Rural Health: Who is ignorant?

Kelly Burnett

A research project submitted in partial fulfillment of the requirements for the degree of Master of Osteopathy, Unitec, New Zealand, 2017
Abstract

Aim: To understand the attitudes, beliefs and knowledge of musculoskeletal health of a small group of rural people.

Methods: Nine rural farmers in the Otago-Southland area were interviewed on their experiences of pain, help seeking and musculoskeletal complaints. Cluster analysis and mathematical modeling were used to assist in the formalization of the data and identification of the themes.

Results: Three main themes were identified that portrayed the experience and behaviors of this group of rural people. 1) Putting up with pain, 2) Avoiding help 3) Chained to the farm. An associate theme, 4) The downfall of isolation, was also noted within the data.

Discussion: The findings showed that pain is frequently experienced when working on a farm. This group of rural people often put up with pain for long periods of time, and at high levels, before seeking help from health professionals. Knowledge about, and access to, these professionals are factors that contribute to delayed help seeking in these communities.

Conclusion: Farmers in rural Otago-Southland are suffering from pain arising from musculoskeletal disorders unnecessarily due to a lack of knowledge about and access to manual therapies. A culture of stoicism contributes to this by not allowing rural people to recognize or seek help. A larger study is urgently recommended to establish how prevalent this situation is in order to address what appears to be a real need.

Keywords: Rural, pain, delayed help seeking, musculoskeletal, farming, farmers
Declaration

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This Thesis/Dissertation/Research Project entitled Rural Health: Who is ignorant? is submitted in partial fulfillment for the requirements for the Unitec degree of Master of Osteopathy, Unitec, New Zealand, 2017

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**Candidate's Declaration**

I confirm that:

- This Thesis/Dissertation/Research Project represents my own work;
- The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.
- Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: 2015-1084

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Preface

This thesis is presented in four main parts. Part one is a literature review to familiarize the reader with relevant background material on rural New Zealand. This covers rural New Zealand, rural people, the farming industry and health care in rural New Zealand. The literature review also covers musculoskeletal disorders in the farming industry. Part two outlines the methodology and methods employed to complete this research. Part three is presented as a manuscript prepared for publication in the Elsevier Journal of Rural Studies and will explore the findings of the study. Part four is the appendices that contain participant information, consent forms, ethical approval, evidence of theme identification and publication guidelines for the journal.
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Introduction
The aim of this thesis was to explore the attitudes, beliefs and knowledge of rural people working on the land about their musculoskeletal health and pain. It also set out to find out what this group of people did to manage any episodes of pain. It provides a thematic analysis of the experiences of work and pain of a group of nine participants living in the rural Otago-Southland area.

Living in rural New Zealand has its advantages and disadvantages. Spectacular scenery, a majestic landscape and the active lifestyle are many of the benefits of living in a rural area. However, other factors can present challenges to living rurally. One of these challenges is the access to, or lack of, health services. A report published in 2010 by the National Health Committee found that addressing the health needs of people living in rural areas is a critical challenge (National Health Workforce Innovation and Reform Strategic Framework for Action 2011–2015, 2011).

New Zealanders involved in rural industries, such as farming, work in situations that are physically demanding which increases the risk of trauma or injury. The Accident Compensation Corporation (ACC) has reported that in the year July 2014 – June 2015 farm based incidents were responsible for 23,944 active claims for injury. The approximate costs to the New Zealand health system for these injuries has been listed at $54,502,966 (“Injury statistics tool,” n.d.).

The Accident Compensation Corporation has identified the agricultural industry as a high injury risk sector in 2015. Claim rates are the highest for the agriculture and fishery workers occupation group. Workers in these industries had the highest incidence rate with 226 work related injury claims per 1000 full time employees in 2013 (Injury statistics - Work-related claims: 2013, 2014). A trend was identified with younger and older workers appearing to have the highest claims rates with the lowest number of rates coming from the 25 – 34 and the 35 – 44 age groups. The 35 – 44 age bracket had a total of 35,900 claims in the 2013 year which equated to 20 per cent of all claims made (Injury statistics - Work-related claims: 2013, 2014).
In the dairy sector of the agricultural industry ACC has identified the top five causes of workplace claims from 2008 to 2015. These are:

1. Being hit or bitten by animal
2. Vehicle incident
3. Muscular stress while lifting, carrying or putting down objects
4. Falls on the same level
5. Being hit by moving objects

In this time period these incidents accounted for a total of 31,054 claims (Collins, 2015). Statistics for the number of claims lodged and that were then used for follow up treatment services were unavailable. It is thought that many agricultural industry claims are made immediately following injury but that employees are not seeking any health services for follow up care.

It is widely accepted that, in the Western world, men’s health tends to be poorer than women’s reflected in life expectancy differential. Men seek help and use health services less frequently than women do (Smith, Braunack-Mayer, & Wittert, 2006). Discussion around men’s help seeking has identified that the decision to utilize a health service is a complex process. This process involves biological, physiological and sociological considerations. The result often suggests that men are reluctant consumers and are less concerned with respect to their health than their female counterparts (Smith et al., 2006). This trend possibly has quite an effect on the mortality rate being significantly higher in males than females.

A steady decline in the health services situated in rural New Zealand has led to high levels of deprivation that are a feature of some rural regions and some rural communities which impact on the health status of the local population and their ability to access services (Fraser, 2006). Rural general practitioner numbers dropped from a total of 528 practicing rurally in the year 2000, to 358 just five years later in 2005 (Ministry of Health, 2008). Several initiatives have been undertaken since 2001 by various government guided subgroups, including subsidy schemes to offset the cost of travel for rural patients to access these services themselves. Yet these initiatives aimed at improving the sustainability of rural services seem to be consistently meeting obstacles and failing to thrive. It has been suggested that the 14% of the population classed as rural occupy some 80% of New Zealand’s landmass,
thus making the delivery of both effective and efficient health care very difficult. Using the current population based funding formula shows great unevenness in delivery of care, even allowing for the factor of rurality in the funding model (Ministry of Health, 2008). While rural people tend to be rather pragmatic and do not expect to access all service locally, there is a growing number of rural communities voicing concerns with regard to the access of the most basic of services.

**Personal background**

I am a 28-year-old osteopathic student. My research idea stemmed from growing up on farms in isolated rural New Zealand. Through my teenage years whilst working seasonal contract positions I had the opportunity to work on numerous farms and with many people who have now become friends. When I began my osteopathic studies I reflected on the injuries and pain I saw in farmers of all ages when I was working on farms and began to wonder if they were getting help and if they knew what was available. The findings in this study will hopefully identify whether there is a need for osteopathic and other manual therapies in rural New Zealand and also highlight areas where education can be improved for farmers’ health and wellbeing physically.
Chapter One

Literature Review

This literature review will provide background information on rural New Zealand. It will explore what rural New Zealand is and the people who work within these areas. The review will also address the state of health care and services available to these communities.

Search process
In April 2016 an electronic database search was conducted to retrieve studies on the topics of rural New Zealand, health care, manual therapy and farming musculoskeletal disorders. The databases Google Scholar, Ebsco Health, Science Direct and PubMed were used. A number of search terms were used: rural New Zealand, farming, injuries, healthcare, osteopath*, manual therapy, farmers, farm workers, accidents, ACC (accident compensation corporation). Useful publications were also reviewed for any further references that could be a source of useful information.

Rural New Zealand

What is rural New Zealand?
New Zealand is a country known for its sprawling landscapes. Over 53% of New Zealand’s land area is dominate by a highly rural/remote classification (Bayley & Goodyear, 2004). On record there are 58,068 farms under the agricultural industry umbrella throughout New Zealand (“2012 Agricultural Census tables,” n.d.). This classification system is determined by population size within a specified area. Rural areas have four sub classification categories and have a population of fewer than 999 people living in them. The four areas in the classification are: rural with high urban influence, rural area with moderate urban influence, rural area with low urban influence and highly rural/remote area.

One major drawback of this approach is that it addresses population number and not distance, travel time or health services availability. Therefore the definition does not
assist in defining populations receiving rural healthcare (Fearnley, Lawerenson, & Nixon, 2016). One study employed the use of their own definition based on the New Zealand Rural Ranking Scale for General Practitioners which considers the travel time from the General Practitioners office to the closest major hospital (Goodyear-Smith & Janes, 2008). The survey reported that a much more systematic approach would be to employ the use of GIS technology to define rural New Zealand rural localities in relation to the delivery of healthcare. Fearnley et al. (2016) estimate that around 340,000 more people actually use and receive what is rural healthcare but are classified as urban under the rural/urban definition system through statistics New Zealand.

**Rural people**
From the last Census count in 2006 14% of New Zealand’s population lived in rural classified areas (Statistics New Zealand, 2016). At just over half a million people (585,900), or one in seven, the trend had maintained since the previous 2001 Census. Growth has been noted in rural towns throughout both the North and South Islands since. Larger proportions of people had moved into rural areas from urban areas than the previous Census (Statistics New Zealand, 2006). Rural populations can be highly mobile due to the demands of seasonal employment. This means that population numbers can fluctuate in rural areas throughout the year.

Rural people have a strongly embedded connection to the land that builds up over time, often generations (Hegney et al., 2007). People who work on the land often experience differing levels of isolation. Isolation can be in many forms such as social, urban and from essential services. It is possible that through isolation the connection with the land, stock and their jobs that farmers become focused only on the job at hand. It has been noted that rural identity is often tied to a place (Ching & Cree, 1997). Cultural studies have been done but primarily focus on urban contexts and information about rural life is commonly presented in the form of statistics rather cultural narratives that show meaning and attachment.
**Stoicism**
Self-sufficiency is a valued trait among farmers. A stance of stoicism in the face of adversity, such as isolation, is part of that self-sufficiency (Burnett & Mort, 2001). Wagstaff and Rowledge (1995) define stoicism in terms of three main characteristics: (a) lacking in emotional involvement, (b) lacking in emotional expression, and (c) exercising emotional control or endurance. Stoicism and its definition appear to have been built out of the idea that those who are willing to work and endure hardship will succeed. Stoicism and endurance have become synonymous with the term “rural” where hardship and struggle are often exemplified (Jones, 2015).

The health of rural men in particular is severely compromised where stoicism is involved. Stoicism is typical of normative rural masculinity and contributes to the reluctance of men to seek help (Alston & Kent, 2008). This often leads to a failure of health concerns being addressed and men being in compromised health states. Courtenay’s (2006) study of masculinity and risk identified that men have generally poorer health and take part in more risky behaviors yet are loath to seek help preferring to remain stoic in the face of extraordinary circumstances (Courtenay, 2006).

**Resilience of living in isolation**
Resilience, the ability to recover from adverse circumstances, is another characteristic of rural dwellers that contributes to attitudes towards health and illness responses. Rural communities are described as being resilient and are often able to successfully adapt, particularly in difficult circumstances (Maybery, Pope, Hodgins, Hitchenor, & Shepherd, 2009). This is expressed as a way of ‘being hardy’ and a pride of being self-sufficient if ever the need arise. A study of rural farmers in Austria found that farmers understand change as unpredictable and unfolding and will have numerous strategies to ensure flexibility and adaptability of their farm and networks (Darnhofer, 2010).

Farmers in Australia identified several key factors that contribute to functioning resilience. It was important to highlight local economy and jobs, the quality of the
local environment, a strong sense of belonging and contribution to the local community (McManus et al., 2012).

Farming
New Zealanders have made a living off the land farming for over 200 years. Māori had a tradition of farming and larger scale farming was introduced with settlers since 1814. Since the 1960’s the agricultural industry has intensified significantly and production has increased with it. Conversion to this intensive farming has led to an increase in stock rates and yields since the late 1970’s (MacLeod & Moller, 2006). It is not known what toll such intensification has had on farmers and their musculoskeletal health. A decline in rural population in the 1990’s (MacLeod & Moller, 2006) suggests that with increased intensification the demands on people would have increased along with it. There is limited research available that investigates the physical, or mental, demands of a farmer either historically or in the current decade. The Accident Compensation Corporation does not have data describing accurate injury and claim figures, given that stoic culture, suggests that true injury rates would be underreported.

A hazardous industry
Agriculture is known to be one of the three most hazardous sectors in the modern working world (Kolstrup, 2012). Health and safety is a risk when working with unpredictable large animals and machinery. In 2003 the International Labour Organization estimated that approximately 1.3 billion workers, or about half of the entire working population, were employed in the agricultural sector (ILO, 2003). Farmers and farm workers are often exposed to a variety of occupational risk factors. It is assumed that in New Zealand the risks may be less than other countries as there is protective legislation in several areas, such as the use of chemicals, which provide some harm minimization.

Farming injuries in New Zealand
The agricultural industry has had high numbers of work related injury and deaths for over 50 years. Back in the 1985-1994 period agricultural sectors accounted for nearly a quarter of all work related fatal injuries (Horsburgh, Feyer, & Langley, 2001).
Agricultural sectors include forestry and fishery in New Zealand so these numbers are broader than just the farming industry. By 2001 a study on 586 Southland farmers noted that injury rates were over 17% during the preceding 12 months (Firth, Herbison, McBride, & Feyer, 2001).

The latest ACC New Zealand statistics show that in the 2014/15 financial year the agriculture industry made 16,634 new claims (“On the farm,” 2015). The top five injury sites listed were 1) lower back/spine, 2) finger/thumb, 3) knee, 4) hand/wrist and 5) shoulder. This shows that there is a range of areas that are vulnerable in this industry. Statistics that are not available are the number of claims from people that undergo follow up treatment or rehabilitation for an industry. The rate of underreporting, likely in stoical farmers, has not been established.

**Musculoskeletal disorders in farming**

The Washington Bureau of labor and industries as has defined musculoskeletal disorders. (Kirkhorn, Earle-Richardson, & Banks, 2010):

- Non-traumatic disorders of the soft tissues of the musculoskeletal system that can be aggravated by work activities such as repetitive motions, awkward postures, use of vibrating tools or equipment, or by manual handling of heavy awkward loads. Primary ergonomic risk factors include excess force, repetition, awkward posture and vibration. Cold ambient temperatures and pressure points are secondary ergonomic risk factors. (p.283)

Musculoskeletal disorders have been identified as the top health problem facing agricultural workers (Fathallah, 2010). A United States of America based study found that these are the most common non-fatal injuries diagnosed among farm workers (McCurdy et al., 2013). These musculoskeletal disorders are more often chronic injuries built up over time from repetitive movements that cause damage exceeding the body’s ability to repair. Low back pain, herniated lumbar discs, rotator cuff tendonitis and tears, wrist tendonitis, carpal tunnel syndrome, hip and knee arthritis are some of the common clinical diagnoses that fall under this umbrella. A key consideration is identifying whether there is adequate time, in a farmers life, for
affected body parts to recover from the physical forces placed upon it (Kirkhorn et al., 2010).

Healthcare in rural areas

What is rural?
The default position for defining ‘rural’ in relation to health is often ‘not urban’ or ‘not metropolitan’. There is no clear internationally recognized definition (Fearnley et al., 2016). Often professional groups in New Zealand use their own definition for research purposes. The New Zealand Rural Doctors Working Party used their own definition of ‘rural’ to define their scope of practice. Distance from base hospitals with specialist services has emerged as a key component for this group (Fearnley et al., 2016). This position illustrates the stance that a low population is not necessarily a component of a definition of what is ‘rural’.

Primary healthcare
Primary health care, in the New Zealand setting has a specific definition: it relates to the professional health care provided in the community, usually from a general practitioner, practice nurse, pharmacist or other health professional working within a general practice. It covers a broad range of health services, including diagnosis and treatment, health education, counseling, disease prevention and screening (Primary health care, 2017). Secondary and tertiary care levels involve referral for specific specialized care. Primary health care is essential care based on practical, scientifically sound, culturally appropriate and socially acceptable methods (A. King, 2001). It is provided by health professionals such as general practitioners and practice nurses, and manual therapy practitioners including osteopaths, not only in urban areas but also rural. Primary health care is integral to the function and success of any health system. It encompasses a wide range of multidisciplinary modalities that contribute to optimal health.

Decline in rural health services
Prior to 2005 additional funding for rural primary health care attempted to improve the access of rural communities to health services by addressing two factors: the
onerous General Practitioner on call rosters and the retention of rural healthcare providers (Goodyear-Smith, 2005). However, since that time areas have faced an increase in the loss of all health professionals. Rural health care in New Zealand is said to be built on a “fragile” model of care (O’Connor, 2009).

**Access barriers to healthcare**
There have been five categories of barriers identified through a qualitative research study undertaken in rural West Virginia communities; these arose from discussion groups with rural people. They are: transportation difficulties, limited health care supply, lack of quality health care, social isolation and financial constraints (Goins, Williams, Carter, Spencer, & Solovieva, 2005). This study also explored the coping strategies employed by these groups of people in order to adapt and negate the challenges, such as: reducing dosage or doing without, limiting other expenses, relying on family assistance, supplementing with alternative medicine, and shopping around for cheapest prices.

Distance to care and transportation challenges are noted as the forefront challenges that face rural people in access (Merwin, Snyder, & Katz, 2006). This is often exacerbated by lower numbers of healthcare professionals located within rural catchments. Studies exploring rural access from health professional perspectives have identified that geographical location and professional isolation are related to a decline in healthcare providers in these areas (Curran, Fleet, & Kirby, 2006). Brems et al (2006) identified policy implications that address the difficult task of providing healthcare in settings that limit effectiveness and success. They put forward the notion that to overcome these challenges rural health care providers need to learn to be creative and flexible and engage in an advocacy role that gains trust and facilitates help seeking (Brems, Johnson, Warner, & Roberts, 2006).

**Locus of control**
Julian Rotter proposed this social learning theory in 1954. It is a fundamental construct of individual psychology (Lefcourt, 1991). The term refers to a person’s orientation of control of life events.
Locus of control might begin to develop in early childhood and may be located internally or externally (Lefcourt, 1980). Internal locus of control depicts that a person believes they can choose to behave in ways that will directly influence events and situations, whereas in external the sense of personal agency is diminished (Neal, Weeks, & DeBattista, 2014). In this case the individual may believe that other people or external forces are controlling events.

Lazarus and Folkman (1984) reported that culture influences an individual’s locus of control beliefs and that these are tied to coping and emotional response to stress (Lazarus, 1986). Studies have suggested that this cultural influence has developed a belief where rural people may be more likely to perceive that their lives are controlled by external factors and engage external locus of control more readily (Bettencourt, Talley, Molix, Schlegel, & Westgate, 2008). Bettencourt et al. (2008) concluded that patients culturally informed values and beliefs will influence the way in which they cope with and adjust to health concerns. The general theory is that people who feel in control of their own health are more likely to engage with positive healthy behavior and those that feel powerless in the control are less likely to do so (French, 2013).

Health and illness behaviors
Developed in the 1950’s, the Health Belief Model, was employed to explain the widespread failure of people to participate in health programs to detect and prevent disease (Hochbaum, 1958). Since then it has been used as a base to study the psychology of peoples’ health behavior. The model contains concepts to predict the action people will take in relation to their health. These may include action to prevent, screen for, or to control illness conditions (Glanz, Rimer, & Viswanath, 2008). Susceptibility, seriousness, benefits and barriers all contribute to an individual’s health behavior in conjunction with their values and beliefs.

Attitudes to health and illness have been reported to differ between rural and urban population (Elliot - Schmidt & Strong, 1997). This study concluded that the provision of health services for rural people was a strong consideration for seeking health care and that response to illness or disability was often related to the degree at which productivity was affected. Participants in the study indicated that health care was
delayed until such time as it was economically or socially convenient (Elliot-Schmidt & Strong, 1997). Rural people also perceived cultural and behavioral differences as a barrier to seeking help. It has been demonstrated that “perceived barriers” are the most powerful deterrent in the Health Belief Model to seeking health care (Janz & Becker, 1984).

**Manual therapy**

There is a range of manual therapies available in New Zealand. Some of these are, but not limited to: osteopathy, physiotherapy, chiropractic, massage, Pilates, Reiki and acupuncture. All of these are open to be engaged with by an individual privately and some are recognized treatment providers that are subsidized under the Accident Compensation Corporation to assist with injury treatment and rehabilitation. The following section is a brief introduction to osteopathy as an example of manual therapy that provides a holistic approach to health and could complement the work of medicine in the rural sector. The researcher’s background of being a student of osteopathy has given an osteopathic lens on the world of physical injury and a professional goal to be involved in the health care of this population of people.

Osteopathy was founded about 1855 by Andrew Taylor Still in the United States of America (Still, 1908). It is known for the inclusive problem solving approach to health. This is based upon the concept of intricate and complex relations that connect the mind, body and spirit in health and disease (Thomson, Petty, & Moore, 2013). The first of the four major principles of osteopathy is that the body is a unit (Seffinger et al., 2003). This provides the platform for a patient-centered approach to osteopathic care.

Osteopathy is a manual therapy that employs a range of techniques that aim to restore a person’s health related physical complaints (Trowbridge, 1991). In New Zealand osteopaths are considered primary health care providers. This echoes the governing Osteopathic Council of New Zealand’s views that osteopaths are front line health professionals comparable to general practitioners, specialists and radiologists in their goals to provide the best service to their patients (“What is Osteopathic Medicine?,” n.d.). There has been no research undertaken to understand the relationship that
osteopathy or any other physical therapy has with New Zealand’s rural people and communities.

**Summary**

New Zealand has a large amount of its population, approximately one in seven, living in rural areas (Statistics New Zealand, 2016). A large proportion of this will be working within the agricultural sector that has been identified as being one of the most hazardous industries worldwide (Kolstrup, 2012). Although legislation in New Zealand provides some protection for farmers and farm workers, this group of people still accounted for in excess of 23,000 injury claims for the 2014 – 2015 calendar year (“Injury statistics tool,” n.d.).

The most common type of injury recorded in the agricultural sector is musculoskeletal disorders (Fathallah, 2010). These types of injuries often develop from repetitive strains over time without enough time to allow for repair of micro trauma. Health care services that help resolve musculoskeletal disorders has, over the past two decades, seen a steady decline in number and types modalities available (Fraser, 2006). This has increased barriers such as transportation challenges and time and cost for prioritizing health-seeking behavior. Rural people are known to be more likely to seek health care when it was more economically or socially convenient (Elliot – Schmidt & Strong, 1997). Several studies have identified that there are major rural health practice issues in relation to the rural workforce (Moritz, 2004). Findings included that osteopaths could play a significant role in making up for the shortage of health care practitioners in rural geographic areas.
Chapter Two

Methodology and Methods

Chapter two outlines the methodology and method used in undertaking this study. There is an introduction to qualitative research and background information that explores the theory behind the process that was undertaken. In the method section participants, data collection, organization and analysis are discussed.

Qualitative Research

The literature review revealed that little is known about modalities of health, particularly manual therapy, used by rural communities in New Zealand. There has been even less research undertaken in New Zealand on farmers’ experiences of and attitudes to pain and help seeking behavior. A qualitative approach was chosen due to the ability it has to enhance the understanding of health behavior. It can also provide insight to improve the management and provision of health services (Green & Thorogood, 2014). When there is little known about a phenomenon qualitative research allows the topic to be explored in detail without constraints (van Manen, 1997). Qualitative research elicits rich data that can enlighten the researcher in regards to the experiences and attitudes of a group of people.

Qualitative Analysis

Qualitative research has many approaches that can be utilized to analyze data. Some of these methods include interpretive description, hermeneutic phenomenology, grounded theory and narrative approach. Thematic analysis using computer software was identified for this research as it allows a researcher with a qualitative method and design to translate observations and apply statistical analysis to determine validity of the themes or codes (Boyatzis, 1998). Thematic analysis is a method for identifying, analyzing and interpreting patterned meanings or ‘themes’ (Rohleder & Lyons, 2015). Themes are developed from the raw data through identification and generation of codes. A code is a textual description of the semantic boundaries of a theme or a component of a theme (Guest, MacQueen, & Namey, 2012). Encoding, a process of
inclusion, allows for raw data to be reviewed and indicates meaning within text. There are a number of ways of sorting and organizing qualitative data. Examples of electronic data programs are QDR Miner, ATLAS and Nvivo.

**Key elements of qualitative research data collection**

In any qualitative research interview the goal is to see the research topic and understand the perspective of the interviewee (Hartley, 2004). In order for this to take place there are three characteristics that interviews generally have: a low degree of structure imposed, a preponderance of open questions and a focus on ‘specific situations and action sequences in the world of the interviewee’ (N. King, Cassell, & Symon, 1994). For the above reasons there is often a close relationship between the participants and the researcher.

The collection of descriptive material is important, as is capturing the essence of the participants’ emotions. These are typically identified through non-verbal clues such as hand gestures and facial expression. It is important to be aware for these signs during interviews as they can help provide a better understanding of the theme being presented and its importance or complexity (Given, 2008). Non-verbal communication can expose a new level of depth within the data, to which end a journal of field notes should be kept and used soon after the completion of each interview.

Semi-structured interview guides provide a base of topics that can be covered; yet allow for a participant-guided flow to conversations. This gives flexibility for other topics to be collected that have not been included in the question development stage. Employing an open-ended question format allows the interviewee to determine the type and order of their response (Hartley, 2004), providing a particular advantage over closed questioning.
Addressing Rigour in Qualitative Research

Rigour is an important aspect of qualitative research. It is described as demonstrating integrity and competence within a study (Aroni et al., 1999). Rigour must be addressed in all aspects of a study to ensure credibility of the process. Quantitative studies employ the use of reliability and validity; rigour is the equivalent in qualitative research (Roberts, Priest, & Traynor, 2006). This section explores how rigour criteria have been addressed throughout this research.

Credibility

Credibility in qualitative research relates to internal validity of quantitative research. It is achieved by ensuring that the study is consistent and free from bias. Researchers should use reflective process and identify any bias so to stay true to the data (Ryan-Nicholls & Will, 2009).

Affirmation of data and findings with participants contributes to credibility. The coding and theme development stages can be reflected upon then discussed and reviewed with supervisors and peers. Houghton et al. (2013) discuss how credibility can be enhanced with triangulation. There are two key purposes. The first is confirmation, of the data, by comparing and exploring data from multiple sources (Casey & Murphy, 2009). The second is to ensure data are ‘complete’. Completeness is ensured by gathering multiple perspectives from a variety of sources. This gives a complete picture of phenomena that could be portrayed (Shih, 1998).

Dependability

Dependability or auditability directly addresses the reliability of the data. To ensure this an audit trail outlining decisions throughout the research process will provide rationale for the methodological and interpretive judgments of the researcher (Houghton, Casey, Shaw, & Murphy, 2013). There should be a comprehensive account of the process so that, should someone examine the data, methods and analysis, they would agree that the concepts are clear and findings are warranted (Tobin & Begley, 2004).
Confirmability
Confirmability relates to the accuracy of the data. Computer assisted organization achieved confirmability through the use of NVivo. NVivo provides a record of decisions made while using the software and will be discussed later in the methods section. NVivo allows the researcher to audit findings and guards against emphasis on rare findings, which may suit the researcher’s preferred argument (Bassett, 2009). Review and cross reference of data is easier as NVivo provides single location storage and ensures that consistent coding is maintained (Bergin, 2011).

Transferability
Transferability addresses whether the findings can be applied in another context. It is not the objective of qualitative research to claim direct generalization, as large numbers are needed for this. Qualitative research is normally conducted with a small sample size, yet transferability may still be appropriate to similar practice situations. Findings should be adequately described so that judgments can be made (Koch, 2006). It is the responsibility of the researcher to provide detailed descriptions of what was done and on the sample group so that readers can identify transferability (Lincoln & Guba, 1985).

Methods
The remaining part of this section will look at ethical consideration, participants, data collection and data analysis methods.

Ethical Consideration
An ethics application was submitted to the Unitec Research Ethics Committee (UREC) in December 2015 and approval was granted (reference: 2015-1084) (Appendix A). An information sheet (Appendix C) detailing the outline of the study and what was required of participants was supplied to each potential interviewee. Before data collection commenced, a participant consent form (Appendix D), was signed by the participant and the researcher.

The audio recordings from the interviews along with the transcribed text files are kept on one computer under password protection. The participant consent forms are held in
a locked filing cabinet on the Unitec Mt. Albert Campus. All of this information will be held for five years as per the UREC ethics approval for this study. At the passing of ten years all hard copy and electronic information will be destroyed.

Considerations of ethical issues were addressed throughout the course of this research. Of particular focus were minimizing participant harm, informed consent, data collection, anonymity and confidentiality, data security and the right of withdrawal from the study. All due steps were taken to ensure that high ethical standards were maintained throughout the course of this study.

**Participant Sample and Recruitment**

*Inclusion criteria*

The criteria for participation in this study were that the participants were between the ages of 35 and 45 and that they had a minimum of 10 years’ experience working on the land. These criteria were of importance to ensure that participants had appropriate and sufficient experience in order to provide rich data. Male and female participants were sought out to balance the data collected, as were farm owners, lease operators and employees to provide contrast within the sample group.

*Recruitment*

Recruitment was fulfilled with one form of advertising. While it had been intended to use a classified advertisement in the regional paper and farming editorial news, the use of this was not required. Sufficient interest and numbers were gained from the use of electronic and hard copy flyer distribution (Appendix B) within the catchment area of Otago-Southland. The first nine participants that expressed interest were chosen to undertake interviews and convenient times were arranged to take place within their own homes.

*The Participants*

Seven men and two women were recruited to partake in interviews. Ideally the balance between males and females would have been closer. Over time, in Canada and other countries, there seems to be an increase in numbers of females working within the agricultural industry (Boserup, Kanji, Tan, & Toulmin, 2007). However,
historically men still hold a traditional gender ideology that makes it difficult for women to be integrated in the agricultural institution (Bock & Shortall, 2006). Therefore a sample size that had more males and females was in fact more representative.

The youngest participant was 35 years and the oldest 45 years. Nine participants provided rich data for collection for this qualitative study where the quality of the data is more important than the quantity of participants (Schneider & Elliot, 2004).

**Data Gathering**

*Preparing for Interviews*

Two practice interviews with volunteer test subjects were held two weeks prior to the interviews commencing. This allowed for questions to be reviewed and reflected on. It also familiarized the researcher with the situation of interviewing rural farmers. These interviews lasted approximately twenty five minutes each and included questions from the interview guide (Appendix E) and subsequent questions that arose with the flow of conversation. This practice allowed for the questions to be tested with realistic study participants for understanding and clarity. Preparation for interview practice can promote rigour and help avoid pitfalls such as premature interpretation of research data (Banner, 2010).

*Data Collection*

Face-to-face interviews were identified as the most appropriate form of data collection for this study. In order to gain a picture of what the attitudes, beliefs and experiences were of pain, farming and help seeking behavior exploratory semi-structured interviews were undertaken. These interviews were completed with the participants in their own homes. This was the most convenient way to minimize impact on the participants’ demands from their farm and family life as organizing them at an off-site location would require more time-cost from them. Undertaking the interviews in a familiar environment would also have the interviewees feeling comfortable thus more likely to provide rich descriptive data.

Nine interviews were conducted and ranged in duration from five to forty minutes. Data were anonymised to ensure confidentiality of each interviewee’s identity. The
participant group for this study, rural farmers, provided succinct and concise answers to the questions posed to them. This provided a total of approximately one hundred and twenty one minutes of interview time. Interview transcription was then undertaken a professional transcription firm who signed a confidentiality agreement. (Appendix F). The transcripts were then checked against the audio recording of the interviews to ensure accuracy of the text. The transcripts were returned to each participant to allow for review. No changes were requested to any of these.

The interviews started with open-ended questions. These were used to help encourage a rich account of the participants experience (van Manen, 1997). If necessary probing questions were used to further explore topics when more detail was sought. Eight of the nine participants had answers to offer for all of the questions posed to them. Some were concise and “straight to the point” with their answers and others had more of a story to tell. All of these were of real life experiences and accounts of events that had happened in their lives. One participant struggled to open up and explore the questions posed and as a result the data supply was minimal from this interview. The questions put to the participants covered topics about experiences of pain, instances of injury, help they had been exposed to or sought, management of musculoskeletal complaints and knowledge of manual therapies. A copy of the researchers Interview Guide that includes a list of questions is included (Appendix E), but it is important to note that other questions were also asked during interviews. All of the interviews were audio recorded, with the consent of the interviewee, for the purpose of transcription and review.

**Data Set**
The data set for analysis was taken from nine interviews that provided approximately 121 minutes of recorded interviews transcribed to 39 pages of data.

**Data Analysis**
Dependability was achieved through engaging with a reflective journal alongside working with the audio and text data. An excerpt of this can be found in Appendix P. Detailing the stages of the process and reflection assisted the development of the
mind-map and allowed for clarity upon review of codes where participants had placed importance or emphasis.

Thematic analysis was the method used to identify patterns and themes across the data set. The advantage of using thematic analysis it is not tied to a particular theoretical outlook (Joffe, 2011). For the purpose of this research the guiding technique was Braun and Clarke’s (2006) six-phase thematic analysis design. Thematic analysis begins as soon as the researcher begins to identify patterns of meaning and issues of potential interest in the data set (Braun & Clarke, 2006). The following are steps taken to get to a point where the meaning of the patterns, or themes, can be reported on. Only a portion of the data, that is, those most significant to the research topic, has been reported on. These main themes provided a richer picture of the experiences of the group of participants.

**Phase 1: familiarizing yourself with your data**
Familiarization with the data began at the interview stage as the researcher was interacting with the interviewees to produce their experiences. Hearing these accounts first hand gave the researcher insight to non-verbal cues and indications about the topics they were discussing. Familiarization continued right throughout the analysis process as the interviews were listened to during the days following collection and again for accuracy of transcription. Throughout the stages in this research the data were consistently referred back to the previous step and the raw data, both audio and text. Analytical interests and thoughts were jotted down in the pre-coding reading phase.

**Phase 2: generating initial codes**
Generating codes begins in this phase. Codes identify a feature of the data that appears interesting to the analyst (Braun & Clarke, 2006). These features may be segments, or basic elements, of the data that can be assessed in a meaningful way regarding the phenomenon (Boyatzis, 1998). Coding belongs as part of the analysis phase as it is the beginning of the organization of the data. To assist with ‘sorting and organizing the data’ (Thorne, 2000) NVivo, a computer software program, was used. The design of this software allows researchers to manage rich text-based data where
deep levels of analysis are required. As the codes were formed the text in which related to that code were attached to it within the program. For this process ‘inclusive coding’ was undertaken. This involves coding for as many potential themes as possible to ensure that saturation of the data was achieved. A codes master list has been attached in Appendix G.

**Phase 3: searching for themes**
Following completion of coding and organization this phase refocused the analysis on looking at a broader picture for themes and patterns. To assist with this an electronically built mind map was created using the website Debategraph. To build the map the researcher thought about the relationship between the codes and the importance that was applied to those relationships within the interviews. All of the codes were applied in the full map. This allowed a visual assessment of the importance of the main themes identified within the data. The mind-map can be located in Appendix H.

Visual cluster analysis occurred once the map was completed. This showed there to be seven larger clusters where codes had more connections with other codes. Using statistical crosschecking, by numerically ordering the codes in connection order, ensured that these seven were the most important codes on the map.

**Phase 4: reviewing themes**
Once key themes were identified they were then reviewed in this phase, occurring on two levels. The first was to review what was emerging by re-reading the collated text within each code. This ensured that the code was a significant theme and that the data were coherent. Refinement was the second level undertaken. It involves a similar process, but in relation to the entire data set (Braun & Clarke, 2006). In the refinement stage a pattern emerged where six of the codes aligned and formed three key combinations. These combinations were relevant as each code, or issue, was often discussed in relation to the other within the raw data. These three combinations theme 1, theme 2 and theme 3, made up of 6 codes, are depicted individually in Appendices I through N. The seventh code was identified as an individual theme (Appendix O).
Phase 5: defining and naming themes
The essence of each of the themes is identified within this phase. It began with further refinement and re-familiarizing with the data within the seven chosen codes. Within the raw data key quotes were selected that represented the character of the node and the meaning that it held for the participants. This shaped the definition of each code and what it signified. Detailed analysis of each theme occurred by breaking down the raw data and interpretation of these began to take form.

Phase 6: producing the report
Once the patterns had emerged and themes had been identified through the organization processes, phase 6, involved the final stage of analysis and the writing of the discussion. Presentation of the findings needs to be concise, coherent, logical and non-repetitive. The discussion includes evidence of the themes within the data and tells the story that is representative of each participant within it. The reader should then be able to decide if this is transferable to another context.

Summary
Chapter two has discussed the methodology of qualitative research as well as the thematic analysis method. The chapter outlined the theoretical and practical steps that were used in the research process as well as discussions of ethical considerations and rigour. The information in this study may be used to understand other rural areas and populations of New Zealand. Readers may then be aware of some of the challenges rural farmers, and people, have as barriers to seeking help from manual therapy practitioners. Information is readily available to indicate to the reader on the age, experience and culture of this group of people. The findings as part of a manuscript written for submission to the Elsevier Journal of Rural Studies follow.
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Rural Health: Who is ignorant?

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Rural health: Who is ignorant?

Abstract
Aim: To understand the attitudes, beliefs and knowledge of musculoskeletal health of a small group of rural people.

Methods: Nine rural farmers in the Otago-Southland area were interviewed on their experiences of pain, help seeking and musculoskeletal complaints. Cluster analysis and mathematical modeling were used to assist in the formalization of the data and identification of the themes.

Results: Three main themes were identified that portrayed the experience and behaviors of this group of rural people. 1) Putting up with pain, 2) Avoiding help 3) Chained to the farm. An associate theme, 4) The downfall of isolation, was also noted within the data.

Discussion: The findings showed that pain is frequently experienced when working on a farm. This group of rural people often put up with pain for long periods of time, and at high levels, before seeking help from health professionals. Knowledge about, and access to, these professionals are factors that contribute to delayed help seeking in these communities.

Conclusion: Farmers in rural Otago-Southland are suffering from pain arising from musculoskeletal disorders unnecessarily due to a lack of knowledge about and access to manual therapies. A culture of stoicism contributes to this by not allowing rural people to recognize or seek help. There is an urgent need for intervention at a regional and national level to improve awareness on musculoskeletal disorders in farming, pain and knowledge about manual therapies available in New Zealand.

Keywords: Rural, pain, delayed help seeking, musculoskeletal, farming, farmers
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### 1.1 Introduction

The aim of this thesis was to explore the attitudes, beliefs and knowledge of rural people working on the land about their musculoskeletal health and pain. It also set out to find out about what this group of people did to manage any episodes of pain. Living rurally in New Zealand has many advantages such as spectacular scenery and an active lifestyle but it also comes with challenges. One of these is the access to, or lack of, health services. A report published in 2010 by the National Health Committee found that addressing the health needs of people living in rural areas is a critical challenge (*National Health Workforce Innovation and Reform Strategic Framework for Action 2011--2015*, 2011).

New Zealanders involved in rural industries, such as farming, work in situations that are physically demanding which increases the risk of trauma or injury. The Accident Compensation Corporation (ACC) has reported that in the year July 2014 – June 2015 farm based incidents were responsible for 23,944 active claims for injury. The approximate costs to the New Zealand health system for these injuries has been listed at $54,502,966 ("Injury statistics tool," n.d.). The Accident Compensation Corporation has identified the agricultural industry as a high injury risk sector in 2015.

### 1.2 Study Design

A qualitative research method was used to enhance the understanding of health behavior and potentially contribute long-term to the management and provision of health services (Green & Thorogood, 2014). A thematic analysis was used in this research to process data as it can allow the essence of the participants experiences to be uncovered whilst finding the meaning of their actions (Schneider & Elliot, 2004).

### 1.3 Sampling

The participants were between 35 and 45 years of age with a minimum of ten years’ experience working on the land. Interest was generated with the use of a flyer (Appendix B), distributed through community noticeboards and electronically on
various social media sites. Convenience sampling ensued and the first nine individuals that met inclusion criteria were recruited for the study, resulting in seven males and two females who took part in the study. The study was approved by the Unitec Research Ethics Committee (reference: 2015-1084). Written consent was obtained prior to the interviews commencing. Following transcription the interviews were returned to each participant for review. No changes were undertaken. Participant anonymity and privacy have been protected with the use of secure location for hard copy material and password protection electronically.

1.4 Data Collection
Face-to-face interviews were undertaken with the nine participants and were audio recorded. Each interview lasted between four and twenty eight minutes with a focus on their attitudes and experiences of pain and help seeking behavior. Participants were also asked about their knowledge and use of manual therapies. Interviews with open-ended questions are known to help encourage a rich account of a participant’s experience through answers that are shaped from an experience (van Manen, 1997).

1.5 Data Analysis
A thematic analysis approach with cluster analysis and mathematical modeling were used to analyze the transcribed interviews. Braun and Clarke’s (2006) six-phase approach guided the analysis process. Familiarization and immersion of the data were achieved by repeated listening to audio recordings and numerous readings of transcribed interviews. Thematic analysis begins as soon as the researcher begins to identify patterns of meaning and issues of potential interest in the data set (Braun & Clarke, 2006). Codes were identified from features that generated interest for the researcher and recorded using NVivo. These features were segments, or basic elements, of the data that can be assessed in a meaningful way regarding the phenomenon (Boyatzis, 1998).

Following encoding of the data an electronic mind map was created with the use of Debategraph. Cluster analysis of this mind map revealed seven key codes. The data that were stored within these codes was then reviewed, reflected upon and broken

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1 *Debategraph* is a web-platform for creating, visualizing and sharing complex mind maps.
down to help understand the connections and intricacies that they contained. This process of review ensured that the themes reflected the true meaning of the data (Schneider & Elliot, 2004). Final stages of the thematic analysis process focused on defining and naming each of the themes as well as the shape of each and the significance. Discussion and review of this was undertaken with supervisors throughout the process.

1.6 Results and Discussion
The aim of this study was to understand the attitudes, beliefs and knowledge of a small group of rural people working on the land towards their musculoskeletal health. The findings in this study uncovered participants’ experiences of and attitudes towards pain and help seeking behavior. The participants displayed stoicism and immense responsibility felt towards their work where work was often prioritized above personal wellbeing. All of the participants had musculoskeletal complaints and often put up with pain for extended timeframes, most waiting for self-resolution instead of seeking help. It appears that this is the cultural norm except in an emergency situation or if the participant is unable to complete work duties.

The analysis revealed cultural barriers to seeking help and low knowledge about modalities that are available in modern complementary healthcare. These findings have given insight into and further understanding of the culture of rural farmers in New Zealand. Four major themes were identified; Putting up with pain; Avoiding help: Chained to the farm: and The downfall of isolation. Each theme has subthemes within it that provide more detail.

1.6.1 Putting up with Pain

Pain
The participants in this study had all had work related pain during their time working on the land. Eight of the nine participants described experiencing pain frequently, which ranged from on a daily basis to multiple times in a month. There were common areas of the body that were identified among the majority of the group such as: back shoulders, hands and knees, but also mentioned were: head, neck, elbows, hips and ankles. Pain was often associated with injury or repetitive use and a principal feeling
of it is not if you are going to get hurt it is when. Pain appears to be accepted as “part and parcel” of the industry. Participants commented:

Most mornings …probably four out of seven mornings and it’s mainly in my neck. [P2, p.2]

It’s very physical, demanding work. Heavy lifting every day. Straining. So that gives some back pain, shoulders, knees, yeah. [P3, p.2]

Daily…it was just every day, working a lot of stress on the body. [P4, p.2]

The constant pain and I was waking up in the night with pain and throughout the day and almost five, six days a week being in pain with it... [P9, p.3]

**Ignoring pain**
The participants had all experienced pain, which they had managed for weeks, months and even years before seeking help or until the pain resolved naturally. Most of the participants expressed that, as long as they could continue to work, they would “put up with it”. Key factors that contribute to this are the level of responsibility that comes with farming and the culture of rural people. In particular the stoicism that is exemplified in learned behaviors such as “putting up with” pain, or enduring hardship in order to achieve (Wagstaff & Rowledge, 1995).
The participants described how they get around pain:

You just gotta get on. You know, that idea that we’re sort of invincible farmers and we’ll be right. [P2, p.2]

In past years, I’ve just boxed on, and “She’ll be alright and away you go” ... Probably the mentality of “Oh you’ll be alright”, “Harden up”. [P4, p.3]

You just sort of get up and keep going ... I just like to keep going and just ignore it and put it away to the side [P2, p.3]
Weeks and months ... you procrastinate on it a lot probably. You just can't get there or you’re busy so you put up with it, put up with it. [P3, p.4]

If it was quite painful, then you’d get on and go and see someone. But if it was just something minor, I think you’d put up with it for quite a while. [P7, p.4]

You don’t wana use up people’s time and that’s a bit of it. But I try and put up with it. Just to make sure it’s not going to go away ‘Cause sometimes you could put up with things and they go away, or most of the time you can. [P9, p.3]

Try for a start by putting up with it and generally going to a wheat bag. [P9, p.3]

Although frequently portrayed as idyllic, farming is an arduous profession (Walker-Bone & Palmer, 2002). Nearly all of the aspects of the job involve physical hazards and stressors, such as lifting, carrying and working with the trunk in a flexed and rotated position, for example in shearing and crutching tasks. There are also other types of hazards, which can be externally applied. Exposure to whole body vibration while tractor driving or high force impacts from unpredictable livestock. Noted in a Southland, New Zealand study in 2001 was that the prevalence of injury, among 586 farmers that were interviewed, within the preceding 12 months was over 17% (Firth, Herbison, McBride, & Feyer, 2001). Given that stoicism is a strong factor in farmers it is likely that this number is underreported.

All of the participants in this study identified work as cause or maintaining factor of pain that they experience. There have been numerous studies internationally that have shown farming is a physically demanding occupation with work tasks that are known to cause musculoskeletal disorders (Kolstrup, 2012). Results from a longitudinal study in Scandinavia in 2002 recorded the incidence of musculoskeletal disorders among 686 active dairy farmers at 83% in males and 90% in females (Pinzke, 2003). The challenge with musculoskeletal disorders is how to assess, diagnose and monitor them. As most develop from strain and are therefore a chronic condition, they tend to come and go. Participants in this study indicated that some types of pain reoccurred many times over the years. Often self-reported pain is the only indicator that there is a musculoskeletal disorder (Kirkhorn, Earle-Richardson, & Banks, 2010).
There were several reasons given by participants as to why they put up with pain for up to months, and in some cases years. These included not knowing where to go, access to services and a lack of trust and confidence in the health system. Although one study in 2010 showed, rural areas sometimes lack medical providers that are knowledgeable about return to work management and/or access to occupational medicine clinics (Kirkhorn et al., 2010), it is not possible to say if that is the situation in New Zealand. The Accident Compensation Corporation is required to follow up, and investigate if necessary, on claims. Lack of services is compounded by farmers’ inadequate knowledge of musculoskeletal disorders and prevention of occupational injuries on farms (Davis & Kotowski, 2007).

### 1.6.2 Avoiding help

**Help seeking behavior was the exception**

An obvious pattern emerged within this theme. The participants were unanimous that help was only sought immediately in extreme pain and emergency situations. At all other times many things had to align in order for an individual to seek help somewhere. These included work, time, travel, appointment availability and coinciding ‘town jobs’. When it occurred, seeking help was often the result of third party encouragement or recommendations from family and friends.

Some considerations the participants shared were:

*Well you gotta weigh up how sore you are and what’s happening at work and try to work around that and when there’s appointments available.* [P1, p.5]

*Yeah. Definitely a nine before I would seek some help.* [P2, p.4]

*Something that disables me from doing my job. I can’t say every broken bone is worth going, but something that is niggly, or absolute painful cuts, or something that you probably need stitches, risk of dying, or something like that, but for your average ... if you can’t fix it yourself ... then you go.* [P3, p.2]
Sometimes back problems and things like that are really hurting you every day, get you right down, giving you headaches and stuff, which eventually you can’t perform so you have to go to a doctor or physio or whatever. [P3, p.3]

Yeah that makes life a lot easier. The thing about it, you’ll do it if it’s convenient, handy. And the thing about it, you know if you can go and get something done, you do know that it will help you quicker and better. [P3, p.5]

Just pure desperation really I think, and pain. [P9, p.3]

**Delayed help seeking behavior**
Stoicism is apparent among the participants. This stoicism is expressed as being “hard” and “not showing weakness”. Not admitting that they (the participants) have problems that need help or that pain is affecting them and keeping it bottled inside are how being “hard” is achieved. It causes a delay in seeing anyone for help. This hesitation is led by experiences of unrealistic medical and health directives or solutions that do not fit with rural lifestyle. Instead there is a tendency to hope that pain and injuries will self-resolve or disappear, at some stage, on their own.
Here are some of the reasons that were offered:

‘Cause I was busy at work. [P1, p.3]

It’s just getting over the stigma of saying you need help … It’s a generation thing … You don’t even put a band aid on it. You just keep going. You harden up sort of scenario, and that’s what I grew up with and that’s what is still in me, as well. You don’t admit that you’ve hurt yourself or that you might be feeling a bit weaker than you should. You just get going and keep going. [P2, p.4]

Got a high pain threshold and can live with most things for a fair while … Don’t have time, just get over it. [P3, p.3]

I’m just not great when it comes to … I’m probably like a lot of farming people, I’m not great when it comes to going and seeing people about your problems. ... I think
it’s more your upbringing. I remember my father would be laying crippled on the sofa all day with back problems ... And you see him, he never bothered going to the doctor, he’d just pop a few pills and get going again. [P5, p.4]

The process involved and the chances of finding a solution. A reasonably prompt solution would be pretty limited. [P9, p.2]

Factors that contribute to a person’s capability to access health services vary between individuals. Higher rates of musculoskeletal disorders among a sub-group population of people can relate in part to access of health services. There are thought to be three levels of concern: health system, health process and patient perspective (Oliver & Mossialos, 2004). Access can fail at any of these levels due to any number of barriers. Barriers, or deterrents, to seeking help identified in the data included: work, distance, time, cost, appointment availability, level of pain/disability and seriousness of injury.

A group of these barriers (distance, time, cost, appointment availability) suggest that access to not only manual therapies, but also healthcare, is a key theme for the participants of this study in relation to delayed help seeking behavior. Health seeking behavior refers to all of the things patients may do to prevent diseases and to detect diseases in asymptomatic stages (WHO - WPRO, 2007). Among this group of participants was a theme of the opposite, delayed help seeking behavior. The true prevalence of musculoskeletal disorders within agriculture is unknown. One of the main influential factors for this is thought to be that many workers have precarious employment and are unwilling to report musculoskeletal disorders for fear of job loss (Kirkhorn et al., 2010).

Holmberg et al. (2002) produced a population-based study contrasting musculoskeletal symptoms among a group of farmers and non-farmers. They found that farmers had more musculoskeletal symptoms that the non-farming group reported. The farmers also did not seek medical advice more often than the non-farming group and noted significantly less sick leave (Holmberg, Stiernström, Thelin, & Svärdssudd, 2002).
There are several factors that contribute to the delayed help seeking in rural people. The first is a culture of stoicism. Stoicism and self-sufficiency have a close relationship and it is assumed that this is where barriers to seek help originate. Stoicism is a typical trait of normative rural masculinity and contributes to the reluctance of men, in particular, to seek help (Courtenay, 2006).

Locus of control and health and illness behavior are the other two factors that play significant parts in delayed help seeking behavior among this group of people. This group displayed evidence of external locus of control where their health care decisions were influenced by external factors (Neal, Weeks, & DeBattista, 2014). In all people values and beliefs are informed by cultural exposure and will influence how health concerns are coped with and adjusted to (Bettencourt, Talley, Molix, Schlegel, & Westgate, 2008). The participants in this study showed consistent trends with other studies where response to illness or disability was gauged by the degree at which productivity was going to be affected and delayed until such time as it was more economically or socially convenient (Elliot – Schmidt & Strong, 1997).

It was apparent with the participants in this study that they were not clear about what type of help was available, or where to go, to help them cope with pain and injuries. There were several factors that contributed including: mistrust of the health system, the processes involved, but the majority of the time it was lack of knowledge. Sun et al. (1991) recommends that education in effective pain treatment, as a primary intervention should be implemented at an intensive level. This would ensure rural people have satisfactory knowledge of musculoskeletal pain as a chronic overuse syndrome (Sun, Park, & Jo, 1991). Chronic overuse syndromes develop as a result of stresses occurring that exceed the body’s adaption to cope with them. There are primary ergonomic risk factors: repetition, excess force, vibration and awkward work postures. Secondary factors include pressure points and cold ambient temperatures (Kirkhorn et al., 2010). A New Zealand study recommends injury prevention community programs for farmers should be a priority in conjunction with addressing lifestyle factors (Firth et al., 2001).
1.6.3 Chained to the farm

Work
The participants conveyed that work is extremely important and all other activities are planned around it. A key challenge identified within the theme is that they are often understaffed with no one to cover if the participant needed time off or to be away. Certain times of the year can be busier than others and can be more difficult to attend to physical and health related issues. Time, when working on the land, is precious and there is not enough of it. Participants detailed this in the interviews:

You either want to get it over and done with first thing in the morning or make it the most latest possible time so you can do the most work for the day. [P3, p.3]

Yeah, work commitments definitely. Yeah that stops a lot of things happening that I think should. [P2, p.4]

Especially in the summertime when you’ve got jobs, weaning and those sorts of things, it’s a bit harder to get away. [P4, p.4]

It depends on your timetable. You’re busy, you can’t go back. You can’t make physios, you can’t … the time. [P3, p.2]

Yeah, the doctor, she gave me a written notice to take a week off work. It was the middle of calving. I had no staff supplied to me by my boss, and there was just no way that the farm and the cows would have been looked after while I had a week off. There was just no way. That would have been an absolute mess to come back to. No, I just went straight back to work. Yeah, no time off. [P2, p.5]

Did my knee … I couldn’t walk, couldn’t physically do my work. Other times, broken arms, bones like that no … There’s certain jobs you can’t do because you’ve got a broken limb, but you don’t stop working. You stop working, you can’t … Even if you’re on ACC or something, you keep going, because it’s your job, it’s your livelihood. You step away from it, chance of someone else taking over, chances of stuff going wrong on the farm, and so when you do come back you’ve got twice the mess to clean up. So, yeah, work’s everything and your paycheck. [P3, p.3]
Responsibility
The participants all reported having high sense of responsibility to the farm. This appeared to be no different between the participants who were owner-operators or the ones that were employees. Responsibility to the farm and work is often put before the participants’ personal health. Some ideas about responsibility that were shared:

Yeah, who’s gonna cover it? I worry about the boss getting carried away and maybe firing me because I haven’t been on the farm when I should have been, it is the big issue, yeah. [P2, p.3]

I’ve broken ribs before and been straight back to work the same day or the next day ... broken ribs aren’t too bad to work with. [P1, p.6]

You can’t just drop tools, so to speak, and get away. [P4, p.4]

Just because you’ve gotta work every day. You can’t afford to be hurt because I couldn’t take any time off farm at all. Didn’t have any staff to cover me and just wasn’t willing to accept that there was anything wrong. [P2, p.2]

You can’t let the team down because people set up for the day’s work with you there. You get injured it puts on a hold, it puts stress on other people, other things. [P3, p.4]

I don’t think I’ve ever failed or not completed the task, but I’ve been in a lot of pain to get things done. So it’s been very hard and very uncomfortable, and extremely hurtful, but I’m still making sure I get done what needs to be done. [P2, p.5]

... the higher up you get in the chain ... the greater responsibility is ... If your job ain’t done, or if you walk away, “Oh I’m injured”, they can be eventually laid off or anything. So your job security. And it’s your stock. Your stock, looking after your animals, means everything to you when you're the boss. [P3, p.3]

Working in the agricultural industry can provide immense job satisfaction. Varied and interesting work tasks where the result of labor can be seen, coupled with an affinity with nature and experiencing the changes in the seasons make it appear picturesque
(Lundqvist, 2001). However, agriculture is often considered the most hazardous of all occupations. What separates agriculture and farming from other industries and occupations is the very long work hours and high physical demand.

The participants in this study described a fear of collapse of the farm system around them. Often there is a lack of staff or back up around to help out if they are injured and a concern that daily or seasonal tasks may fail to get done if they are out of action. There are no statistics available for the average sick leave used within the agricultural industry, nor information on how sick or injury leave is covered as opposed to other industries that have relief worker systems, such as the education system.

Up to 89% of farmers have thought there is a correlation between pain and discomfort and the farm work they undertake (Sun et al., 1991). Work-related musculoskeletal disorders occur following repeated stresses to a localized area and if left unaddressed they can result in lifelong pain and permanent disability (Singh & Arora, 2010). It is known that the number of hours worked by farmers renders them more susceptible to musculoskeletal disorders (Osborne et al., 2010). Prevention of such disorders needs multifaceted consideration. This includes equipment designed to decrease force impacts, correcting awkward work postures, addressing pressure points, but most importantly allowing adequate time for affected body parts to recover (Kirkhorn et al., 2010). Musculoskeletal disorders can cost a farmer in several ways. They increase production costs due to worker absence, medical and associated costs such as travel and accommodation, and decreased work capacity. Current strategies used to avoid any of these involve avoiding healthcare and transitional work programs that involve protecting the affected body part while preventing unnecessary physical deconditioning and prolonged medical recovery (Kirkhorn et al., 2010). A challenge is that appropriate treatment modalities tend to be unavailable in rural areas. Current trends follow a decline seen in health services in rural areas that has been occurring for up to two decades in New Zealand (New Zealand Institute of Rural Health, 2008). All of the participants indicated that if manual therapists were more accessible then they would use them to help with musculoskeletal disorders and pain.
1.6.4 The downfall of isolation

**Geographical challenge**
Primary services, including health care, have been declining in rural areas over the past 20 years. Rural people and isolated farmers find this as a barrier to access to allied and complementary health practitioners. Most of the participants indicated that if manual therapists were closer they would be more inclined to use these services. Some challenges that they face being isolated are:

It’s then trying to get an appointment, either after hours or first thing in the morning or last thing in their working time, because if you live an hour away, you’ve got to leave an hour earlier. [P3, p.3]

“It’ll come right”. And probably at times where I lived was quite a trip to town. Trying to get time off work and organize things like that, and probably costs too. [P4, p.4]

No I can’t say why I haven’t, but it is probably remoteness … [P5, p.3]

Good intention to but sometimes it’s just that I’m working work hours and if you live a long way from a physio or something, it’s a hassle to take time off to get there to do it. [P8, p.2]

Access to health services in rural areas of New Zealand has been an area the Ministry of Health have been working on since the early 1990’s. Initiatives that included rural recruitment, funding, reasonable rostering and locum schemes all failed to slow a rural general practitioner loss of 32% between 2000 and 2005. The New Zealand Institute of Rural Health (2008) also noted that access is about the ability of the consumer to travel to services. Three factors contributed to a lack of consumers being able to transverse distance to essential services: the down turn in the economy, employers’ difficulty in releasing staff (often for a full day) and the increase in petrol and vehicle costs (Health, 2008).
Rural health care sustainability is challenged not only in New Zealand but internationally by shortages of primary health care practitioners (Goodyear-Smith & Janes, 2008). Countries with large land masses have found that rural health workforce recruitment and retention is likely to be more successful with practitioners who are recruited from rural backgrounds (Rabinowitz, 2005). Location is known to be a significant factor in provision and access to services but further research is required to identify the other factors that contribute to this challenge. Areas noted needing more attention include risk determinants, health behavior, service utilization and monitored the stage at which conditions were diagnosed or received treatment (Smith, Humphreys, & Wilson, 2008).

1.7 Limitations
The participants in this study were located over an extensive land area. In order to undertake further research in other rural areas distance and time allowed for data collection will be a challenge along with coordinating to minimize disruption to participants. Communication is also a consideration with rural people. Their responses to questions were short and concise in contrast with similar method studies completed with urban dwellers. The underreporting of pain and injury amongst this population should also be considered.

1.8 Conclusion
All of the farmers in this participant group had experienced pain and injuries over their farming lifetime. They had also all shown tendencies to delay health seeking to assist with varying levels of pain and/or serious injury. Without specific diagnosis of these complaints it is assumed that these were types of injuries that can be grouped under the musculoskeletal disorder umbrella. It is important to address these within the Otago-Southland area, but also other rural New Zealand areas, as they can result in long-term disability, lost work time and increased production costs (Kirkhorn et al., 2010).

Physical risk factors are major contributors to the manifestation of musculoskeletal disorders in agriculture, however others are important to note in the development and prevention. Psychosocial, cultural and socio-economic factors all contribute to locus
of control and health behavior among people. In rural people external loci have a more significant impact (Bell, Quandt, Arcury, McDonald, & Vitolins, 2002).

There is still a long way to go to improve health and safety within the agricultural sector and the rate of intensification of farming makes this even more urgent that changes are made and education becomes a priority. Health industry awareness and musculoskeletal disorder prevention education by health professionals who understand rural culture and stoicism are required to gain trust and build trusting relationships between rural people and health professionals (Gilson, 2003). A larger study is urgently recommended to establish how prevalent this situation is in order to address the needs of New Zealand’s rural people.
1.9 References


Schneider, Z., & Elliot, D. (2004). *Nursing research: Methods, critical appraisal and


Appendices
Appendix A: Ethical Approval Letter

Kelly Burnett
22 Bollard Avenue
New Windsor
Auckland 0600

18.2.16

Dear Kelly,

Your file number for this application: 2015-1084
Title: The attitudes, beliefs and knowledge of a small group of rural workers about their musculoskeletal health.

Your application for ethics approval has been reviewed by the Unitec Research Ethics Committee (UREC) and has been approved for the following period:

Start date: 18.12.15
Finish date: 18.12.16

Please note that:

1. The above dates must be referred to on the information AND consent forms given to all participants.

2. You must inform UREC, in advance, of any ethically-relevant deviation in the project. This may require additional approval.

You may now commence your research according to the protocols approved by UREC. We wish you every success with your project.

Yours sincerely,

Sara Donaghey Deputy Chair, UREC

cc: Elizabeth Niven, Cynthia Almeida
Appendix B: Flyer Advert

Seeking farmers to participate in a study investigating musculoskeletal health.

To express an interest and receive information on eligibility criteria please contact lead researcher

Kelly Burnett
Ph: 0274 63 65 69, email: osteofarmingstudy@gmail.com

Study to be conducted Jan – Feb 2016

Ethical approval: ...
Appendix C: Participant Information Sheet

Information for participants

Research Project Title: The attitudes, beliefs & knowledge of a small group of rural workers about their musculoskeletal health.

Synopsis of project: This project aims to interview 10 people working on the land about their thoughts and attitudes towards their musculoskeletal, or physical health.

What we are doing: Interviews will be conducted with each participant and audio recording will be used to collate the conversation between the researcher and the participant. The information and data collected from these interviews will then be organized using computer assisted thematic analysis. Following this the data will then be analysed and interpreted by the researcher to form part of a Master of Osteopathy research thesis.

What it will mean for you: Participating in the study will involve being interviewed by the researcher for approximately one hour, but no longer than 90 minutes. These interviews will be scheduled at a time that is convenient for you. Following this you will receive a transcribed copy of the interview recording to read over and authenticate.

If you agree to participate, you and your parent/guardian will be asked to sign a consent form. This does not stop you from changing your mind if you wish to withdraw from the project. Your parent/guardian can also ask for you to be withdrawn. However, because of our schedule, any withdrawals must be done within 2 weeks after we have interviewed you.

Your name and information that may identify you will be kept completely confidential. All information collected from you will be stored on a password-protected file and only you, the three researchers and our supervisors will have access to this information.

Please contact us if you need more information about the project. At any time if you have any concerns about the research project you can contact our supervisor: My supervisor is Elizabeth Niven, mobile phone: 021 654 935 or email eniven@unitec.ac.nz

UREC REGISTRATION NUMBER: 2015-1084

This study has been approved by the UNITEC Research Ethics Committee from 18.12.2015 to 18.12.2016. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix D: Participant Consent Form

Participant Consent Form

Research Project Title: The attitudes, beliefs & knowledge of a small group or rural worker about their musculoskeletal health.

I have had the research project explained to me and I have read and understand the information sheet given to me.

I understand that I don't have to be part of this research project should I chose not to participate and may withdraw at any time prior the date two weeks following the day at which I receive the transcribed copy of the interview.

I understand that everything I say is confidential and none of the information I give will identify me and that the only persons who will know what I have said will be the researchers and their supervisor. I also understand that all the information that I give will be stored securely on a computer at Unitec for a period of 10 years.

I understand that my discussion with the researcher will be taped and transcribed.

I understand that I can see the finished research document.

I have had time to consider everything and I give my consent to be a part of this project.

Participant Name: ..............................................................................................................

Participant Signature: .................. Date: ..............................................................

Project Researcher: Kelly Burnett Signature: .................................................. Date: ..............................

Project Supervisor: Elizabeth Niven, mobile: 021 654 935, email: eniven@unitec.ac.nz

UREC REGISTRATION NUMBER: 2015-1084
This study has been approved by the UNITEC Research Ethics Committee from 18.12.2015 to 18.12.2016. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix E: Interview Guide

Interview guide and questions

Introduction: Introduce myself: thank the participant for agreeing to be involved.
- Set the scene, discuss how interruptions will be managed should they arrive.
- Outline what will happen: We will begin with administrative duties then we will move into the interview stage that will be audio recorded.
- Check participant has read and understands information sheet they have been supplied with.
- Invite participant to sign two consent forms (one for them to keep, one to be stored on UDrive: premises)
- Outline the interview order and general content. The interview will begin with an open-ended question, which you are invited to answer as you see fit. At any time you are able to ask to pause during the interview or for any comments to be deleted from the interview.
- Explain to the interviewee that their details will be kept confidential and any pseudonyms or numbering system that I am using. Also tell the participant that I may take written notes as I go so that we can follow up points of interest later on.
- Check with the interviewee that it is now OK to begin (all these steps are necessary as we must do it properly)
- Turn on the recorder and speak the date, the purpose of the interview and who is present (my name and the participant number or pseudonym)

Question Guide for interviews:
1. How often do you wake with aches, stiffness and pain?
2. How often do you carry injury or complaints that affect your ability to work at optimal capacity?
3. What injuries have you incurred in your time working on the farm?
4. What help have you sought for these injuries?
5. Have you ever sought help from a musculoskeletal health professional in your working life? Why/why not?
6. How do you usually manage your musculoskeletal complaints?
7. What sort of injury or pain levels would drive you to seeking help?
8. What types of health professionals that deal with musculoskeletal complaints do you know about?
9. How would you describe your musculoskeletal health at present?
10. What regime do you undertake to maintain optimal musculoskeletal health?

Towards the end of the interview:
- As I near the end let the participant know we are near the end and ask if they have any questions
- Remind them of withdrawal conditions and how they will get a copy of the interview transcript and how they may respond
- Thank them and go over any next actions, ask them if they would like reminders of these actions
- Remind them of how to contact myself
- Take my equipment and go out to my car
- Make immediate notes into my recorder about my impressions, feelings, observations, reflections
- Make personal notes (next time remember to...)

Review the recording within a week. Make notes on how to improve for the next interview, note concepts and ideas that are not in my literature review but appear in the interviews.
Appendix F: Transcription Confidentiality Agreement

Confidentiality Letter

TO WHOM IT MAY CONCERN

I, Rajiv Poddar, on behalf of Scribie.com, agree to treat in absolute confidence all information that we become aware of in the course of transcribing the interviews or other material connected with the files which we receive for transcription. We agree to respect the privacy of the individuals mentioned in the interviews that we are transcribing. We will not pass on in any form information regarding those interviews to any person or institution. On completion of transcription we will not retain or copy any information involving the above project.

We are aware that we can be held legally liable for any breach of this confidentiality agreement, and for any harm incurred by individuals if we disclose identifiable information contained in the audiotapes and/or files to which we will have access.

Signature: [Signature] Date: 25th November 2015

2603 Camino Ramon, #420 San Ramon, CA 94583
https://scribie.com, contact@scribie.com
+1 866 941 4131
Appendix G: Nodes/Codes Master List

#Third party intervention/recommendation#
Wife

#Accessibility#
Ankles
Arm
Back
Hand
Knee
Leg
Lower Back
Neck
Shoulder

#Daily physical work#

#Delayed help seeking#

#Didn’t follow professional advice#

#Does not know about musculoskeletal professionals#

#Farming experience#

#Fitness regime#

#Stretching#

#Warm up#

#Frequency of niggles, sore, pain#

#Geographics#

#Help seeking behavior#

#Injury#

Broken bone
Lacerated liver
Ligament damage
Ribs
Sciatic nerve
Sprained vertebrae

#Medication#

Ibuprofen
Panadol
Steroids

#Never sought musculoskeletal help#

#No affect on working#

#Positive musculoskeletal treatment#

#Responsibility#

#Self description of health#

#Strength#

#Tasks#

Catching sheep
Crutching
Drenching
Driving tractor
Jumping out of a truck
Lifting
Motorbikes
Shearing
Weaning
#Temporality#
Future
Present
Past
#Time off work#
Acupuncturist
Ache
Artificial leg
Bad
Broken
Busy at work
Can’t do some things
Carry on
Challenge
Chiropractor
Cold weather
Comes right
Commitments
Complaint
Cortisone
Cost
Cramp
Doctor
Errands
Felt it
Fit that around work
Get fixed
Get going again
Get it done
Get moving
Harden up
Harder to get away
Headaches
Heavy lifting
Hopefully it comes right
Horse
Hospital
Hurt
If you don’t look after it, it’ll break down
Incapacitates
Just have to
Lack of movement
Major
Manipulation
Massage
Medication
Muscle it
Near death
Never stopped
Niggle
Only one there
Osteopath
Pain
Constant pain
Pain level
Physiotherapist
Process
Prompt solution
Put up with it
Repetitive strain
Serious
Sore
Sport
Stiffness
Strain
Take it easy
Time
Tweak
Vehicle
Wear and tear
Work
Work around it
Worse
You can get help
Appendix H: *Debategraph* – Full Mind Map of codes and relationships
Appendix I: ‘Pain’ code
Appendix J: ‘Put up with it’ code
Appendix K: ‘Help seeking behavior’ code
Appendix L: ‘Delayed help seeking’ code

[Diagram showing complex relationships between different factors related to delayed help seeking, such as pain, help seeking behaviour, only one there, minor, help seeking, serious, etc.]
Appendix M: ‘Work’ code
Appendix N: ‘Responsibility’ code
Appendix O: ‘Geographics’ code
Appendix P: Reflective Journal Extract

24/1/2016: Participant had experienced excruciating pain for up to 18 months before being told to seek medical help from wife. Medical investigations = kidney failure. How did the farmer put up with pain like this for so long? Why was his health not a priority?

5/2/2016: Participant talked about taping knee up for two days before going to the hospital with ligament damage. The workload was high and the pressure was on to finish it with contractors around to complete the job. Why was he not taken to hospital straight away? Too far, time consuming, needed to finish the job.

28/4/2016: Data analysis: All of the participants experienced pain – pain was felt in numerous areas of the body – why is there not a set pattern of reoccurring injuries? All the participants talked about encouragement to seek help from third parties/ or recommendations from other people about people “who were good”. Why was this? Why would they not just look in the phone book and see who was the closest?

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