of healing was used to treat a range of conditions in pre-colonisation time (Williams, 1996). The notion of using nature to provide wellness encompasses an indigenous paradigm (Daveson, O'Callaghan, & Grocke, 2008) and may have relevance for treatment today. An example of this is Chinese medicine that advises people to eat food in accordance with the seasons (Corington, 2001). Māori also followed a seasonal approach to their diet, practising vegetable planting according to the lunar calendar (Blair, 2002).

Research focused on traditional healing may help address issues such as access to prescription based medications, the increasing burden of chest conditions, and provide a forum for physiotherapy to embrace Māori health care strategies. Physiotherapy is responding to the changing demographics forecasted in New Zealand. These include an increase in the elderly and disabled populations (Nicholls & Larmer, 2005). A change in the undergraduate physiotherapy curriculum that now focuses on a multi-treatment approach and broadening the scope of their practitioners has signalled a shift in the profession (Nicholls, Reid, & Larmer, 2009). Current leaders in physiotherapy are promoting diversity in contemporary practise (Nicholls & Gibson, 2010) and this gives scope for Māori physiotherapists to undertake research and practise within a Māori paradigm. The overall aim of this study was to examine how traditional Māori healing might contribute to physiotherapeutic practice. In considering these issues a comprehensive review of the literature was undertaken. A specific focus for this research was around the application of rongoā in the cardiorespiratory setting.

Contemporary physiotherapy work is centred on reducing the work of breathing and promoting adequate chest clearance (Hough, 1996). Cardiorespiratory rehabilitation employs a gamut of devices and mobilisation techniques designed to reduce hospitalisation rates and educate patients on maintenance strategies. Māori may be under utilising the current treatment options providing incentive for research outside of the current scope of practise. The utilisation of plant properties in the treatment of chest conditions in New Zealand has not been explored in research to date. This article will consider the concept of intellectual property rights that have been developed

to protect plant species and their distribution. The impact of commercialisation and the ethical issues that surround an integrated approach to cardiorespiratory rehabilitation will also be explored.

Research Design

A qualitative design using kaupapa Māori research and a structured review of the literature was used to explore how traditional Māori healing might contribute to physiotherapeutic practice. The focus was also on plants that might contribute to treating chest complaints for their expectorant properties.

Literature Review

Literature was sourced from a range of databases (Miro, Psych Lit, Med Line, CINAHL, Conzul, Core Bio Med, Abi/Nform, New Index). Search terms included culture and health, physiotherapy, rongoā, indigenous health, and plant expectorants, as well as related health promotion. This enquiry found limited results in terms of the use of plants for chest related conditions by New Zealand authors. Books were found to contain most information about the use of specific plants and the details of their medicinal properties. There was limited research found that explored the active ingredients within the plants that were discussed as having expectorant properties. However, there was extensive research that explored the use of plants under existing traditional healing structures with the Ayurveda system from India and Chinese herbal medicine.

Expectorant Plants

An expectorant is a type of medication that can reduce the viscosity of mucus and assist with the loosening of secretions that are associated with an increased work of breathing (Hough, 1996). Several plants were found to be of use in the treatment of chest conditions: The kawakawa tree, kumarahou and the pititi (peach) tree. Brooker, Cambie and Cooper (1987), Goldie (1907), and Riley (1994) all credited the kawakawa for its medicinal qualities. The kawakawa tree is a significant plant described as being a representative of the end and beginning of a life cycle (Riley). A twig of kawakawa was used to ensure conception, and alternatively the kawakawa leaf was used as a symbol of grief. Brooker et al. (1987) recorded the macropiper excelsum (kawakawa) as an

aphrodisiac that also stimulated the salivary glands and the kidneys. Riley also documented that the kawakawa tree had a relaxing effect on the nervous system. This could signal that the kawakawa tree may share qualities that mirror the function of the parasympathetic nervous system that is commonly used for rest and digestion (Lundy-Ekman, 2002). Importantly, Riley noted the expectorant properties with the use of kawakawa leaves. There is a range of anecdotal accounts of its efficacy in the treatment of chest conditions. “In the old days Māori families always had a pot with kawakawa leaves on the stove in simmering water, for the use of those of the family with coughs and colds and chest complaints including bronchitis” (Riley, p.205) Accounts by Māori indicated that they appreciated the kawakawa for its versatility, and described it as one of the staple plants for healing (Tito, 2007).

Kumarahou is commonly found in northern parts of New Zealand and has been planted in household gardens for its golden bloom (Riley, 1994). Importantly the kumarahou is related to the common angelica plant, which is credited for its expectorant properties (Ram, Balachandar, Viyayanath, & Singh, 2010). Expectorants are essential in the course of treating lung conditions that are associated with a build of mucous. Emphysema and bronchitis are examples of Chronic Obstructive Pulmonary Disorders (COPD) when, due to an exacerbation, the patient has developed increased viscosity and levels of mucous (Hough, 1996). After long term exposure to these conditions the ability of the body to expel mucus through the mucociliary escalator and clearing mucous by coughing becomes hindered (Main, Prasad, & van der Schans, 2009). Māori prescribed plant preparations to treat chest conditions to promote mucous clearance (Goldie, 1903).

The kumarahou leaves are prepared by boiling them in water to make a tea that was then consumed. This tea was commonly used for the treatment of chest complaints such as asthma, bronchitis and pulmonary tuberculosis (Brooker et al., 1987). Kumarahou was mixed with other herbs by Reverend Edgar Ward in 1863 and dispensed to treat Māori (Brooker et al.). Further research is required to understand how the agents of these plants contribute to the treatment process.

The pititi (peach) tree was introduced to New Zealand in the early 1800s (Riley, 1994). Māori were reluctant to use the imported tree, however, they soon developed use for the properties of the pititi tree for the treatment of chest conditions as well as enjoying the sweet nature of the fruit (Riley, 1994).

> During those days, I would be given a drink made from the leaves of the pititi tree. It was kawa (sour) but the rongoā inside the drink would korikori the phlegm in my chest and a hot

> plaster would be smothered onto my chest and parts of my back, to clothe and bind. This piece of armour would remain on me for some days (Tito, 2007, p.84).

This account does not clarify whether the hot plaster used constituents of the pititi tree or whether the term is liberally describing a plaster immersed in hot water.

The three plants identified have a history of use for the treatment of chest conditions. However this enquiry found that further research was needed to test the efficacy of these plants. Phytotherapists have conducted research that identifies properties of plants and described them as beneficial in the treatment of chest conditions (Mills & Bone, 2000). They found the expectorant properties of plants provided a remedy that assists in the removal of mucous from the airways (Mills & Bone, 2000). This can be attributed to dilution of the mucus (Ram et al., 2010) and activation of the cough reflex. Plants prescribed by Mills and Bone, such as Foeniculum (Fennel) and Pimpinella (aniseed), can be used for the treatment of chronic bronchitis and emphysema. For the treatment of bronchiectasis the same expectorant plants were considered in addition to the importance of supplementing the patient with immune enhancing herbs (Ram et al., 2010). The kawakawa tree and kumarahou have been reported by various sources as effective expectorants (Macdonald, 1974).

These plants and their application represent a segment of a Māori approach to wellness. In accordance with Māori worldview it is important to encompass all aspects of healing modalities to achieve the best health outcomes (Mark & Lyons, 2010). This ideology encompasses a worldview that lives in harmony with the environment. In order to engage with Māori healing modalities physiotherapists will need to be educated around the underpinning philosophies of Māori healing and Māori pharmacopeia (Durie, 1996). Through education Māori physiotherapists may improve the current service delivery and ultimately reduce disparities in the Māori health population.

Māori and Their Environment

> *Who are you? What are your understandings? What choices are you making? Ko wai koe? What waters are you, what energies are you, what flows through you?*
>
> (Manu Rangimarie Magrath, 2007, p.84)

Te Ao Māori lived in harmony with the environment and in turn was given provisions and guidelines to achieve sustainability of the Māori race. Rongoā is one aspect of a gamut of modalities that were applied to achieve wellness in acute and long term settings (Macdonald, 1974). Other traditional healing approaches include mirimiri, romiromi and karakia performed by tohunga. Tohunga were powerful orators who spoke karakia over the afflicted person or wider group (Goldie, 1903). They had an extensive knowledge base of medicinal plants, prayer, genealogy and understood the physical and meta-physical (O'Connor, 2007). Collection of plants and preparation of poultices and drinking tea were as much a part of the healing process as was the active ingredients within the mixture (Williams, 1996).

Karakia is a form of prayer that has been handed down through intergenerational transfers. It is well documented that karakia was the source of healing and the application of rongoā was complementary (Goldie, 1903). This may signal an early understanding of the ability to generate healing through what contemporary western culture describes as the placebo effect. The treatment technique of mirimiri and romiromi are forms of therapeutic touch either applied as a deep tissue technique or spiritual exchange between the practitioner and the patient through touch (O'Connor, 2007).

These modalities are most common in traditional Māori healing, however the application of these therapies were reinforced by the social controls of tapu and noa. Tapu provided protection for the environment and imparted wellness, and therefore provided sustainability and maintained universal balance (Durie, 2007). Noa was used to neutralise a scenario, previously deemed as tapu. These social controls worked in unison with traditional Māori healing and contributed to a collective society that lived in harmony with the environment (Mark & Lyons, 2010).

There is a formal group established as a collective of Māori healers that work to protect and promote traditional healing (Ahuriri-Driscoll et al, 2008). Ngā Ringa Whakahaere have identified their commitment to improving health outcomes for Māori whether whānau, hapū or iwi, strengthen Māori rangatiratanga over the health and healing process, and to uphold the Treaty of Waitangi (Ahuriri-Driscoll et al, 2008). There is also research that specifically focuses on the purchasing of traditional healing services (Durie, 1996), and on the sustainability of rongoā (Ahuriri-Driscoll et al, 2008).

In New Zealand, Māori healers operate in diverse clinical settings. Through funding initiatives from the Health Research Council a range of discussions have taken place around potential strategies for rongoā (Lucas, 2009). Nevertheless, several barriers have been identified in applying

an Indigenous treatment modality within mainstream structures. There is a lack of scientific evidence that supports the use of rongoā in clinical practise. This issue may prevent the application of plant modalities in contemporary physiotherapy, given that the profession is aligned with biomedicine. Other barriers could be the lack of resources identified by healers as a result of deforestation and the impact of policy makers on environmental sustainability (Ahuriri-Driscoll et al., 2008). Indigenous cultures around the world apply indigenous healing modalities, although there is little research that discusses whether Māori consider Māori healing modalities to be effective. The lack of research in this area is also a barrier to promoting the use of Māori healing modalities within a biomedical paradigm.

Efficacy and Effectiveness of Traditional Medicine

The Medicines Act 1981 provides guidelines around the use of herbal medicines in New Zealand. The World Health Organisation (1999) has stated that the efficacy and effectiveness of natural medicine can be determined by its long term proven use without the report of adverse effects. In some cases licensing and assessment of the herbal medicine is not required. However there is research that suggests that herbal or traditional medicine should undergo the same criteria that is applied with all medicines (Angell & Kassirer, 1999). In comparison the United States billion dollar supplementary industry has diluted regulatory practises exempting certain herbal products from regulation (Angell & Kassirer, 1999). These issues around commercialisation and the reductionist approach to medicine are also some of the areas of concern for Māori practitioners.

Durie (1997) advocated for the inclusion of Māori practises and protocols when assessing the efficacy and effectiveness of treatment modalities. Assessing the patient could encompass the natural and social environments they live in, and according to Durie (2006) this is a tikanga Māori approach. Ahuriri-Driscoll et al. (2008) described the use of randomised control trials as being ineffective to assess rongoā due to the large number of participants needed. This poses some challenge to the use of rongoā in the current health system that is largely based on evidence derived from quantitative research (Durie, 1994). Māori are also concerned with intellectual property rights of rongoā, an issue addressed in the Wai 262 claim (Waitangi Tribunal, 2011).

Intellectual Property Rights, Bioprospecting and Genetic Modification

Three areas have been identified as key components to the open access versus protection debate, bioprospecting, genetic modification and creation of **intellectual property rights** (IP) (Waitangi Tribunal, 2011). The Wai 262 claim is an extensive document outlining the intricacies involved in protecting the interests of Māori as custodians of the environment and interests of the Crown that seem to be centred around the theme of evolution and human advancement (Waitangi Tribunal, 2011). International law and agreements guide the current frameworks that are applicable to New Zealand. Rights related to plant varieties largely come under the 1994 agreement on trade related aspects of intellectual property rights (TRIPS). Under the current system patents or plant variety rights (PVR) could affect the ability of a group to extract or synthesise active ingredients in plants that are deemed as therapeutic (Waitangi Tribunal, 2011). This process is positioned between open access to knowledge which is the western approach, and the interest of custodial rights that is for the protection of native organism.

Bioprospecting often produces a commercial product where the land owner is permitted to consent to research of plants within their property. There is an exception to this process that grants the Crown ownership of the species, and consent is warranted before the plants are extracted. **Genetic modification** is of particular concern for Māori given the change in the natural discourse of genealogical relationships that will take place for the potential organisms. The creation of intellectual property rights is in place largely to resist commercial exploitation. The Wai 262 claim also discussed the potential application of rongoā and suggested that policy changes might have stunted the true potential of developing natural medicine in New Zealand (Waitangi Tribunal, 2011). Other countries such as China, India and South America use traditional medicinal practises to address the shortage of doctors and surging populations (Wing, 1998). These modalities have been particularly effective in the treatment of mental health where the traditional practitioner views the affliction as a gift (Wing, 1998).

Promoting indigenous health practises in New Zealand may improve access to healthcare for Māori (Ministry of Health, 2002). Yet, in New Zealand the development of rongoā has stagnated, with the State culling rongoā funding in 2004 (Waitangi Tribunal, 2001). The Wai 262 report states that the degree of funding is inadequate to maintain the practise of rongoā and support the sustainability of continued education (Waitangi Tribunal, 2001). However, there has been a revival in all things Māori and the demand for traditional healing has increased (Durie, 1996).

Rongoā in Rehabilitation

Rongoā can be tested by scientific methods (Durie, 1996). This process can identify the active ingredients of the expectorant plants and a dosage level could be established (Mills & Bone, 2000). Durie (1996) suggested that the use of rongoā without applying the underpinning philosophies to treatment is less effective. Māori healing incorporates the mind, body and soul in the assessment and treatment process (Durie, 2007). The inclusion of family in the treatment process is also a key strategy for Māori healing (Durie, 2007).

Riley (1994) published an extensive account of the therapeutic properties attributed to plant use in New Zealand. Most accounts report that the plants were heated for drinking or applied externally (Williams, 1996). Māori applied splinting techniques using harakeke (flax) and developed drinking tea by infusing several plants. Anecdotal accounts reported that these remedies were effective in the treatment of hemiparesis, lower back pain and arthritis (Riley, 1994). However this enquiry focused on the application of rongoā to treat cardiorespiratory populations, and specifically chest expectorants. The transfer of knowledge in a Māori paradigm has been largely intergenerational. Māori elders pass on knowledge to their children and this process is reciprocated through generations (Mark & Lyons, 2010). Historically this practise is orally based and healers are concerned that much of this information is being lost (Ahuriri-Driscoll et al., 2008). Deforestation is also a wider concern that has contributed to a lack of resources for rongoā practitioners.

Revitalisation of traditional practises is reliant upon the transfer of knowledge and the sustainability of the environment. Physiotherapy can play an important role in reaffirming traditional healing through supporting Māori physiotherapists to pursue traditional knowledge. Further research is needed to explore the ethical implications that this will place on the treatment and the safety of the practitioner.

Physiotherapy – the Past, Present and Future

Physiotherapy has evolved since its establishment in early Victorian times (Nicholls & Cheek, 2006). Early practise only included the treatment of middle class woman, in a time when prostitution was rampant and massage was associated with the sex industry. In contemporary physiotherapy there is a range of treatments employed to guide people to wellness across the lifespan

(www.physiotherapy.org.nz). The undergraduate programme focused on three distinct areas, musculoskeletal, neurophysiological and cardiorespiratory rehabilitation. The current education programme has expanded and includes a sociological component as well as promoting a multidisciplinary approach to treatment (Nicholls, Reid & Larmer, 2005). Current leaders have encouraged the industry to venture outside of the normal scope of practise to better equip the physiotherapists of tomorrow (Nicholls et al, 2005). This direction has been in line with the projected increase in New Zealand's aging population and a forecasted increase in chest and cardiovascular cases (Nicholls et al, 2005).

The physiotherapy workforce is largely based in private musculoskeletal clinics with a third of the group employed in the public health system (Nicholls & Gibson, 2010). In 2010, Māori physiotherapists represented four percent of the active physiotherapy workforce (Ministry of Health, 2011), and less than one percent (0.7%) of the health workforce (Ratima et al., 2007). In contrast Māori requiring health care are over-represented in areas of health that physiotherapists can be very effective in. These areas are smoking cessation, education to reduce the number of chest exacerbations and the promotion of exercise to reduce symptoms of breathlessness (Levack, Weatherall, Reeve, Mans, & Mauro, 2012). Research undertaken by Levack et al (2012) have identified a disparity in the uptake of cardiopulmonary rehabilitation in Māori populations, however they have not addressed why this disparity exists. Māori will continue to experience respiratory symptoms and go on to develop lung conditions two decades earlier than non-Māori (Levack et al., 2012). These statistics are consistent with hospitalisation rates for obstructive lung conditions with Māori having a hospitalisation rate four times higher than non-Māori for COPD (MOH, 2010). These statistics are significant for the physiotherapy profession who have identified the need to reduce the disparities in cardiopulmonary rehabilitation.

Cardiopulmonary rehabilitation is largely exercised based programmes that incorporate health education and engage patients in behavioural modification to achieve wellness (www.heartfoundation.org.nz). Research suggests that programmes should be designed on an individual basis to be more effective. The patient populations often have co-morbidities including reduced lung function. The main symptoms associated with these patients are the increased work of breathing which is related to cardiovascular dysfunction, the reduced capacity of the skeletal system to function effectively, and shortness of breath (Levack et al., 2012). Heart and lung conditions often exist simultaneously and are areas where Māori are over-represented.

Māori have experienced resurgence in cultural competence in New Zealand and can attribute this to a determination and the continued practise of intergenerational transfers of

knowledge. During the rongoā sustainability meetings several workshops reported the willingness of elders to pass on knowledge of healing practises (Ahuriri-Driscoll, 2008). However, there has been much discussion around the protection of knowledge to avoid issues raised by the Wai 262 claim. There is very little research exploring any benefit in incorporating Māori healing into allied health services such as physiotherapy. The physiotherapy workforce is predominantly based in musculoskeletal practise in private clinics (Nicholls & Gibson, 2010). A third of the workforce is employed in the public health sector working in hospital settings. It is within the hospital setting that Māori are poorly represented, providing an opportunity for physiotherapy to improve Māori health status in the sphere of chest complaints and cardiovascular health. A community-based approach to provide education and improve access at the primary health care level may also reduce the high hospitalisation rates.

Physiotherapy has played a lesser role in providing treatment at community-based level (Stewart & Haswell, 2007). As a profession there has been some movement around cultural competency and development of a Māori workforce (Nicholls, Reid, & Larmer, 2009). The opportunity for physiotherapy to engage with communities is possible since the development of the primary health system (Stewart & Haswell, 2007). The primary health system has been developed to reduce health disparities and improve access to health care. This process has been largely driven by general practitioners, and research suggests that input from allied services could improve these community-based initiatives (Stewart & Haswell, 2007). In Canada an indigenous approach to cardiovascular health was used to improve the health status of the aborigines (Huffman & Galloway, 2010). Improved cultural competency could be the catalyst for the development of new funding streams and the development of a new way of practising physiotherapy. The physiotherapy profession have developed a range of treatment modalities to support chest clearance, breathing techniques and education programmes. Working in primary health care settings may enable physiotherapists to engage with Māori and reduce the disparities that are evident in this population.

Conclusion

This report has identified the potential for future research into the use of plants that have been identified as expectorant plants. Physiotherapists' research has identified that their current approach to healthcare has not been effective in reducing health inequalities between Māori and non-Māori (Levack et al., 2012). This is the case for the overwhelming health statistics that have

been represented in this report for lung conditions. The use of rongoā in contemporary practise has some serious considerations that need to be fully reviewed before further development in this area can take place. Rongoā is one modality of Māori healing that may improve the current health status of Māori (O'Connor, 2007). The traditional healing scope incorporates karakia and massage techniques.

There is a lack of evidence-based research in this area (Ahuriri-Driscoll et al, 2008). The ethical implications and potential for malpractice in the case of prescribing plant applications for the treatment of chest conditions warrant further research. While Māori physiotherapists have the potential to make a contribution to Māori health in the area of respiratory disorders, they only represent four percent of the current physiotherapy workforce. Adequate training and the protection of Māori physiotherapists to apply traditional healing modalities in synergy within biomedical curricula may have some implications for the New Zealand Society of Physiotherapists. Alternatively the development of relationships with Māori healers, and the purchasing of traditional services may provide the best health outcome for Māori in the interim.

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