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Loneliness among older people living in long term care settings in New Zealand

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Abstract

Introduction

Loneliness is a major problem experienced by older people living in long term care settings. Among older people, loneliness has been associated with poorer physical and mental health. However, there is limited information known about the prevalence of loneliness and socio-demographic and health characteristics associated with loneliness, among older people living in long term care settings in New Zealand.

Methodology

This study used a cross-sectional correlational design to explore the degree of loneliness among older people living in long term care settings in New Zealand and the socio-demographic and health characteristics associated with loneliness. Methods included a demographic data sheet, the Barthel Index to measure functional independence, the EQ-5D-5L and EQ-VAS to measure health and wellbeing, the geriatric depression scale to measure depression, and the De-Jong Gierveld loneliness scale to measure loneliness. Between December 2015 and April 2016, data from 36 participants were collected using predominantly face to face interviews.

Results

The mean age of participants was 81 years (95% CI: 77.81-84.42). Analysis revealed older people experienced marginal loneliness ($M = 2.36$, 95% CI: 1.76-2.96). Logistic regression predicted loneliness was almost twice as likely to occur in older people with low perceived health ($OR = 1.78$, $p = .04$) and was more than twice as likely to occur in those with fewer social networks ($OR = 2.53$, $p = .03$). Logistic regression also predicted that those with fewer social networks were three times more likely to experience social loneliness ($OR = 3.18$, $p < .00$).

Conclusion

Loneliness is prevalent among older people living in long term care settings in New Zealand and is associated with lower levels of perceived health and fewer social networks. Further research with a larger population is needed to understand loneliness, the factors associated with it, and more importantly, strategies to reduce it.

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Chapter one: Introduction

This thesis explores loneliness among older people living in long term care settings within New Zealand. This chapter introduces this thesis by providing background on loneliness among older people, the rationale for conducting the research, the research aims and questions, and finally an overview of the thesis. My interest in this topic comes from my experience as a registered nurse caring for older people living in long term care settings and concern that some of these older people may experience loneliness.

1.1. Background and rationale

The oldest age group are more at risk of loneliness; this is believed to be associated with grief, loss of close associates, change in living conditions, and other related life events (Dykstra, 2009; La Grow, Neville, Alpass, & Rodgers, 2012; Weiss, 1974). In older people, loneliness has been found to be associated with increased risk of mortality, poorer physical and mental health, and increased risk of institutionalisation (Luo, Hawkey, Waite, & Cacioppo, 2012; Prieto-Flores, Forjaz, Fernandes-Mayoralas, Perez, & Martines-Martin, 2011).

Institutionalisation in itself, is believed to cause an increased level of loneliness, with older people living in long term care settings twice as likely to feel lonely than those living in community settings (Prieto-Flores et al., 2011). It is estimated that more than 47% of older New Zealanders aged 65 years and above will use long term care settings in their life (Broad et al., 2015). The population of older people in New Zealand is growing and Statistics New Zealand predicts a 90% probability of older people aged 65 years and above to reach 1.37 million by 2041 (MacPherson, 2014). This increase is likely to also mean there will also be an increasing number of older people living in long term care settings.

There is limited information known about the prevalence of loneliness in older people living in long term care settings and the socio-demographic and health characteristics associated with it (La Grow et al., 2012; Prieto-Flores et al., 2011). Courtin and Knapp (2015) conducted a scoping review of the studies exploring loneliness among older people and found only 10% of the studies were conducted in long term care settings; the other 90% were conducted in community settings. In completing a literature review, no studies were identified exploring loneliness in New Zealand (NZ) long term care settings; this suggests research into loneliness in these settings is needed.

1.2. Usage of terms

In this thesis, the term *long term care settings* is used frequently throughout all the chapters. In this thesis, this term refers to the settings in which older people live where 24 hours nursing care is provided to them.

1.3. Research aims and questions

As previously discussed, loneliness is prevalent among older people living in long term care settings however limited research has been conducted in this area (Prieto-Flores et al., 2011). Review of the literature identified no studies exploring loneliness in NZ long term care settings. The inadequacy of research in this area informed the aim and research questions of this thesis.

The aim of this study was to explore the degree of loneliness among the group of older people living in NZ long term care settings. The research questions of this study are:

1. Is loneliness prevalent among older people living in NZ long-term care settings?
2. Are socio-demographic and health characteristics associated with loneliness?
3. Is depression one of the factors associated with increased levels of loneliness?

1.4. Overview of the thesis

This thesis is divided into six chapters. This chapter introduces this thesis. Following this chapter, Chapter two, *Literature review*, synthesises and critiques the literature pertaining to loneliness among older people. Chapter two presents the definition of loneliness, effects of loneliness, socio-demographic and health factors associated with loneliness and tools available to measure loneliness.

Chapter three, *Methodology*, discusses the suitability of post-positivism and objectivism as the philosophical and theoretical underpinnings of this study. It also presents and justifies the cross-sectional correlational design used in this study, the research methods and the data collection and data analysis processes. Finally the chapter outlines the ethical considerations pertaining to the study and the measures used to ensure research rigour.

Chapter four, *Results*, answers the research questions by presenting the findings of the data analysis. These findings determine the prevalence of loneliness among older people living in long term care settings and factors associated with loneliness.

Chapter five, *Discussion*, elaborates on the findings of this thesis and relates them to wider research conducted in this field. This chapter scrutinises the relevance of the findings in the NZ context.

Chapter six, *Conclusion*, summarises the findings of this study. This chapter addresses the study limitations and the implications of the findings to the NZ context.

1.5. Chapter summary

This study explores loneliness among older people living in NZ long term care settings. This chapter outlined the rationale for studying loneliness in long term care settings due

to the detrimental effect it has on physical and mental wellbeing of older people. The research aim and questions were highlighted and an overview of the six chapters provided. The literature exploring loneliness among older people will be presented in the next chapter.

Chapter two: Literature review

This chapter explores literature pertaining to loneliness and justifies the need for exploring the following research questions:

1. Is loneliness prevalent among older people living in NZ long-term care settings?
2. Are socio-demographic and health characteristics associated with loneliness?
3. Is depression one of the factors associated with increased levels of loneliness?

This chapter explores the concept of loneliness and the determinants of loneliness. It also provides an overview of current knowledge pertaining to loneliness among older people living in long term care settings. The influence this knowledge had on the study design and the contribution this study could have on loneliness in long term care settings are discussed. This chapter also outlines the importance of continuing research into this area and conducting this study.

2.1. Literature search process

An inclusive search for the relevant studies was done using the databases EBSCO host, CINAHL complete, Medline, Google Scholar, Discover and Scopus for peer reviewed journal articles published from time period between 2005-2016 and using the search terms ‘elder* OR “old* people” OR “old* adult*” OR “old* person*” OR “age* person*” OR “age* people*” AND lonel* OR isolat* OR segregat*’. This yielded relevant articles which were narrowed down using availability of full text, peer reviewed and in the English language. Further articles were also selected from the references within articles found in the search. Suitable articles were also selected by isolating authors who have contributed towards research in loneliness in older people and by conducting search of their work in this field.

2.2. Defining Loneliness

Loneliness is defined as a subjective and negative experience, which is rooted within the quality and quantity of social networks, and possibly having an impact on the individual's health and wellbeing. Loneliness has been argued by various researchers as a major indicator of the social well-being of an individual (De Jong Gierveld & van Tilburg, 2006). Loneliness is considered as a person's subjective estimation of his or her involvement or withdrawal from society (De Jong Gierveld & van Tilburg, 2006).

Loneliness can be present without a person being socially isolated. Older people who are socially isolated tend to feel lonely, but experiencing loneliness is not identical to a person being socially isolated (Luo, Hawkley, Waite, & Cacioppo, 2012). Various researchers have recognised loneliness as a two dimensional concept that extends beyond social isolation.

Loneliness has social and emotional dimensions and the presence of one does not imply the presence of other. The concept of social and emotional loneliness was initially proposed by Weiss, and has received support from other researchers (Dahlberg & McKee, 2014). Social loneliness has been described as an absence of a social group, leading to a person feeling empty and lacking a sense of belonging with a group or community (Dahlberg & McKee, 2014). Emotional loneliness on the other hand is much deeper and personal to the person as it originates from within a person. The person feels an absence of a close bond, intimate support, and reliable people to turn to or a meaningful close relationship in life (Dahlberg & McKee, 2014).

The social and emotional dimensions should be explored independently when studying loneliness as they may not be present together. A longitudinal study with 2,101 participants (more than 50 years of age), conducted over a six year period in America, found 43% of the participants were lonely and only 18% were living alone; this suggested loneliness was present even in the absence of social isolation (Luo et al., 2012). Lou et al.'s study highlights the importance of studying loneliness with distinct social and emotional components.

2.3. Effects of loneliness

Loneliness has been increasingly associated with the deterioration in physiological and psychological wellbeing of older people. Luo et al. (2012) found loneliness to be significantly associated with an increased risk of mortality; those with extreme loneliness were almost twice as likely to die over the following six-year period when compared to those with the lowest levels of loneliness. Along with an increasing risk of mortality, loneliness has been associated with various mental and physical illnesses.

Research demonstrates loneliness is associated with the development of mental illnesses in older people making them at risk of depression (Coyle & Dugan, 2012; Losada et al., 2012; Prieto-Flores, et al., 2011; Van Beljouw et al., 2014). Considerable research demonstrates depression to be related to the levels of loneliness among older people living in long term care settings (Drageset, Kirkevold, & Espehaug, 2011; Luanaigh & Lawlor, 2008; Golden et al., 2009; Nikmat, Hashim, Omar, & Salmi, 2015; Nyqvist, Cattan, Andersson, Forsman, & Gustafson, 2016; Prieto-Flores et al., 2011; Theeke, 2010). Drageset et al. (2011) found depression was related to both social and emotional loneliness and loneliness has been associated with an increased level of depression in older males in New Zealand (Alpass & Neville, 2003).

In addition to depression, loneliness appears to be associated with other areas of mental functioning. It has been related to dementia (Holwerda et al., 2012) and decreased cognition, with reduced psychomotor processing speed and visual memory (Luanaigh and Lawlor, 2008). Being lonely and socially isolated is also linked to an increase in health risk behaviours, such as smoking and inactivity (Shankar, McMunn, Banks, & Steptoe, 2011; Theeke, 2010).

Apart from the direct relation with health risk behaviours, loneliness has also been linked with various chronic conditions such as hypertension, which could be a result of health risk behaviours (Cacioppo et al., 2002; Cacioppo, Hawkley, & Thisted, 2010). Research suggests social isolation is directly linked to increases in blood pressure, fibrinogen levels and C- Reactive proteins (Shankar et al., 2011) all of which can

eventually lead to an increased risk of developing cardiovascular disease and other chronic illnesses (Reed, Crespo, Harvey & Anderson, 2011).

Dahlberg and McKee (2014) in their correlational study of 1,255 older people aged over 65 years, demonstrated similar results to other studies portraying the wider effects of loneliness. They showed significant relationships between poor physical health and increased level of both social and emotional loneliness (Dahlberg & McKee, 2014). Various other studies have also found chronic health conditions and poor health to be a strong predictor of loneliness (Arslantaş, Adana, Abacigil Ergin, Kayar, & Acar, 2015; Losada et al., 2012; Theeke, 2010).

Loneliness furthermore, has been associated with altered immunity in older people (Pressman et al., 2005) and a triggering factor for stress responses (Luanaigh & Lawlor, 2008). Loneliness increases the hypothalamic pituitary adrenocortical activity (Adam, Hawkley, Kudielka, & Cacioppo, 2006) and reduces the anti-inflammatory response whilst increasing the pro-inflammatory response (Cole, Hawkley, Arivalo, & Cacioppo, 2011). This means older people experiencing loneliness are more prone to infection and have less ability to recover from it.

Research suggest decreased levels of loneliness is associated with improved physical and mental function. In a British longitudinal study of 999 participants over an eight-year period, Victor and Bowling (2012) found a strong positive correlation between improved physical health and a reduced level of loneliness. Rueggeberg, Wrosch, Miller, and McDade (2012) identified stress and inflammatory disturbances associated with loneliness are reduced in lonely older people who engage in strategies to protect themselves from being lonely. As loneliness is associated with various problems that can disrupt normal bodily functions and decrease the quality in life, older people who experience loneliness are especially vulnerable to a decline in their quality of life.

2.4. Loneliness in older people

The population of older people in New Zealand is growing. The population of older people aged 65 years or older in New Zealand was 0.65 million in 2014 and Statistics New Zealand projects a 90% probability of the count reaching 1.37 million in 2041 and 1.81 million in 2068 (MacPherson, 2014). It is estimated that more than 47% of older New Zealanders aged 65 years or older will use long term care settings in their life (Broad, Ashton, Gott, McLeod, Davis, & Connolly, 2015). This suggests there will be an increase in number of older people in NZ and a subsequent increase in people living in long term care settings.

One of the biggest problems faced by older people is loneliness. Older people are highly vulnerable to loneliness and several studies have found high levels of loneliness among older people (Prieto-Flores et al., 2011; La Grow, Neville, Alpass, & Rodgers, 2012).

Loneliness has increased rapidly in western societies as the pressure to become productive has led people to ignore their social networks. The basic structure of society is evolving and is witnessing a rapid decline in larger family units with increases in nuclear families, divorce rates and the number of people who choose to stay single (Dykstra, 2009). These changes create a smaller social pool for older people and predispose them to loneliness when they start losing their family and friends (Dykstra, 2009). All of these factors can lead to increased loneliness among older people and therefore, if we are to improve the quality of life of our older population in NZ, there is an urgent need to better identify loneliness and determine strategies to reduce it. The importance of managing loneliness among older people in order to improve their quality of life has been recognised in various policies worldwide and in New Zealand (Statistics New Zealand, 2013) and the New Zealand Ministry of Health recognises reduced loneliness as a healthcare target (Statistics New Zealand, 2013)

2.5. Loneliness in long term care

There are various studies conducted in the field of loneliness but the majority of them have explored loneliness in the community settings (Prieto-Flores et al., 2011).

Research demonstrates loneliness is more prevalent in older people living in long term care settings when compared to those living in community settings therefore, focus into research among older people living in long term care settings is required. Prieto-Flores et al. (2011) conducted a comparative study between loneliness in Spanish older people living in long term care settings and those living in the communities. They had 234 participating older people 60 years old and above from long term care and an equal number from the community. They found older people living in long term care settings were twice as likely to be lonely than those living in the community (Prieto-Flores et al., 2011). The study found depression and participants' social networks were closely associated with loneliness.

The findings related to a higher prevalence of loneliness in older people living in long term care settings when compared to community settings, is supported by Heidari, Ghodusi, and Shirvani (2016) in an Iranian descriptive cross-sectional study of 100 older people over 60 years. Among them, 50 were living in long term care settings, and loneliness was significantly higher in older people living in long term care settings compared to those living in communities. Their study however, excluded participants with disabling acute or chronic physical or mental conditions. As disabilities have been identified as an indicator for loneliness (Golden et al., 2009; Theeke, 2010), this study may have underestimated the degree of loneliness in the wider population living in long term care settings. Heidari et al. (2016) used the Loneliness Self-reported Questionnaire which is not widely used in studies exploring loneliness in older people in long term care settings and may not have derived the true degree of loneliness in this population.

Nyqvist et al.'s (2016) Swedish study found 55% of those living in Swedish long term care settings and 45% of those living in Swedish community settings were lonely. They used a cross-sectional population-based study with a total of 483 older people aged 85 years and over to investigate the association between aspects of social capital (structural, cognitive and health resources) and loneliness. They found loneliness was

found to be closely associated with living alone, depression, and the geographical region they lived in (Nyqvist et al., 2016). Nyqvist, et al. used a single question for their assessment of loneliness “Do you ever feel lonely?” This question had four responses: often, sometimes, seldom, and never. Nyqvist et al. argue the use of this single question to assess loneliness was as equally valid as the multi-items tools developed. However, the use of a single question does not explore the two-dimensional concept of social and emotional loneliness which has been identified as being quite different. Drageset, Eide, Kirkevold, and Ranhoff (2012) previously used a single dimensional tool to measure loneliness, however, now suggests a multi-dimensional measure that enables differentiation between emotional and social loneliness to enable deeper insights into loneliness.

Between 2004 and 2010, Drageset et al. (2012) conducted a study on 227 cognitively intact older people aged 65-102 years, from 30 different long term care settings in Norway. Using face-face interviews and the Social Provisions Scale to measure loneliness, they found emotional loneliness was significantly associated with mortality. From the same sample, using a cross-sectional, descriptive, correlational design Drageset et al. (2011) explored the relationships between depressive symptoms, sense of coherence and emotional and social loneliness and found depression to be associated with both social and emotional loneliness.

Whilst Drageset et al. (2011) showed depression was associated with loneliness in cognitively intact older people, cognitive impairment is also associated with loneliness. Nikmat et al. (2015), in a Malaysian cross sectional survey involving 149 older people aged more than 60 years with cognitive impairment, found loneliness or social isolation was prevalent in 95.5% of participants and was strongly associated with depression and relationship satisfaction with their children (Nikmat et al., 2015). This shows loneliness is prevalent among both cognitively intact and impaired older people, and in both groups it is associated with depression. Nikmat et al. (2015) however did not differentiate between loneliness and social isolation but rather used the Friendship Scale (FS) to measure loneliness. The FS does not measure loneliness as a unique two-dimensional concept and focusses more towards the social component of the loneliness.

It was designed to measure social isolation among older people (Hawthorne, 2006) and has been used to measure just the social engagement of older people (de Guzman et al., 2012). Hence using this scale may be inadequate in assessing loneliness.

The association between loneliness, social isolation, social engagement, and life satisfaction among 180 older people in Philippines living in long term care settings was examined by de Guzman et al. (2012). They used the University of California Los Angeles Loneliness Scale (UCLA) and found association between increased loneliness and increased social isolation, inadequate social engagement and decreased life satisfaction. A tabulated summary of the studies conducted in long term care settings exploring loneliness is included in appendix A.

2.6. Socio-demographic and health factors associated with loneliness

There are various socio-demographic and health factors that have been associated with loneliness. The socio-demographic factors include age, gender, marital status, ethnicity, and social networks. The factors relating to health and wellbeing include institutionalisation and residential satisfaction. These factors will now be discussed.

2.6.1. Age

There are numerous studies suggesting increased age correlates with increased levels of loneliness however, some suggest a positive correlation and some have found a negative correlation between them. Age related degeneration has been associated with increased levels of loneliness (De Jong Gierveld & van Tilburg, 2006; Dykstra, 2009; Golden et al., 2009; Kobayashi, Cloutier-Fisher, & Roth, 2009; Losada et al., 2012). In a secondary analysis of a longitudinal health and retirement study, Theeke (2010) found age to be inversely related to the likelihood of loneliness. The NZ General Social Survey conducted in 2010 found the likelihood of feeling lonely decreased with the increment in age (Statistics New Zealand, 2013).

2.6.2. Gender

The relationship between gender and loneliness does not appear to be clearly established. There are numerous studies associating increased loneliness in women and some studies suggest a relationship between male gender and increased loneliness. Dahlberg and McKee (2014) found male gender a factor associated with increased level of social loneliness; a similar result was found by Djukanovic, Sorjonen and Peterson (2014) who identified the largest proportion of loneliness in their study was among males. On the other hand, Losada et al. (2012) and Golden et al. (2009) found being female as a strong predictor of loneliness.

Some studies propose theories to explain how women cope better with loneliness than men. Some studies suggest women cope with loneliness in a more effective way than men, leading to a lower prevalence of loneliness among them (Honigh-de Vlaming, Haveman-Nies, Bos-Oude Groeniger, de Groot, & Veer, 2014). Others suggest women, when compared to men, are less likely to be socially isolated due to their increased tendency to engage in social groups and make social relationships (Honigh-de Vlaming, et al., 2014).

Bekhet and Zauszniewski (2012) in a descriptive and comparative study examined gender associations with loneliness and resourcefulness skills in older people living in long term care settings. They found the interaction between gender and loneliness was not significant, however, older people who reported not feeling lonely had higher resourcefulness scores than those who reported feeling lonely (Bekhet & Zauszniewski, 2012).

The degree of loneliness varies depending on the instruments used to measure it. Nicolaisen and Thorsen (2014) found asking direct questions showed loneliness was more prevalent in women, however, when using De Jong Gierveld loneliness scale, it was found to be more prevalent in men (Nicolaisen & Thorsen, 2014). This emphasises the influence varying tools have on the study findings and the care required when generalising the results to the older population.

2.6.3. Marital status

There appears to be uniformity in results exploring association between marital status and loneliness. The majority of research associates not being married, or being widowed, or having no partner to an increased level of social and emotional loneliness (Dahlberg & McKee, 2014; Golden et al., 2009; Honing-de Vlaming et al., 2014; Kobayashi et al., 2009; Prieto-Flores et al., 2011; Theeke, 2010). Prieto-Flores et al. (2011) found loneliness twice more likely to exist in older people without partners compared to those with partners.

2.6.4. Social networks

The social networks of older people encourages them to be part of society. The meaningful contacts made by older people enable them to feel associated with the society thereby, reducing the levels of loneliness (Stephens, Alpass, Towers, & Stevenson, 2011). Various studies have found association between the social networks of older people and their levels of loneliness. Prieto-Flores et al. (2011) found personal networks to be the major factor associated with the increased levels of loneliness in older people living in long term care settings.

Victor and Bowling (2012) in their longitudinal study of 999 participants, also found social networks to be a direct measure to reduce loneliness in older people, and Dahlberg and McKee (2014) found less contact with family and friends contributed to an increased level of social loneliness among older people. Living alone and having dissatisfaction with the frequency of contact with relatives and friends is a strong predictor of loneliness (Losada et al., 2012).

The degree of loneliness appears to be related to the composition of households and the relationships with family members. Theeke (2010) found living in the household with limited people significantly increased the likelihood of older people getting lonely. These findings were supported by Chen and Feeley (2014) who found support from spouse/partner, family, friends, and children as a significant indicator of decreased loneliness whereas, strain in relationships was linked to increased levels of loneliness.

2.6.5. *Health and wellbeing*

The perceived wellbeing and ability to function physically appears to be related to loneliness levels. Dahlberg and McKee (2014) found low level of activities contributed to an increased level of loneliness and was a significant predictor for social loneliness. Lack of hobbies is a strong indicator of loneliness (Arslantaş et al., 2015) and loneliness is increased in those who are physically disabled or have physical limitations (Golden et al., 2009; Honing-de Vlaming et al., 2014; Theeke, 2010). High levels of restriction in performing activities, such as inability to perform activities of daily living, is also associated with increased levels of emotional loneliness (Dahlberg & McKee, 2014).

The relationship between the loneliness and wellbeing of older people appears to be inter-related. Loneliness has been associated with the decline in the physical functioning and that decline leads to the loss of independence among older people. The inability to independently manage activities of daily living may also cause distress, isolation, grief, sense of helplessness, and other psychological problems (Dahlberg & McKee, 2014) that can lead to loneliness.

2.6.6. *Institutionalisation*

Prieto-Flores et al. (2011) found the effects of institutionalisation was significantly associated with loneliness. They also found older people living in long term care settings twice as likely to feel lonely than those living in the community.

Moving into an unfamiliar environment of a long term care setting brings with it its' own problems that can increase the vulnerability and stress levels among older people. Moving away from familiar surroundings and people into a setting which has timetables, policies and practices, insufficient space, structured environment, time constraints and most importantly the distance separating them from their meaningful social contacts, increases the likelihood of feeling lonely (Prieto-Flores et al., 2011). Older people with cognitive impairment and/or other limiting health and wellbeing factors may not be able to form meaningful relationships once they move into long term settings. Prieto-Flores et al. (2011) state "Not only does institutionalisation have an

effect on the feeling of loneliness, but extreme loneliness may also lead to institutionalisation” (p.190).

2.6.7. Residential satisfaction

The wellbeing of older people living in long term care is associated with the physical and social environment of long term care setting they live in (Cheng et al., 2011). There is limited research on the residential satisfaction among older people living in long term care settings despite the negative effects of institutionalisation on the social world of older people (Fernandez-Mayoralas, Prieto-Flores, Forjaz, Rojo-Perez, & Martinez-Martin, 2011). A cross-sectional study conducted in Spain found residential satisfaction positively affects the sense of belonging and negatively affects loneliness among older people living in long term care settings (Fernandez-Mayoralas, et al., 2011).

Socio-structural factors, such as education and income, have also been associated with loneliness. Theeke (2010) found lower levels of education and income were associated with increased loneliness among older people living in the community settings. On the other hand, education and income have not been frequently associated with loneliness among older people living in long term care settings. Having discussed factors affecting loneliness, the tools available to measure loneliness will now be discussed.

2.7. Measuring loneliness

There are tools developed and utilised to measure loneliness among older people living in long term care settings. The tools described below have been used in the studies conducted in long term care settings and consist of both uni-dimensional and multi-dimensional tools to measure loneliness.

2.7.1. University of California, Los Angeles loneliness scale

University of California, Los Angeles (UCLA) loneliness scale is a 20-item scale used to measure loneliness and social isolation. Although the scale was developed using

sample of young people, the validity of the scale has also been proven in older people (Dahlberg & McKee, 2014). This scale appears to be highly reliable with an internal consistency (Cronbach's $\alpha = .89 - .94$) and test-retest reliability over a 1-year period ($r = .73$) (Russell, 1996).

2.7.2. *De Jong Gierveld loneliness scale*

The De Jong Gierveld Loneliness Scale provides a multi-dimensional measure of loneliness as it covers both social and emotional dimensions (Dahlberg & McKee, 2014). This scale is regarded to be appropriate, widely used and has been validated for use in long term care settings for assessment of loneliness in older people (Cronbach's $\alpha = .76$) (Dahlberg & McKee, 2014; De Jong Gierveld & van Tilburg, 2006; Penning, Liu & Chou, 2013). Penning, Liu and Chou (2013) also found this scale more suitable to use in older people when compared to the ULCA.

2.7.3. *Social provision scale*

The social provision scale (SPS) was designed by Cutrona and Russell in 1987 to measure the extents to which a person reports being satisfied with their present relationships. It is an interviewer administered scale and contains 16 items, based on the four social provisions identified by Weiss (1974) which are attachment, social integration, nurturance and reassurance of worth. This scale has been used in a variety of populations including older people, but it was not designed specifically for the geriatric setting. High scores of SPS indicate a high level of satisfaction with their present relationship. The revised SPS has shown good reliability when used among older people living in long term care settings and good validity measures (Drageset et al., 2011).

2.8. Measuring functional independence

There are various tools designed to measure the functional ability of an individual to perform activities of daily living (ADL). Among them, the most commonly used are the

Barthel Index and the functional independence measure (Cheng, Weng, Chang, Tan, & Tang, 2014) which are described below.

2.8.1. *The Barthel Index*

The Barthel Index is used to assess functional independence of older people to carry out activities of daily living and has been used in other studies exploring loneliness of older people living in long term care settings. It consists of 10 activities of daily living and can be completed through observation or self-report and is seen as a valid tool to measure functional ability (Collin, Wade, Davies, & Horne, 1988).

2.8.2. *Functional independence measure*

The functional independence measure (FIMTM) is an 18-item ordinal scale used to measure the functional status often in the rehabilitation community (Wright, 2000). The FIMTM is a valid and reliable tool to measure functional ability among older people as it has shown good construct validity and reliability (Cheng et al., 2014). This tool however, has not been widely used in studies exploring loneliness among older people.

2.9. Measuring self-reported health status

There are various tools developed to measure health status of older people. Among the available tools, two of the tools previously used in the research exploring loneliness among older people are described below.

2.9.1. *36-item short form health survey*

The 36-item short form health survey (SF-36) was developed by the Research and Development (RAND) Corporation as part of the medical outcomes study which was a survey conducted to assess the quality of life in people with chronic conditions (RAND Corporation, 2016). It was designed to evaluate medical outcomes and rationalise differences in patient outcomes (RAND Corporation, 2016). The SF-36 is an articulated, generic and self-reporting tool which covers quality of life measures, such

as physical functioning, social functioning, role limitations due to physical problems and/or emotional problems, mental health, energy or vitality, pain, general health perception and health changes over the past year (Garcia & McCarthy, n.d.; RAND Corporation, 2016). It is widely used for routine monitoring and assessment of care outcomes and has been widely used in studies involving older people (Garcia & McCarthy, n.d.).

Haywood, Garratt, and Fitzpatrick (2005) performed a systematic review of generic self-assessed health scales in older people and among the 15 most widely used instruments assessed, SF-36 was found to have the most extensive evidence of both internal consistency and test-retest reliability. It has an extensive amount of evidence supporting its reliability and validity and recommended in older people when a broad range of health assessment needs to be carried out (Haywood, Garratt, & Fitzpatrick, 2005). A study conducted by Andresen, Gravitt, Aydelotte, and Podgorski (1999) found SF-36 valid and reliable to use in long term care settings however, they recommend it to be used for participants with higher cognitive function.

2.9.2. EQ-5D-5L

The EQ-5D-5L is a tool developed by the EuroQol group to measure health and it has widespread application in the health setting including use in clinical research (Janssen et al., 2013). It measures five dimensions of health: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. EuroQol group requires EQ-VAS to be used as a part of EQ-5D-5L to measure health; EQ-VAS is a slider scale that records the perceived health score. This tool has previously been used in the long term care setting to determine the perceived health of older people (Prieto-Flores et al., 2011).

2.10. Measuring depression

There are various tools commonly used to assess levels of depression in older people living in long term care. Four tools commonly used in clinical studies to assess depression in older people include the Hamilton Rating Scale for Depression, the Zung

Self-rating Depression Scale, the Montgomery-Asberg Depression Rating, and the Geriatric Depression Scale.

2.10.1. *Hamilton Rating Scale for Depression*

The Hamilton Rating Scale for Depression (HAM-D) is a commonly used tool to identify people with depressive disorders in clinical studies (Holroyd & Clayton, 2000). The HAM-D is a 21-item scale which is completed by an observer following an interview with the participant. The validity of this scale in the geriatric setting has not been well established (Holroyd & Clayton, 2000).

2.10.2. *Zung Self-rating Depression Scale*

The Zung Self-rating Depression Scale (SDS) uses graded responses and is widely used in clinical studies (Holroyd & Clayton, 2000). The SDS is not recommended for use in older people due to the false positives it can produce and does not have a well-established validity for use in the geriatric setting (Holroyd & Clayton, 2000).

2.10.3. *Montgomery-Asberg Depression Rating Scale*

The Montgomery-Asberg Depression Rating Scale (MADRS) is completed by an observer, based on an interview of the participant (Holroyd & Clayton, 2000). The scale consists of 10 questions covering core symptoms of depression. The scale has not been validated sufficiently in the geriatric setting (Holroyd & Clayton, 2000).

2.10.4. *Geriatric Depression Scale*

The Geriatric Depression Scale (GDS) short form consists of 15-items (Sheikh & Yesavage, 1986) and was developed to be used in the geriatric setting (Jongenelis et al., 2005). It is one of the most widely used assessment tools to measure depression in older people living in NZ long term care settings (New Zealand Guidelines Group, 2008) and is considered reliable and well validated for use in this population (Jongenelis et al.,

2005; Leshner & Berryhill, 1994; Smalbrugge, Jongenelis, Pot, Beekman & Eefsting, 2008).

2.11. Chapter summary

Loneliness is a subjective and negative experience which is prevalent among older people and it is believed to be twice as prevalent among older people living in long term care settings compared to those living in the community. Loneliness is considered a two dimensional concept, consisting of emotional and social loneliness.

Loneliness is associated with the deterioration in the health and wellbeing of older people. Research has found various socio-demographic and health factors, such as age, gender, marital status, ethnicity, social network, depression, residential satisfaction and institutionalisation, associated with loneliness among older people. Whilst there are various studies conducted in the area of loneliness; it has not been explored in NZ long term care settings.

This chapter explored the concept of loneliness and the research associated with it. The next chapter presents the methodology used to explore loneliness in older people in NZ long term settings.

Chapter three: Methodology

This chapter explains the methodology used to answer the following research questions:

1. Is loneliness prevalent among older people living in NZ long-term care settings?
2. Are socio-demographic and health characteristics associated with loneliness?
3. Is depression one of the factors associated with increased levels of loneliness?

This chapter presents the theoretical framework that underpins this study, the methodology and the methods utilised to answer the research questions, ethical considerations, participant selection processes, and processes used to ensure research rigour.

3.1. Theoretical framework

The philosophical underpinning for this study was objectivism as it followed a scientific method to answer the research questions. Objectivism believes in the existence of a reality and therefore, considers the research process as a way to discover the reality (Gray, 2014). Understanding the philosophical foundation of a study is essential as it aids in understanding the background of the research problem, articulating research questions, validating the methodological approach, and providing criteria which can be used to assess the rigour of the published research findings (Comerasamy & Siu, 2013).

The theoretical stance of this study was post-positivism. Post-positivism stems from positivism and retains some aspects of it hence an understanding of positivism is needed. Positivism believes in only gaining knowledge from phenomena that can be directly observed and measured (Crossan, 2003); once this knowledge is gained it presents truth (Giddings & Grant, 2007). Criticisms pertaining to Positivism led to the development of a post-positivist view.

Post-positivists believe that all observations and measurements can have errors (Crossan, 2003). They support objectivity, however, they define objectivity as a social phenomenon rather than characteristic of an individual researcher. They believe in achieving objectivity by valuing or critiquing knowledge discovered by work of one another (Giddings & Grant, 2007; Houghton, Hunter, & Meskell, 2012). The knowledge that survives the scrutiny of truth seekers is closer to achieving objectivity (Houghton, Hunter, & Meskell, 2012). Post-positivists also believe in uncertainty, with truth being highly likely but not certain (Giddings & Grant, 2007) and that research outcomes are a result of interactions related to a complex range of causative factors (Giddings & Grant, 2007).

This study follows objectivism and post-positivism as there were no known studies conducted in the area of loneliness in older people living in NZ long term care settings which meant uncertainty around the study's findings. The long term care setting is a complex environment where previous research has found difficulty recruiting participants (Tzouvara, 2015) and the interaction of numerous factors, such as physical health, age and gender, influencing the levels of loneliness in older people.

Although a post-positivist approach may include both quantitative and qualitative methods, this study used a quantitative design to identify whether loneliness exists in older people living in long-term care settings. Due to the requirements of a post-positivist approach, this thesis had processes in place to minimise researcher bias related to the researcher's personal values, emotions, and beliefs to enable it to generate results that would be useful in informing future research and improving care of older people.

3.2. Research design

This study used a cross-sectional correlational design to investigate loneliness in older people living in long term care settings. Loneliness being a subjective experience cannot be measured experimentally, which makes correlational design as an appropriate design for a quantitative study on loneliness (Eng, 2016; Weeks, Michela, Peplau, & Bragg, 1980).

Cross-sectional correlational study uses a single timeframe to collect data from a cross-section of population and is beneficial in assessing variables of interest in a population sample (DePoy & Gitlin, 2011). In a cross-sectional correlational design, the independent variables are not controlled and all the variables are measured as they exist, without any manipulation (Beck & Polit, 2012).

DePoy and Gitlin (2011) recommend cross-sectional correlational design in conducting research in a real life setting as it helps enhance understanding about the existing real world setting around us; this is likely the reason why most studies conducted around loneliness in older people have used a correlational design.

This thesis closely resembles a Spanish study which used a cross-sectional correlational design to investigate loneliness among older people living in the community and in long term care settings (Prieto-Flores et al., 2011). Prieto-Flores et al. (2011) used correlation to identify if the socio-demographic factors, depression, and health and wellbeing of the participants was associated with levels of loneliness. A NZ cross-sectional survey conducted in the community setting established relationships between loneliness and self-reported health (La Grow, Neville, Alpass, Rodgers, 2012). La Grow, et al. (2012) found 52% of the participants to be lonely and loneliness was associated with lower physical and mental health scores.

This study used a cross-sectional correlational design, because it aimed to determine the health and demographic factors associated with loneliness in a cross-section of population of older people living in NZ long term care settings at one point in time. Correlation was used to determine whether any relationships exist between loneliness, depression, health and socio-demographic characteristics.

3.3. Methods

As previously stated, this study used a cross-sectional correlational design and resembles the study of Prieto-Flores et al. (2011). Prieto-Flores et al. (2011) utilised previously validated and reliable quantitative tools to explore prevalence and socio-demographic and health factors associated with loneliness. This study compared the factors associated with loneliness among the older people living in community settings and those living in long term care settings. The study from Prieto-Flores et al. identified statistically significant relationships between loneliness, depression and the social network of the participants living in long term care settings.

This thesis used a questionnaire to collect data on participant demographics, their social network, functional independence, perception of health and well-being, and self-reported level of depression and loneliness. Functional independence, health and wellbeing, and depression were included as components of participants' health scores. (see Appendix B). Each of these methods will now be discussed.

3.3.1. Demographic data

Prieto-Flores et al. (2011) collected data on gender, age, marital status, education level, number of children, and the place of residence. The demographic data in this thesis also collected data on the participants' gender, age, marital status, and ethnicity (see Appendix B). As the entry criteria required participants to be living in long term care settings, this was automatically collected. The study did not collect data on education level and number of children as the majority of studies conducted in long term care settings either did not include these factors in their demographic data or when included, have not found any association with loneliness (Nikmat et al., 2015; Nyqvist et al., 2013).

3.3.2. Social networks

To identify factors associated with loneliness, Prieto-Flores et al. (2011) collected data on participants' social network as indicated by the frequency of meaningful gatherings

they have within the setting and the frequency of visits they have outside the setting with their friends, family and neighbours. This study has also used these questions to collect data on participants' social networks. In this study, this data were collected using an interval scale with categories of 'less than once a month', 'once or twice a month', and 'once a week or more frequently'. The response of 'less than once a month' was allocated a score of '3', 'once or twice a month' allocated a score of '2', and 'once a week or more frequently' allocated a score of '1'. The higher the score, the lesser the frequency of contact with friends, neighbours and family therefore fewer social networks (see Appendix B). This data was not measured within a certain time period but related to the frequency of gatherings and visits occurring generally.

3.3.3. Health Scores

The participants' health scores consists of their level of functional independence, health and wellbeing, and depression. The health and wellbeing is further divided into perceived health and health rating.

3.3.3.1. Functional independence

Prieto-Flores et al. (2011) utilised the Barthel Index to assess participants' functional abilities and its association with loneliness; the Barthel Index was also used in this thesis. The Barthel Index collected data on the functional independence of the participants. The Barthel Index is validated, reliable, and has been widely used in the geriatric settings to assess functional ability of older people (Lübke, Meinck, & Von Renteln-Kruse, 2004). The items in the index includes 10 personal activities of daily living: mobilising, transferring from one seating position to another, using stairs, controlling bladder, controlling bowel, bathing, using toilet, personal grooming, dressing, and feeding. Each of the responses to the items in the index would score 0, 5, 10, or 15, depending on the item. The total of the responses to 10 items are then added for a final score ranging from 0 (completely dependent) to 100 (completely independent).

3.3.3.2. *Health and wellbeing*

Prieto-Flores et al. (2011) used the EQ-5D and EQ-VAS to collect data on the health and wellbeing of the participants. This thesis used the EQ-5D-5L and EQ-VAS to collect data on participants' perceived health and wellbeing. The EQ-5D-5L is an updated version of EQ-5D. The health and wellbeing is measured by two different tools and therefore, is further divided into perceived health and health rating.

3.3.3.2.1. Perceived health

Data on the self-reported perceived health were collected using EQ-5D-5L. Copyright of EQ-5D-5L is held by the EuroQol Group Association therefore, permission to use the NZ version of EQ-5D-5L for this study was obtained from them (see Appendix C). The EQ-5D-5L is a validated and reliable tool and is widely used in multiple countries to collect data on self-reported health status of older people (Hulme, Long, Kneafsey, & Reid, 2004).

The EQ-5D-5L includes five items which collect data on the ability of participants to mobilise, perform activities of daily living, basic management of the environment around them, pain or discomfort level, and level of anxiety and depression. Each item has five responses; each response scores a number ranging from 1 to 5. The responses from five items are added to provide a total score, ranging from 5 to 25, where 5 reflects a high perceived health and 25 a low perceived health.

3.3.3.2.2. Health rating

The data on participants' perceived ranking of their health and wellbeing on a scale were collected using the EQ-Visual analogue scale (EQ-VAS). The EuroQol Group Association requires the use of the EQ-5D-5L to be accompanied by the EQ-VAS tool, which is a continuous scale with scores between 0 and 100 measuring participants' perceived health and wellbeing scores. It required participants to rate their health and wellbeing in a scale, with 0 being the lowest and 100 being the highest level of health and wellbeing at that particular point in time.

3.3.3.3. *Depression*

Prieto-Flores et al. (2011) used hospital anxiety and depression scale (HADS) to assess the presence of depression. In this thesis, the 15 item 'geriatric depression scale' (GDS-15) was used as it is recommended by the Ministry of Health of New Zealand as a tool to detect depression among older people and is widely used in long term care settings in New Zealand (New Zealand Guidelines Group, 2008). The majority of studies outlined in the literature review exploring loneliness and conducted in long term care settings have used GDS-15 for the assessment of depression.

The GDS-15 is a valid, reliable and efficient tool in screening for depression among older people living in long term care settings (Smalbrugge, et al., 2008). It is a dichotomous tool and uses 'yes' or 'no' as responses to fifteen questions. For every question, a positive score was assigned if the response indicated depression. The sum total of 15 questions would then give a score ranging from 0-15, where 0 would be no presence of depression and 15 would indicate severe depression.

3.3.4. *Loneliness*

Prieto-Flores et al. (2011) used the 6-item De-Jong Gierveld Loneliness Scale in long term care settings to measure loneliness; this was also used in this thesis to assess levels of loneliness. Although other studies exploring loneliness in long term care settings have used the Social Provisions Scale, UCLA loneliness scale, and Friendship scale, these scales were not designed to measure social and emotional components of loneliness separately (Drageset, Eide, Kirkevold, & Ranhoff, 2012). Drageset et al. (2012) recommended use of a multi-dimensional tool to measure loneliness to gain a deeper understanding of it. The 6-item De-Jong Gierveld Loneliness Scale is a multi-dimensional tool that measures both social and emotional loneliness.

The 6-item De-Jong Gierveld Loneliness Scale has been tested as being reliable and valid in the context of long term care setting (De Jong Gierveld & Tilburg, 2006). It has six items with five possible responses which includes 'yes!', 'yes', 'more or less', 'no', and 'no!'. The scale consists of three questions measuring the levels of social loneliness

and three questions measuring emotional loneliness. For this study, loneliness was studied in its entirety as well as by differentiating it into social and emotional loneliness.

The items related to the emotional loneliness were negatively worded (1, 5, and 6) and the responses to these items would score 1 for 'yes!', 'yes', or 'more or less' and 0 for 'no' or 'no!'. The items related to social loneliness were positively worded and responses for these items (2, 3, and 4) would score 1 for 'no!', 'no', or 'more or less' and 0 for 'yes' or 'yes!' options. The sum total of the six questions would give a final score ranging from 0-6, where 0 would be not lonely and 6 would be extreme loneliness.

3.4. Participant selection

This study used non-probability and purposive sampling to recruit participants. This was to maximise participation and due to the intention of the research to study the population of older people living in long term care settings. Purposive sampling is a non-random sampling technique, where the able and willing participants participate in the study to provide information based on their experience or knowledge (Moule & Goodman, 2009).

To access participants, agreement of the management of the long-term care settings and their input in identifying older people who would meet the inclusion criteria for the study was required. The study had inclusion and exclusion criteria defined to ensure only reliable data were collected. The inclusion criteria included: 1) Older people aged 65 years or over living in long term care settings, 2) cognitively capable to make their own decisions as indicated by a mini-mental state examination (MMSE) score of 27 or greater, 3) proficient in English, and, 4) participating settings are within the greater Auckland region, and, 5) were able to either self-administer the questionnaire or answer the questions asked by the interviewer.

The exclusion criteria for the study included: 1) Older people living in care settings who do not require 24 hours nursing care (i.e. older people living independently in villas or apartments of care settings, 2) Older people living in care settings with an activated Enduring Power of Attorney, 3) Older people medically deemed incapable to make decision for themselves (e.g. diagnosis of dementia) and, 4) Older people who score less than or equal to 26 points in MMSE test.

Whilst Prieto-Flores et al. (2011) used Pfeifer's short portable mental state questionnaire to determine cognitive ability for participation in the study, this study used the MMSE test which was previously administered by the registered nurses of the participating long term care settings as part of their routine patient assessment. The MMSE is routinely used as a tool to assess cognitive function of older people living in the majority of long-term care settings interested in participating in this study. When consulting with experts during the design phase of this study, the managers of the settings interested in their residents participating in the study requested a commonly used tool.

The MMSE is the most widely used tool to assess cognitive levels of older people in NZ settings, even though there are debates around the sensitivity and specificity of the tool (Strauss, Leathem, Humphries, & Podd, 2012). Strauss et al. (2012) found the MMSE the most popular among the health care professionals in NZ as they found it easily available, concise and required less time to complete when compared to the other commonly used tools. This study required registered nurses from the participating settings to utilise previously completed MMSE scores on prospective participants therefore, the tool needed to be already in use.

The MMSE has 11 questions that tests five areas of cognitive function: orientation, registration, attention and calculation, recall, and language, and has a maximum score of 30 (Tombaugh & McIntyre, 1992). There are debates about cut-off values of MMSE, with studies suggesting the cut off value should be 27 instead of the traditional 24 when using it in population at a high risk of dementia (Larner, 2008; O'Bryant, Humphreys,

Smith, Ivnik, Graff-Radford, Petersen, & Lucas, 2008). This study used the cut-off value of 27 to ascertain the participants were cognitively capable to complete questionnaires and to ensure they were capable of providing informed consent.

The Managers of 81 eligible long-term care settings in the Greater Auckland Region were contacted via email, and given information about the study, and approached for the participation of their setting. Among them, only six of the settings were interested in participating in the study. Four other settings replied saying they were not interested. There were no response received from 71 settings. Among the six settings who agreed to participate initially, two of them declined participation during the data collection phase of the study; One said they did not have time to participate in the study due to various other activities going on in the setting whilst the other, although initially showing interest in the study, gave no response when contacted further about the study. Finally, four of the settings were included in this study. The difficulty in recruiting participants in long term care settings is not a problem isolated to this study. This has been experienced by various researchers internationally. A study conducted by Tzouvara (2015) on loneliness among older people living in long term care settings experienced similar problems in recruitment and highlighted it as a significant challenge.

The Managers of the four participating settings identified older people who met the inclusion criteria for the study, and provided them with the brief information about the study and the information sheet. Finally, older people, willing to participate in this study and who met the inclusion criteria for the study, were approached by the researcher.

3.5. Sample size

The sample size of the study was calculated using power tables by Clark-Carter (2009). Clark-Carter (2009) suggests having a minimum sample size of 35 to allow the two-tailed Pearson's product moment correlation coefficient to achieve a greater than 80% power and an effect size of 0.5. An adequate sample size is important in avoiding a

result which may not be sufficiently powered to detect a difference between the groups therefore, resulting in a type II error due to false negatives (Nayak, 2010).

The effect size gives information on the magnitude of the difference between two groups (Sullivan & Feinn, 2012). This study has chosen a medium effect size of 0.5. The effect size is important in identifying whether a statistically significant difference is enough to be a clinically significant difference as well (Nayak, 2010). The alpha value for this study was 0.05.

3.6. Data collection

After consultation with experts in the field of long term care for older people, it was identified that the majority of older people living in long term care settings may require assistance with completing the questionnaire. This thesis was designed to include older people who would meet the inclusion criteria for the study, and may be willing to participate in the study, but their participation may be limited due to the physical and/or sensory deficits, such as arthritis or vision impairment. Participants who could fill out the questionnaire independently were encouraged to do so and if they were unable to complete it themselves then, they were offered a face to face interview. For participants that accepted the face to face interview, they were assisted by the researcher to complete the questionnaire.

The interviews occurred at a time convenient for the participants and in a quiet, private and uninterrupted area of the long-term care settings. The interviews occurred in the long-term care setting that each participant was residing in. The interviews lasted from twenty minutes to one and one-half hours depending on the details of participants' discussion. The responses obtained from the participants were recorded on the questionnaire.

3.7. Ethical considerations

Ethical approval for this study was obtained from the Massey University Human Ethics Committee. As the study involved participation of vulnerable older people living in long term care settings, a complete application was submitted to the committee. Throughout the research process, the information gained from the participants was kept private and confidential.

The consent forms and questionnaires were coded for identification purposes to enable identification and removal of data if any participants decided to withdraw from the study. The information gained during the data collection process was relevant and served the purpose of this study. The data gained from the participants were stored appropriately in a locked cupboard and were used only for the purpose of this study. Patient confidentiality and anonymity was maintained throughout the study. Each participant received a small gift for participating in the study.

Participants were provided with an information sheet, which included information about the background of the study, aim of the study, details about what participation in the study entailed, inclusion criteria for the study, rights of the participants, details of the support services available for the participants, details of the researcher, details of the researcher's supervisor, and the ethics committee approval statement. The participants were also given detailed information about the contents of the information sheet verbally prior to the interview. The participants were given information about the storage of the data, which will be kept for five years in Massey University (see Appendix D).

At the time of interview, the researcher explained to the participants the details of the study, re-emphasised the details contained in the information sheet, the rights of the participants, and the support system available for them if they experienced any distress during the research process. Once the participants were satisfied with the information they had received, and had agreed to participate in the study, verbal and written

informed consent were obtained from them prior to completion of the questionnaire or interview process (see Appendix E).

Information given by the participants during interviews, which were not required by the questionnaire, was not included in the study. At the end of the interview, participants were given an opportunity to discuss any concerns or distresses they may have had during the period of data collection. The availability of support services were highlighted once again if required by the participants.

3.8. Data analysis

As this study followed a quantitative design, data were analysed quantitatively. Data were entered into the Statistical Package for Social Sciences (IBM-SPSS) version 22.0 for windows for descriptive and statistical analysis. All data were subjected to exploratory data analysis (EDA). The skewness value, kurtosis, and histograms were used to determine normality in the distribution of data. Normally distributed continuous data were analysed using mean and 95% Confidence Interval (CI) whilst non-normally distributed continuous data were analysed using median, inter-quartile range (IQR) and range. Categorical data were analysed using frequency count and percentage. Following descriptive analysis, Inferential statistical analysis was applied to the data; this will now be discussed.

3.8.1. Inferential statistics

All parametric tests assume the distribution of scores on the dependent variable is 'normal' (Pallant, 2016). A variable is considered 'normal' when scores of the variable, if plotted in a graph, shows the majority of the scores concentrated in the middle and tapering towards the extreme, giving a symmetrical, bell-shaped curve to the distribution (Clark-Carter, 2004; Pallant, 2016). Variable analysed using parametric statistics in this study met the assumption of normality and those not meeting the assumption of normality, were analysed using non-parametric tests. Homoscedasticity is an assumption of parametric tests which means the sample was obtained from a population of equal variances (Pallant, 2016). In this study the Levene's test was

conducted when a parametric test was used to ensure the assumption of homoscedasticity was met. Both parametric and non-parametric tests assume the groups being tested are independent of one another (Pallant, 2013).

This study used two-tailed tests for all statistical tests performed. A two-tailed test has rejection regions in both right and left tails of the distribution curve (Mann, 2010). This allowed data analysis to be performed without any predicting which direction the result may take. Each of the statistical tests used will now be outlined.

3.8.1.1. *Pearson product-moment correlation coefficient*

The Pearson product-moment correlation coefficient (r) is a parametric statistical test that measures the relationship between two continuous variables (Pallant, 2013; Tabachnick & Fidell, 2013). The assumptions of this test require the variables to have a linear relationship as demonstrated on a scatterplot. The values of Pearson's r ranges from -1 to +1, where -1 indicates perfect negative correlation, +1 indicates perfect positive correlation and 0 indicates no correlation (Pallant, 2013). Pearson's r was used in this study to identify any relationship between participants' perceived health and functional independence.

3.8.1.2. *Spearman rank order coefficient*

The Spearman rank order coefficient (r_s) is a non-parametric test that is equivalent to the Pearson's product moment correlation coefficient and is used when continuous variables do not meet the assumptions of Pearson's r (Clark-Carter, 2004; Pallant, 2016). Spearman rank order coefficient ranks data then completes the Pearson product-moment correlation coefficient to measure the relationship between two variables (Pallant, 2013). This study used Spearman rank order correlation to determine if: 1) age was associated with loneliness or health scores (that included functional independence, perceived health, health rating, and depression), 2) depression was associated with health scores or loneliness, and 3) health scores were associated with loneliness.

3.8.1.3. *The independent samples t-test*

The independent samples t-test (*t*) is a parametric test used to compare the means of two independent continuous variables (Pallant, 2016; Tabachnick & Fidell, 2013). This test requires the continuous dependent variables to be normally distributed and needs homoscedasticity to be met. The test is used to determine if there is any difference between the means of two different groups or conditions. In this study the test was used to determine if there were differences in male and female loneliness scores and perceived health scores.

3.8.1.4. *Mann-Whitney U test*

The Mann-Whitney U (*U*) test is a non-parametric test used to compare two independent groups when the data is not normally distributed and the dependent variable is continuous or ordinal in nature (Clark-Carter, 2004; Pallant, 2016). The Mann-Whitney U test can be applied when the independent variable has two sub groups. In this study, the Mann Whitney U test was used to identify differences in female and male participants' functional independence, health rating and depression.

3.8.1.5. *A one-way analysis of variance*

A one-way analysis of variance (ANOVA) is a parametric test used to compare two independent groups when the distribution of data is normal (Pallant, 2016). ANOVA assesses the influence of categorical variables with more than two levels on a normally distributed continuous variable and requires the assumptions of homoscedasticity and normality to be met. The Levene's test was performed to ensure the tests conducted using ANOVA had not violated these assumptions. In this study ANOVA was used to ascertain differences in participants' marital status and their perceived health and loneliness scores. Marital status was a categorical variable with six items and the perceived health and loneliness were normative continuous variables.

3.8.1.6. *Kruskal-Wallis test*

The Kruskal-Wallis test is a non-parametric test to compare two independent groups, one a dependent continuous variable and the other a categorical variable with more than two items (Pallant, 2016). This test does not assume that the data are normally distributed, however it assumes the distribution of data is heteroscedastic (McDonald, 2014). It was used in this study to assess if participants' with differing marital status had different health scores, including functional independence, health rating and depression. These health scores had non-normative distribution of data. It was also used to identify if participants' with varying ethnicity had different health scores and loneliness scores. Ethnicity and marital status were categorical variables with eight and six items respectively. The loneliness score and health scores were continuous variables.

3.8.1.7. *Jonckheere–Terpstra test for ordered alternatives*

The Jonckheere-Terpstra test for ordered alternatives is a non-parametric test to compare two independent groups when the distribution of data is not normative, the dependent variable is continuous and the independent variable is ordinal in nature (Hinton, Brownlow, McMurray, & Cozens, 2004). This test is preferred to the Kruskal Wallis test when the data is of ranked order (Singh, 2007). It was used in this study to identify if participants' varying levels of social networks that was collected as ordinal data, created differences in participants' health scores and loneliness score.

3.8.1.8. *Logistic Regression*

Logistic regression was used to determine if all the health scores as a set of predictors had an impact on participants' loneliness scores. The study was conducted in long term care settings which is a complex environment to study correlation between variables, because there may be multiple variables interrelated to each other. Logistic regression is considered a versatile and ideal statistical technique to explore interrelationships between variables in a sophisticated real-life setting (Stoltzfus, 2011).

The previous studies conducted in long-term care settings exploring loneliness have successfully used logistic regression to test whether a model comprising of a set of predictor variables has any influence on the levels of loneliness (de Guzman et al., 2012; Nyqvist et al., 2013; Prieto-Flores et al., 2011). This study also utilised logistic regression to assess whether demographics and health scores as a whole had any influence on the loneliness scores. Logistic regression was also used to test the influence of the same predictor variables on both social loneliness and emotional loneliness scores.

Logistic regression is very sensitive to the outliers and multicollinearity (highly correlated independent variables), ($r = 0.9$ or above) (Pallant, 2016; Tabachnick & Fidell, 2013). Logistic regression has an assumption of singularity where any subset of a scale cannot be used together with the complete scale as independent variables (Stoltzfus, 2011). Logistic regression does not follow the assumption of linearity (dependent variable and predictors in a linear relationship) (Pallant, 2016; Tabachnick & Fidell, 2013).

Logistic regression requires at least 10 cases per independent variable analysed (Stoltzfus, 2011). The socio-demographic characteristics were excluded from the analysis to match the independent variable and sample size ratio required by the test. The goodness-of-fit measures were used to assess the overall fit of the model to the sample data.

3.9. Transformed variables

The scores of the visits conducted by the participants inside and outside the setting were added to provide a total score reflecting participants' social networks and used only in the logistic regression analysis. The scores for the Barthel Index were reversed so that the higher value would mean high dependency. The reversed value ranged from 0 to 100, where '0' indicated complete independence whereas, '100' indicated complete dependence. This was done so it would align with other variables and for the interpretation to be easier during the data analysis process.

Prieto-Flores et al. (2011) dichotomised the De-Jong Gierveld Loneliness scale due to skewed data. Although dichotomization of variables implies a loss of information, loneliness responses have been dichotomised in many studies for reasons, such as reducing the number of response categories to gain statistical power and presence of skewed data (Nygqvist et al., 2013). This study dichotomised the loneliness score as 'not lonely' for scores of 0-1 and 'lonely' for scores of 2-6, when performing logistic regression and followed the same separation of categories as Prieto-Flores et al. (2011). This study used the Loneliness scale in its pure form in all other analyses apart from when it was being subjected to logistic regression analysis. If the loneliness score was used in the pure continuous form, it would have required multiple regression, which was not completed due to the assumptions of the test not being met. Having discussed the data analysis process, the measures used to ensure research rigour will be discussed.

3.10. Research rigour

Having a sound process is an essential part of research. Quantitative studies use objectivity, reliability, validity, and generalisability to measure the research rigour. The measures utilised to ensure diligence of this study will now be discussed.

3.10.1. Objectivity

Objectivity focusses on the measures utilised to avoid any biased results (Beck & Polit, 2014). This study was based on the post positivist paradigm therefore, the researcher was aware of the need to minimise contamination of data related to her personal values and emotions. The study used a questionnaire when collecting data which meant questions were asked without altering the format of the questionnaire and ensuring consistency in data collection.

3.10.2. Reliability

Reliability focusses on the uniformity and the ability of the study to be duplicated (Beck & Polit, 2014). The criteria of reliability were met, by clearly outlining the research process to enable replication of this study in a similar setting with similar participants.

3.10.3. Validity

Validity focusses on the extent to which results of the study are true and the extent of credit that can be given to the variables measured (Beck & Polit, 2014). This study involved a heterogeneous sample and the sample were from four different long-term care settings. The design of the study was critically examined by experts in the field of long term care settings, and the design was modified to ensure it collected data that would provide results reflective of that population sample.

The study recruited an adequate sample size for statistical analysis to be performed without creating a Type II error. The methods including, the Barthel Index, the EQ-5D-5L, the 6-item De Jong Gierveld loneliness scale, and the GDS-15, all which have been previously validated and extensively utilised in the quantitative studies in long term care settings.

All methods used in correlation research should ensure the internal consistency is sufficient to ensure the tools used measures the same general construct. Cronbach's alpha is the most widely used objective tool to assess internal consistency of scales used to measure a variable, and values range between 0 and 1 (Tavakol & Dennick, 2011). The acceptable values of alpha generally ranges from 0.70 - 0.95 (Tavakol & Dennick, 2011). This study used Cronbach's alpha to measure internal consistency of the scales used in this study to ensure they were reliable. The previously established Cronbach's alpha (α) for the 6-item De Jong Gierveld loneliness scale varies between .70 and .76; The 3-item emotional loneliness component of the scale has α values between .67 and .74, and the 3-item social loneliness component of the scale has α values between .70 and .73 (De Jong Gierveld & Van Tilburg, 2006).

The reliability of the scales used in this study was measured using Cronbach's alpha (see Table 1). As shown in Table 1, the Cronbach alpha showed good internal consistency (above .7) for the Barthel Index and the Geriatric Depression Scale, however, low internal consistency for the EQ-5D-5L and the De-Jong Gierveld loneliness scale; both of these scales had less than 10 items each. Pallant (2016)

suggests scales with less than 10 items often get a low Cronbach's alpha value and proposes reporting mean inter-item correlations when the value obtained for Cronbach's alpha is low. Using inter-item correlations, the EQ-5D-5L and the De-Jong Gierveld loneliness scale showed these scales had adequate internal consistency (.2-.4).

Table 1

Reliability of scales

Scales	Total items	Cronbach's alpha	Mean inter-item correlations
The Barthel Index	10	.92	
EQ-5D-5L	5	.60	.22 (-.21-.80)
GDS-15	15	.82	
The De-Jong Gierveld loneliness scale	6	.67	.26(-.19-.77)

The independent variables that were assessed for correlations with the levels of loneliness were selected based on the previously conducted studies in this field. This study's questionnaire included questions and tools successfully used in previous studies exploring loneliness in long term care settings. The content of the questionnaire had sufficient data to answer the research questions therefore, this study ensured internal validity.

Collection of data did not take place from mid-December 2015 to mid-January 2016 in order to avoid the Christmas holiday period and prevent it contributing to loneliness and influencing the findings of the study. This was due to the potential for increased levels of loneliness during the holiday period and the frequency of gatherings made by the participants with their family, friends or neighbours may vary during the festive and holiday season.

3.10.4. Generalisability

Generalisability focusses on the extent to which the results of a study can be applicable to other similar areas and populations (Beck & Polit, 2014). This study may not be

generalisable to the entire population of older people living in NZ long term care settings due to the small sample size and the recruitment method. The study employed a small sample size to meet the boundaries of a Master's thesis and the need for face to face interviews in the sample population. It was conducted within a single metropolitan city and involved only four participating centres and hence if completed in different centres or in another town or city, the findings may differ.

3.11. Chapter summary

The aim of the study was to identify the prevalence of loneliness among older people living in NZ long-term care settings and to identify if any association exists between loneliness and socio-demographic factors, depression and health characteristics. This study was based on the philosophical underpinnings of objectivism and post-positivism and used a cross-sectional correlational research design due to the utilisation of this design in previously conducted studies.

Purposive sampling was utilised to select participants due the health characteristics of the participants and their accessibility. Data were collected using a questionnaire which was either self-administered by the participants, or completed during a face to face interview. The study used previously validated methods to collect data and appropriate descriptive and statistical analysis were performed on the data. Having discussed the methodology related to the research, the next chapter presents the results of the study.

Chapter four: Results

This chapter describes the findings of this thesis exploring loneliness and answers the following research questions:

1. Is loneliness prevalent among older people living in NZ long-term care settings?
2. Are socio-demographic and health characteristics associated with loneliness?
3. Is depression one of the factors associated with increased levels of loneliness?

This study recruited 39 participants from four different long term care settings in Auckland, NZ. These participants were selected by the managers of participating long term care settings. At the time of data collection, three participants were excluded from the study as further investigation found they did not meet the inclusion criteria of the study. Finally, a total of 36 participants were included in the data analysis process.

For the data collection process, 34 participants chose to have face to face interviews and two participants opted to complete the questionnaire themselves. The data were collected over a five month period from December 2015 to April 2016.

4.1. Participant demographics

The mean age of the participants was 81 years old (95% CI: 77.81-84.42). The majority of the participants identified themselves as Pakeha (n = 30, 83.3%). Most of the participants were female (n = 21, 58.3%) and many were widowed (n = 15, 41.7%). Most of the participants visited their family, friends, and neighbours outside the setting once a week or more (n = 20, 55.6%). A number of participants received visits from family, friends, and neighbours inside the setting once a week or more (n = 15, 41.7%) (see Table 2).

Table 2

Patient demographic data

Variable	Number (Percent)
Gender	
Female	21 (58.3)
Male	15 (41.7)
Ethnicity	
Pakeha	30 (83.3)
Māori	1 (2.8)
Chinese	1 (2.8)
Other	4 (11.1)
Marital status	
Legally Married	11 (30.6)
Divorced	5 (13.9)
Widowed	15 (41.7)
Single	5 (13.9)
Social networks	
Frequency of visits made by the participants with their friends, family or neighbours	
Outside the setting	
Once a week or more frequently	20 (55.6)
Once or twice a month	4 (11.1)
Less than once a month	12 (33.3)
Inside the setting	
Once a week or more frequently	15 (41.7)
Once or twice a month	7 (19.4)
Less than once a month	14 (38.9)

4.2. Health scores

Participants' health scores included the Barthel Index, the EQ-5D-5L and EQ-VAS and the GDS-15. The Barthel Index measured participants' functional independence. The median score for this index was 97.50 (IQR = 32.50, range =15.00-100.00) showing that most of the participants required minimal assistance in carrying out activities of daily living.

Both the EQ-5D-5L and EQ-VAS determined participants' perceived health. The mean score for EQ-5D-5L was 9.67 (95% CI: 8.32-11.02) and the median score of EQ-VAS was 70 (IQR= 38.75, range = 30.00-100.00), both reflecting participants' perceiving they had a low level of health.

The GDS-15 measured the presence of depression in the participants. The median score was 4.00 (IQR = 3.75, range = 0.00-15.00) showing a low prevalence of depression among the sample population.

4.3. Demographic factors influencing health scores

The data were analysed to identify any relationships between participants' health scores and their age, gender, ethnicity, marital status and social networks. The type of test used and the results of this analysis are outlined in Table 3. As shown in Table 3, participants' social network was positively associated with their functional independence suggesting older people with higher functional independence had more frequent visits with family, friends and neighbours inside and outside long term care settings they lived in. Analysis demonstrated no other significant relationships between participants' health scores and other socio-demographic variables.

Table 3

Relationships between socio-demographic factors and health scores

Socio-demographic variables		Functional independence		Health and wellbeing			Depression	
		Statistical test	Result	Perceived health	Health rating (0-100)	Statistical test	Statistical test	Result
Age		Spearman's rho	$r_s = -.21, n = 36, p = .23$	Spearman's rho	$r_s = -.09, n = 36, p = .62$	Spearman's rho	Spearman's rho	$r_s = .04, n = 36, p = .81$
Gender		Mann-Whitney U	$U = 116, z = -1.42, p = .19$	Independent t-test	$t(36) = -0.85, p = .40$	Mann-Whitney U	Mann-Whitney U	$U = 123.50, z = -1.10, p = .28$
Ethnicity		Kruskal-Wallis	$\chi^2 (3, n = 36) = 1.64, p = .65$	Kruskal-Wallis	$\chi^2 (3, n = 36) = 4.18, p = .24$	Kruskal-Wallis	Kruskal-Wallis	$\chi^2 (3, n = 36) = 4.86, p = .18$
Marital status		Kruskal-Wallis	$\chi^2 (3, n = 36) = 7.81, p = .05$	ANOVA	$F (3, 36) = 2.08, p = .12$	Kruskal-Wallis	Kruskal-Wallis	$\chi^2 (3, n = 36) = 6.87, p = .08$
Social networks (Frequency of visits)	outside the setting	Jonckheere-Terpstra test	$T_{JT} = 270.50, z = 2.02, p = .04^*$	Jonckheere-Terpstra test	$T_{JT} = 165.50, z = -1.22, p = .22$	Jonckheere-Terpstra test	Jonckheere-Terpstra test	$T_{JT} = 224.50, z = .54, p = .59$
	inside the setting	Jonckheere-Terpstra test	$T_{JT} = 261.50, z = 2.55, p = .01^*$	Jonckheere-Terpstra test	$T_{JT} = 146.00, z = -1.18, p = .24$	Jonckheere-Terpstra test	Jonckheere-Terpstra test	$T_{JT} = 165.00, z = -.59, p = .56$

Note. * indicates statistical significance

4.4. Relationships between health scores

Data were analysed for relationships between participants' health scores; health scores included functional independence, perceived health, health rating and depression scores. The type of statistical tests used for this analysis and the results are outlined in Table 4.

A significant relationship was found between participants' perceived health scores and functional independence scores ($p < .000$) suggesting the less functional dependence older people have the more likely they are to perceive their health as poor or vice versa. No significant relationships were found between participants' health and wellbeing and their levels of depression or with participants' functional independence and their levels of depression.

Table 4

Correlation between health scores

Health and wellbeing	Functional independence		Depression	
	Statistical test	Result	Statistical test	Result
Perceived health scores	Pearson's r	$r = -.77, n = 36, p = .00^*$	Spearman's rho	$r_s = .26, n = 36, p = .13$
Health rating (0-100)	Spearman's rho	$r_s = .05, n = 36, p = .78$	Spearman's rho	$r_s = -.03, n = 36, p = .87$

Note. * indicates statistical significance

As already stated, health scores included participants functional independence, perceived health, health rating and depression scores. The results of this analysis and the statistical tests used to perform the analysis are outlined in Table 5. As shown in Table 5, the functional independence, health rating, and depression scores had no statistical correlation with total, social, and emotional loneliness. The perceived health demonstrated a significant correlation with the level of loneliness showing the more

older people perceived their health as poor, the more likely they were to experience loneliness (see Table 5).

Table 5

Correlations between health scores and loneliness

Health scores		Statistical test	Loneliness		
			Total	Social	Emotional
Functional independence		Spearman's rho	$r_s = -.07, n = 36, p = .68$	$r_s = -.06, n = 36, p = .73$	$r_s = .01, n = 36, p = .94$
Health and wellbeing	Perceived health	Spearman's rho	$r_s = .38, n = 36, p = .02^*$	$r_s = .24, n = 36, p = .17$	$r_s = .31, n = 36, p = .07$
	Health rating (0-100)	Spearman's rho	$r_s = -.31, n = 36, p = .06$	$r_s = -.18, n = 36, p = .30$	$r_s = -.22, n = 36, p = .20$
Depression		Spearman's rho	$r_s = .01, n = 36, p = .97$	$r_s = -.18, n = 36, p = .29$	$r_s = .27, n = 36, p = .12$

Note. * indicates statistical significance

4.5. Loneliness

The 6-item De-Jong Gierveld loneliness scale determined participants' levels of loneliness. The participants' mean score was 2.36 (95% CI: 1.76-2.96), representing presence of loneliness but only at a marginal level.

The 6-item De-Jong Gierveld loneliness scale has three items dedicated to social loneliness and three items dedicated to emotional loneliness. The mean score for social loneliness was 1.08 (95% CI: 0.65-1.52) indicating presence of social loneliness was also at a marginal level, whilst the mean score for emotional loneliness was 1.28 (95%

CI: 0.97-1.59) indicating the presence of emotional loneliness was slightly higher than social loneliness.

4.6. Factors associated with loneliness

Participant demographic factors were assessed for their relationship to loneliness. The type of statistical test used and the results are outlined in Table 6. The Jonckheere-Terpstra test for ordered alternatives identified a significant positive relationship between levels of loneliness and the frequency of social networks. This means that older people with fewer visits from family or friends either inside or outside long term care settings experienced more loneliness. The Jonckheere-Terpstra test also identified a significant relationship between the frequency of these social networks and social loneliness however the frequency of social networks was not related to emotional loneliness (see Table 6).

Analysis revealed no relationships between loneliness and age, gender, ethnicity and marital status (see Table 6). Although not statistically significant there was a trend towards participants' age being associated with social loneliness which may mean the older the person is the more likely they are to experience social loneliness.

Table 6

Relationships between loneliness and socio-demographic factors

Socio-demographic variables		Statistical test	Result for loneliness		
			Total	Social	Emotional
Age		Spearman's rho	$r_s = -.22, n = 36, p = 0.21$	$r_s = -.33, n = 36, p = .05$	$r_s = .00, n = 36, p = .10$
Gender		Independent t-test	$t(36) = 1.10, p = .91$	$t(36) = .71, p = .48$	$t(36) = -.80, p = .43$
Ethnicity		Kruskal Wallis	$\chi^2 (3, n = 36) = .93, p = .65$	$\chi^2 (3, n = 36) = 2.69, p = .44$	$\chi^2 (3, n = 36) = 2.50, p = .48$
Marital status		ANOVA	$F (3, 36) = .58, p = .63$	$F (3, 36) = 1.05, p = .38$	$F (3, 36) = .14, p = .93$
Social networks (Frequency of visits)	outside the setting	Jonckheere-Terpstra test	$T_{JT} = 289.50, z = 2.51, p = .01^*$	$T_{JT} = 277.50, z = 2.29, p = .02^*$	$T_{JT} = 256.50, z = 1.55, p = .12$
	inside the setting	Jonckheere-Terpstra test	$T_{JT} = 250.00, z = 2.08, p = .04^*$	$T_{JT} = 269.00, z = 2.87, p = .00^*$	$T_{JT} = 195.50, z = .37, p = .71$

Note. * indicates statistical significance

A direct logistic regression was performed by recoding loneliness scores into a dichotomous categorical variable with 0 denoting absence of loneliness and 1 for the presence of loneliness. The functional ability, health and wellbeing, depression, and social network scores were used as predictors, to determine if loneliness scores could be predicted. The total scores of visits that occurred inside and outside the setting was summed up to a total social network score for inclusion in the model. The socio-demographic variables such as gender and marital status of the participants were excluded from this analysis as the inclusion of these variables resulted in a p value of $<.05$ for the Hosmer and Lemeshow test, indicating the model was not supported.

The full model containing all the predictors was statistically significant, $\chi^2 (5, n = 36) = 19.75, p < .00$, indicating the model was able to differentiate between participants who reported and did not report the presence of loneliness. The model as a whole explained between 42.2% (Cox and Snell R square) and 57.3% (Nagelkerke R squared) of the variance in loneliness levels, and correctly classified 86.1% of the cases. The social network and the perceived health strongly predicted the levels of loneliness compared to the other variables in the model (see Table 7). Participants' who perceived their health to be poor were 1.78 times more likely to experience loneliness when compared to those who viewed their health more positively. Participants who had fewer social networks were 2.53 times more likely to experience loneliness when compared to those who have stronger social networks.

Table 7

Logistic regression predicting loneliness

	B	S.E.	Wald	Df	P	Odds ratio	95% C.I. for Odds ratio	
							Lower	Upper
Functional independence	.03	.03	.86	1	.36	1.03	.97	1.10
Perceived health	.58	.28	4.29	1	.04*	1.78	1.03	3.07
Health rating	-.05	.02	3.08	1	.07	.95	.90	1.00
Depression	-.02	.17	.01	1	.93	.98	.70	1.38
Social networks	.93	.42	4.93	1	.03*	2.53	1.12	5.75
Constant	-6.89	5.50	1.57	1	.21	.00		

Note. * indicates statistical significance

A direct logistic regression was conducted predicting emotional loneliness with the same model of five variables (functional independence, perceived health, health rating, social network, and depression). The full model containing all the predictors was not statistically significant, $\chi^2 (5, n = 36) = 9.04, p = .11$, indicating the model was not able to differentiate between participants who reported and did not report the presence of

emotional loneliness. The model as a whole explained between 22.2% (Cox and Snell R square) and 34.0% (Nagelkerke R squared) of the variance in the emotional loneliness levels, and correctly classified 77.8% of the cases. None of the variables made a statistically significant contribution to the model (see Table 8).

Table 8

Logistic regression predicting emotional loneliness

	B	S.E.	Wald	Df	P	Odds ratio	95% C.I. for Odds ratio	
							Lower	Upper
Functional independence	-.00	.04	.01	1	.92	1.00	.93	1.07
Perceived health	.22	.24	.85	1	.36	1.25	.78	1.99
Health rating	-.05	.03	2.63	1	.11	.95	.90	1.01
Depression	.23	.21	1.21	1	.27	1.26	.83	1.91
Social networks	.07	.30	.06	1	.81	1.08	.60	1.93
Constant	2.37	5.40	.19	1	.66	10.66		

The same model of five predictor variables (functional independence, perceived health, health rating, social networks and depression) was used to predict social loneliness using logistic regression analysis. The entire model was statistically significant, χ^2 (5, n = 36) = 17.30, $p < .00$, in differentiating participants who reported and did not report the presence of social loneliness. The model as a whole explained between 38.2% (Cox and Snell R square) and 50.9% (Nagelkerke R squared) of the variance in social loneliness levels, and correctly classified 72.2% of the cases. The social network of the participants made a statistically significant contribution to the model (see Table 9). This means that older people who have fewer visits inside or outside long term care setting, are 3.18 times more likely to experience social loneliness.

Table 9

Logistic regression predicting social loneliness

	B	S.E.	Wald	Df	P	Odds ratio	95% C.I. for Odds ratio	
							Lower	Upper
Functional independence	-.01	.03	.23	1	.63	.99	.93	1.04
Perceived health	.26	.21	1.48	1	.22	1.29	.86	1.96
Health rating	.00	.02	.01	1	.93	1.00	.96	1.05
Depression	-.24	.14	2.91	1	.09	.78	.59	1.04
Social networks	1.16	.39	8.64	1	.00*	3.18	1.47	6.89
Constant	-5.05	4.55	1.24	1	.27	.00		

Note. * indicates statistical significance

4.7. Chapter summary

Over half of the participants in this study were female and identified themselves as Pakeha. Under 50% of them would gather with their family, friends, and neighbours less than once a week, both inside and outside the setting. The frequency of their visits (both inside and outside the setting) significantly contributed to loneliness with those who experienced fewer social visits experiencing more loneliness. There was no significant correlation between any of the socio-demographic variables and the health scores of the participants. Participants' perceived health was strongly associated with their functional independence indicating the more functional independence older people had, the better they perceived their health and wellbeing or vice versa.

Logistic regression predicted older people who perceived their health to be poor were almost twice as likely to experience loneliness when compared to those who viewed their health more positively. It also predicted that older people who had fewer social networks were more than two times as likely to experience loneliness when compared to those who have more frequent social networking. The model also predicted that those who had fewer visits inside or outside long term care settings were three times more

likely to experience social loneliness. Having presented the study results, the next chapter discusses these results and how they relate to the NZ context and wider international research.

Chapter five: Discussion

The previous chapter answered the research questions of this study. This chapter will discuss the findings of the study and relate it to the wider research conducted in this area. The research questions of this study were:

1. Is loneliness prevalent among older people living in NZ long-term care settings?
2. Are socio-demographic and health characteristics associated with loneliness?
3. Is depression one of the factors associated with increased levels of loneliness?

This study found a low degree of loneliness among older people living in four NZ long term care settings. Older people with weaker social networks that meant they had fewer visits from family, neighbours, or friends inside or outside long term care settings experienced more loneliness. Those who perceived their health to be poor perceived themselves to have less functional independence and were more likely to feel lonely.

The findings of this study are discussed in three different sections: socio-demographic factors, health scores, and loneliness. Health scores are further divided into functional independence, health and wellbeing, and depression.

5.1. Socio-demographic factors

In this study age had no correlation with the levels of loneliness or any other health scores of the participants. This finding was similar to those of Prieto-Flores et al. (2011) who also had participants of a similar age. They found age did not influence the levels of loneliness among older people living in long term care settings however, it had a significant effect on the loneliness of older people living in the communities.

Although the absence of relationship between age and loneliness found in this study aligns with the result of Prieto-Flores et al. (2011), it is in contrast to the findings of several other studies that have found loneliness to either increase or decrease with age. In the NZ General Social Survey (NZGSS), the distribution of loneliness was linear across age, with older people experiencing the lowest levels of loneliness (Statistics New Zealand, 2013). The study by the Auckland Council (2012) found age had no correlation with loneliness among people aged 50 years or above in Auckland, however these studies did not solely focus on older people living in long term care settings. Older people living in long term care settings are generally there because of difficulties associated with living independently in their previous home hence the previous NZGSS and the Auckland study cannot be generalised to long term care settings.

This study had slightly more female participants (58.3%) than males (41.7%). In the census of 2013, 68.1% of older people living in long term care settings in Auckland were female and a total of 54.1% of older people 65 years old and above in NZ were female (Statistics New Zealand, 2015). The gender distribution of the sample in this study appears to represent the general pattern of gender distribution in Auckland long term care settings.

Gender was found to have no association with participants' loneliness or any other health scores, including functional independence, perceived health and depression, in this study. This is in contrast to the study of Prieto-Flores et al. (2011) who reported females were 56% less likely to feel lonely than males and their findings correspond to the findings pertaining to the majority of studies conducted in long term care settings. However the NZGSS found females were more likely than males to feel lonely (Statistics New Zealand, 2013) and the Auckland Council (2012) study found males were lonelier than females. La Grow et al. (2012) in their NZ study of loneliness in older people living in their community dwellings, found no relation between gender and

loneliness. The discrepancy in the results of these study means the relationship between gender and loneliness among older people in NZ is not clearly understood.

This inconsistency in gender and its association with loneliness could be a factor related to different perceptions of loneliness among males and females. Older females in NZ were found to have a better social network than older males however, they were also more likely to report being lonely (Stephens et al., 2011). This indicates that perceived loneliness varies depending on the individual's expectation of acceptable levels of social engagement which differs between males and females and this could be a factor causing discrepancy in the results of NZ studies.

The ethnicity of the participants had no influence over participants' levels of loneliness and their health scores. The majority of the participants in this study were Pakeha (83.3%) so the sample of this study did not represent NZ's diverse ethnic distribution; however this may be representative of the distribution of ethnicity in long term care settings of Auckland and the total population of New Zealand. In the census data of 2013, a vast majority (93.4%) of older people residing in long term care settings in the Auckland region were Pakeha, aligning with the 87.8% of the total population of New Zealand 65 years of age or above who identify themselves as Pakeha (Statistics New Zealand, 2015).

Over 40% of the participants were widowed (41.7%) which appears to resemble the trend of long term care settings in Auckland (Statistics New Zealand, 2015). Census data of 2013 found 60.4% of older people living in long term care settings were widowed (Statistics New Zealand, 2015). Participants' marital status had no relation to their feelings of loneliness and their health scores. This was also the case among the community dwelling older people in NZ, where no relationship between participants' loneliness and the marital status were found (La Grow et al., 2012). This is in contrast to

those of Prieto-Flores et al. (2011) who identified not having a partner increases the levels of loneliness. They identified the majority of older people in long term care (89.1%) had no partner and they were twice as likely to feel lonely than those with a partner.

The social networks of the participants were measured using the same questions used by Prieto-Flores et al. (2011). In this thesis, the majority of the participants received visits inside the setting (41.7%) and gathered outside the setting (55.6%) once a week or more. This aligns with the findings of Prieto-Flores et al. (2011) who found 63.2% of older people living in long term care settings gathered with their family, friends, or neighbours once a week or more frequently. The higher frequency of social networks found in this study and that by Prieto-Flores et al. (2011) is not consistent with other studies. Nyqvist et al. (2013) found more than 70% of older people living in long term care had no contact with their family, friends and relatives face to face or over the telephone for the week before the data was collected.

This thesis identified participants' fewer social networks inside and outside the setting predicted loneliness and social loneliness. This aligns with the findings of Prieto-Flores et al. (2011) who found social networks to be the most significant factor that influenced the levels of loneliness.

5.2. Health scores

Participants' health scores comprised of their functional independence, health and wellbeing, and depression levels. Health and wellbeing was measured using two different tools: EQ-5D-5L measured the perceived health and EQ-VAS measured the health rating on a scale of 0-100.

5.2.1. Functional independence

The median score of the Barthel Index that measured functional independence showed the majority of older people were functionally able to perform most of their activities of daily living; however this may not be an actual reflection of the functional status of the population of older people living in long term care settings. Prieto-Flores et al. (2011) found only 26.7% of older people in long term care settings were completely independent and a higher functional independence was linked to a lower likelihood of feeling lonely. This thesis did find a significant relationship between older people's functional independence and their perception of health and there was a significant relationship between their perceived health and loneliness. This means a larger study may identify a relationship between functional independence and loneliness; this is a subject for future research.

There are conflicting reasons explaining the relationship of functional independence and loneliness. It is suggested that older peoples' functional dependence on their caregivers help build a level of attachment that serves as a protective factor against loneliness (Korporaal, van Groenou, Marjolein, & van Tilburg, 2008; Savikko et al., 2005). This is in contrast to the view of Grenade and Boldy (2008) who argue that older peoples' functional dependence on long term care staff may not reduce loneliness as older people may not see this relationship as providing any meaningful interactions for them. They stress staff members are not the family and friends of older people and the frailty of older people may limit the amount and degree of interaction they can conduct with the staff and other older people living in long term care settings (Grenade & Boldy, 2008). Therefore, this area needs to be explored further to more clearly understand any association between loneliness and functional independence.

5.2.2. *Health and Wellbeing*

The perceived health measured using EQ-5D-5L found the majority of participating older people perceived their health as low, despite being reasonably independent in carrying out their activities of daily living. As already mentioned, this study found a significant correlation between participants' functional independence and their perceived health. This is not surprising since physical ability is often an indication of older peoples' overall health and wellbeing (Ailshire & Crimmins, 2013).

Our findings showed older people perceived their health as low. Similarly, in the study by Prieto-Flores et al. (2011) the EQ-5D showed a lower health among older people living in long term care settings when compared to those living in the communities. Perceived health has been frequently associated with levels of loneliness. This thesis found being lonely was associated with lower perceived health which was also the finding of a cross-sectional study conducted in the community dwelling older people in NZ (La Grow et al., 2011). La Grow et al. (2011) found older people who were lonely also scored lower in the physical and mental health scores.

5.2.3. *Depression*

The levels of depression was measured using GDS and it showed a low level of depression among older people. This is in contrast to the study of Prieto-Flores et al. (2011) and other studies done in this area where levels of depression has been found to be significantly higher. This could be a result of difference in tools utilised to measure depression between the studies. However, the GDS was used by Nikmat et al. (2015) and Drageset et al. (2011) and both of these studies identified prevalence of depression among older people and significant association between depression and loneliness.

This thesis found no correlation between depression and loneliness of older people. This is in contrast to the findings of other studies, including Prieto-Flores et al. (2011), that established a significant relationship between depression and loneliness among older people living in long term care settings. Prieto-Flores et al. (2011) found older people living in long term care settings twice as likely to be lonely as those living in the communities.

As discussed in the literature review, other studies identified depression as one of the most prominent factors associated with levels of loneliness. Among the studies exploring loneliness in older people, 25% of them have identified association of depression with loneliness (Courtin & Knapp, 2015). In this study however, depression had no relationship with either emotional or social loneliness. In a study conducted by Auckland Council (2012) depression was reported least by the people who identified as Pakeha than any other ethnicities living in Auckland. This could be one of the reasons behind the presence of low levels of depression among the participating older people, as 83.3% of them were Pakeha.

5.3. Loneliness

The result of this study found a low degree of loneliness was prevalent among older people and this was similar for both the levels of social and emotional loneliness. The finding of this thesis are similar to those of Prieto-Flores et al. (2011). The logistic regression analysis showed fewer social networks and poorer perception of health predicted loneliness and social loneliness however, did not predict emotional loneliness.

The current research around loneliness among older people in NZ has conflicting findings. The NZGSS found loneliness was least common among older people in NZ compared to the other age groups (Statistics New Zealand, 2013). This survey however utilised a single question to assess loneliness. It is questionable whether this single question was effective in recognising the multi-dimensional nature of loneliness.

A study conducted by the Auckland Council (2012) with people aged 50 years and above found over half of the participating people living in Auckland were lonely. A study conducted in the community settings of NZ found a prevalence of significant loneliness among older people, where 52% of the participating older people were lonely (La Grow et al., 2012). These conflicting findings on loneliness among older people in NZ suggests this area needs to be explored further.

This study was conducted in Auckland, which has the largest number of older people living in long term care settings and has the largest population in New Zealand. In 2013, Auckland had a total of 31,899 older people residing in 822 long term care settings (Statistics New Zealand, 2015). Auckland being the biggest city in NZ, might have had an influence on the levels of loneliness experienced by older people living in long term care settings. Savikko et al. (2005) found the experience of loneliness tends to be more common in the rural areas than in the cities. Auckland Council (2012) found Pakeha people aged 50 years and above in Auckland were less likely to be lonely than other ethnicities. This may also be a factor in the presence of the low degree of loneliness among the participating older people, as the majority of them were Pakeha.

5.4. Chapter Summary

The socio-demographic characteristics of the participants in this study appeared to be representative of the population of older people residing in long term care settings in Auckland. However, participants' health scores, reflecting their functional status, perceived health and depression, did not resemble the findings of other studies conducted in this area. The majority of the participants in this study were functionally able to do most things for themselves and had lower levels of depression. This is in contrast to the findings of the majority of the studies conducted in this group of people.

Only a low level of loneliness was identified in this study. Loneliness was associated with poor perceived health and fewer social networks. This reflects international literature also identifying these factors as a significant predictor of loneliness among older people living in long term care settings. Having discussed the findings of this study, the next chapter presents the limitations and the implications of this study.

Chapter six: Conclusion

Loneliness has been found to be highly prevalent among older people living in long term care settings (Nygqvist et al., 2011; Prieto-Flores et al., 2011). Loneliness has been associated with a decreased quality of life among older people due to the detrimental effect it has on their health and wellbeing (Luo et al., 2012; Prieto-Flores et al., 2011). Even though loneliness has been recognised as a prominent problem faced by older people, limited research has been done to explore loneliness in long term care settings (Prieto-Flores et al., 2011).

This thesis used a post-positivist approach and a cross-sectional correlational design to explore loneliness among older people living in NZ long term care settings. This study was designed to answer the followed research questions:

1. Is loneliness prevalent among older people living in NZ long-term care settings?
2. Are socio-demographic and health characteristics associated with loneliness?
3. Is depression one of the factors associated with increased levels of loneliness?

This study used a questionnaire that included a demographic data sheet. The questionnaire collected data on participants' socio-demographic characteristics, social network, loneliness, depression, functional independence, and health and wellbeing. All the scales used in the study were validated, reliable and previously used in other studies exploring loneliness among older people living in long term care settings. The questionnaires were either self-administered by participating older people or completed using face to face interviews. This study included 36 participants selected from four different long term care settings in the Auckland region.

Loneliness was found to be present among the participating older people but only to a marginal degree. The fewer social networks of the participants and their poorer perceived health significantly contributed to loneliness.

6.1. Limitations of the study

The study had a number of limitation due to the nature of the study and the population being studied. The limitations of this study are discussed below as recognising limitations helps interpret whether the study was valid and whether the results derived were credible (Ioannidis, 2007) and able to be generalised to older people living in other long term care settings.

The study may have encountered a selection bias due to the technique utilised to recruit participants. Although the majority of the studies conducted in the area of loneliness among older people living in long term care have utilised convenience sampling, participants in this study were recruited by the managers of long term care settings which may have led to a sample selection bias. Older people who agreed to participate may have been satisfied with the long term care facility they were residing in and this may have reflected their lower reported levels of loneliness.

The levels of loneliness found in this study could have been influenced by factors that were not tested in this study. This study did not collect data on factors, such as participants' residential satisfaction, something that has been linked to levels of loneliness in previous studies. As this study was conducted to fit within a Masters' thesis, only the common variables most relevant to older people living in long term care settings were included even though, inclusion of further variables may have enriched the study. Collecting data on participants' satisfaction with their long term care setting, would have likely made recruitment of participants more difficult than it already was.

In this thesis, social networks were measured using the questions used by Prieto-Flores et al. (2011) which may not be sufficient in gathering information about the participants' social networks. This study and the study of Prieto-Flores et al. (2011) have found high frequency of social network among participating older people which is contrary to the findings of other studies in this field. Forsman et al. (2013) highlighted that long-lasting friendship is vital to the well-being of older people living in long term care and the loss of close friends is irreplaceable. In this respect, this study has managed to capture most of the meaningful interaction of the participating older people.

This thesis did not study grief as one of the variables associated with loneliness. The levels of loneliness among the participating older people may have been influenced if they were grieving during the period of data collection.

Participants had MMSE scores completed by staff in their long term care settings prior to being recruited into the study. Participants MMSE scores were 27 or above reflecting a high level of cognitive functioning thereby ensuring they could fully consent to participating in the study. This level of cognition may not be representative of this population and could be a factor contributing to the low degree of loneliness found in this study; higher levels of cognition has been associated with lower incidents of loneliness (Lunaigh et al., 2011). As loneliness is considered a social stigma (Tzouvara, 2015) and it is often difficult for people to admit they are lonely, it may be that participants with higher cognition chose not to admit the presence of loneliness to avoid stigmatisation.

The results of the study should be treated with caution as the sample size of this study was small and the results may not be generalisable to other older people living in long term care settings in NZ. The sample size was limited due to the difficulty faced in

recruiting participants from long term care settings combined with the restricted financial resources and the boundaries of the masters' thesis. This study however serves as a gateway for future research exploring loneliness in NZ long term care settings.

6.2. Future research

Although this study has a number of limitations, it provides a foundation for larger NZ studies. Marginal loneliness was present among the participating older people in this study but those with fewer social networks and poorer perceived health were more likely to be lonely. There is now a need for a larger study exploring loneliness in long term care settings; if loneliness is found to exist in a larger study, the results may enable a more strategic approach to minimize loneliness in this population.

Older people living in care settings cannot be assumed to have any lower risk of loneliness because of the structured environment of the setting and presence of companions in the form of staff or other residents. They have almost every other high risk factors that are outlined by the relevant studies that increases the risk of both social and emotional loneliness and therefore highlights the necessity for further research into this area (Grenade & Boldy, 2008; Prieto-Flores et al., 2011).

As the majority of the research conducted in this area have used a cross-sectional design, causal relationships between variables have not been identified. The studies showing association of variables such as depression and social networks with loneliness were all cross-sectional and hence, they have not identified causal relationships (Nyqvist et al., 2013). Further research is needed to discover causal relationships between the established associations of loneliness.

As fewer social networks was associated with increased levels of loneliness, which has also been established by several other studies such as Prieto-Flores et al. (2011), further research into this area needs to be conducted for better understanding of this relationship. This study participants reported comparatively better physical independence when compared to many others living in long term settings which could have enabled them to build social networks. Hence the findings may differ in studies with less functional independence. Nyqvist et al. (2011) found social networks significantly reduced among older people with functional limitations living in long term care.

The prevalence of loneliness was minimal in this study which may be an indicative of the staff and the culture of long term care settings they live in. It is believed that the culture of long term care and the staff is influential in determining the quality of relationships between older people and staff (Cook & Brown Wilson, 2010); however as already stated this also could be related to selection bias.

There exist three different types of relationships between staff and older people and their families, which are: individualised task-centred, resident-centred, and relationship-centred (Brown Wilson, Davies, & Nolan, 2009). In order to improve experience of older people, Brown Wilson, Davies and Nolan (2009) emphasises the importance of relationship-centred care practices which takes into account the needs of older people, their family and staff. This shows further research focussing on the influence of the relationship between older people and long term care staff members on older peoples' loneliness is needed.

6.3. Implications of the study

This study may have a number of implications for policy, service provision, future research and practice in the field of long term care settings. This study found fewer

social networks significantly increased older peoples' levels of loneliness. Older people living in long term care settings have social networks around them, but they still feel lonely. Focussing more on facilitating social connections within long term care settings, may prove beneficial in reducing the levels of loneliness in older people. To prevent loneliness among older people living in long term care settings, staff can develop their plan of care to facilitate the social contact between older people and their close ones.

6.4. Chapter summary

This study was designed to explore loneliness among older people living in long term care settings in NZ. This study showed the prevalence of loneliness among older people was significantly associated to their poorer perceived health and fewer social networks. This study had various limitations due to the nature of the study and the population being studied however, informs future larger studies. The findings of this study may help in the development of policies and in tailoring care of older people living in long term care settings to address the issue of loneliness.

Appendices

Appendix A. Summary of relevant studies

Author(s)	Setting(s)	Population	Study Aim(s)	Study Design(s)	Result(s)	Tool utilised to measure Loneliness
Prieto-Flores et al., (2011)	Spain	N = 234 older people more than 60 years old living in long term care settings and 234 older people living in community settings.	To examine whether any socio-demographic or health factors contribute differentially to loneliness	Cross-sectional correlational	Depression and frequency of visits made by the participants outside and inside the setting with their family, friends, or neighbours contributed to increased levels of loneliness	The six-item De-Jong Gierveld loneliness scale

Fernandez-Mayoralas et al., (2011)	Spain	N = 234 older people more than 60 years old living in long term care settings and 234 older people living in community settings.	To analyse the influence of residential satisfaction and sense of belonging on loneliness	Cross-sectional correlational	Residential satisfaction positively affects sense of belonging and negatively affects loneliness	The six-item De-Jong Gierveld loneliness scale
Nikmat, Hashim, Omar, & Razali (2015)	Malaysia	N = 110 older people aged more than 60 years living in long term care settings	To determine the prevalence of loneliness/social isolation and late-life depression among older people with cognitive impairment living in long term care settings.	Cross-sectional correlational	Depression was strongly associated with loneliness or social isolation	Friendship Scale (FS)

de Guzman, Maravilla, Maravilla, Marfil, Marinas, & Marquez (2012)	Philippines	N = 180 older people aged more than 60 years living in long term care settings	To examine the interplay between and among loneliness, social isolation, social engagement, and life satisfaction.	Cross-sectional correlational	Increased social isolation, inadequate social engagement and decreased life satisfaction aggravates loneliness	UCLA loneliness scale
Nyqvist, Cattán, Anderson, Forsman, & Gustafson (2013)	Sweden	N = 149 older people aged more than 85 years living in long term care settings and 334 older people aged more than 85 years living in their own homes.	To investigate the association between aspects of social capital and loneliness.	Cross-sectional longitudinal (2005-2007)	Loneliness prevalent in 55% living in long term care and closely related to depression and to the geographical region they live in	A single question stating "Do you ever feel lonely?"
Drageset, Espehaug, & Kirkevold (2011)	Norway	N = 227 cognitively intact older people aged more than 65 years living in long term care settings for more than 6 months	To analyse the relationships between depressive symptoms, sense of coherence and emotional and social loneliness	Cross-sectional correlational	Depression contributes to social and emotional loneliness	The revised social provisions scale (SPS)

Drageset, Eide, Kirkevold, & Ranhoff (2012)	Norway	N = 227 older people living in long term care settings for more than 6 months, without cognitive impairment, and aged more than 65 years	To assess whether social and emotional loneliness influenced mortality among the older people with cancer living in long term care settings	Cross-sectional Longitudinal (2004 - 2010)	Emotional loneliness was associated with mortality	The revised social provisions scale (SPS)
Bekhet & Zauszniewski (2012)	Northeast Ohio, United States of America	N = 314 older people living in long term care settings	To examine gender differences and association between loneliness, indicators of physical and mental health consequences, and resourcefulness skills among older people living in long term care settings	Descriptive and Comparative	Anxiety and depression significantly related to loneliness	Single item question
Heidari, Ghodusi, & Shirvani (2016)	Shahrekord, Iran	N = 100 older people aged more than 60 years, 50 of them living in long term care settings and other 50 in the community	To assess loneliness in relation with demographic factors	Descriptive Cross-sectional	The prevalence of loneliness is higher in the older women living in long term care settings.	Authors constructed Loneliness scale

Tzouvara (2015)	United Kingdom	settings	To investigate the inter-relationships between self-stigma, loneliness, and culture among older people with mental illness residing in long term care settings	Mixed-method	Loneliness was identified to be prevalent among more than half of the sample (68.8%). There was also a positive correlation between loneliness, age and religiosity	Single self-reporting question
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Appendix B. Questionnaire

Questionnaire

Loneliness among older people living in long term care facilities in New Zealand.

Section 1:

1. What is your gender? Male Female Gender diverse

2. How old are you?

3. What is your marital status?
☐ I am legally married
☐ I am in a civil union/de facto/partnered relationship
☐ I am permanently separated from my legal husband or wife
☐ I am divorced or my marriage has been dissolved
☐ I am a widow or widower
☐ I have never been legally married

4. Which ethnic group do you belong to?
☐ Pakeha / New Zealander of European descent
☐ Māori
☐ Samoan
☐ Cook Island Maori
☐ Tongan
☐ Chinese
☐ Indian
☐ Other

5. How often do you gather with your family, friends or neighbours outside the facility?
- ☐ Less than once a month
 - ☐ Once or twice a month
 - ☐ Once a week or more frequently

6. How often do you get visited by your family, friends or neighbours in the facility?
- ☐ Less than once a month
 - ☐ Once or twice a month
 - ☐ Once a week or more frequently

Section 2:

Total the score at the end of the section.

Questions:	Scores
1. How do you mobilise indoors?	
▪ Immobile	0
▪ Wheelchair independent (including comers/doors)	1
▪ Help of one untrained person, including supervision	2
▪ Independent (may use aid)	3
2. How do you transfer?	
▪ Unable - no sitting balance, two to lift	0
▪ Major help: physical help, 1 strong/skilled or 2 normal. Can sit	1
▪ Minor help: 1 person easily or supervision for safety	2
▪ Independent	3
3. How do you take stairs?	
▪ Unable	0
▪ Needs help (verbal/physical, carrying aid)	1
▪ Independent up and down, carrying walking aid	2
4. How do you use toilet?	
▪ Dependent	0
▪ Needs help but can do something (including wiping self)	1
▪ Independent: can reach toilet/commode, undress, clean self and leave	2

5. What is your bladder function like?	
▪ Incontinent or catheterised and unable to manage	0
▪ Occasional accident (maximum once / 24 hours)	1
▪ Continent over 7 days	2
6. What is your bowel function like?	
▪ Incontinent (or needs to be given enema)	0
▪ Occasional accident (less than 1 / week)	1
▪ Continent	2
7. How do you bath/shower?	
▪ Dependent	0
▪ Independent	1
(Bath: must get in and out unsupervised, wash self	
Shower: unsupervised/unaided)	
8. How do you groom?	
▪ Needs help with personal care	0
▪ Independent: implement can be provided by helper	1
9. How do you dress?	
▪ Dependent	0
▪ Needs help but can do half unaided	1
▪ Independent including buttons, zips, laces, etc.	2
10. How do you eat or drink?	
▪ Unable	0
▪ Needs help in cutting up food, spreading butter, etc, but feeds self	1
▪ Independent (food cooked, served and provided within reach but not cut up. Normal food [not only soft food])	2

Total score:

Section 3:

Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY

- | | |
|---|--------------------------|
| I have no problems in walking about | ☐ |
| I have slight problems in walking about | ☐ |
| I have moderate problems in walking about | ☐ |
| I have severe problems in walking about | ☐ |
| I am unable to walk about | ☐ |

SELF-CARE

- | | |
|---|--------------------------|
| I have no problems washing or dressing myself | ☐ |
| I have slight problems washing or dressing myself | ☐ |
| I have moderate problems washing or dressing myself | ☐ |
| I have severe problems washing or dressing myself | ☐ |
| I am unable to wash or dress myself | ☐ |

USUAL ACTIVITIES (*e.g. work, study, housework, family or leisure activities*)

- | | |
|--|--------------------------|
| I have no problems doing my usual activities | ☐ |
| I have slight problems doing my usual activities | ☐ |
| I have moderate problems doing my usual activities | ☐ |
| I have severe problems doing my usual activities | ☐ |
| I am unable to do my usual activities | ☐ |

PAIN / DISCOMFORT

- | | |
|------------------------------------|--------------------------|
| I have no pain or discomfort | ☐ |
| I have slight pain or discomfort | ☐ |
| I have moderate pain or discomfort | ☐ |
| I have severe pain or discomfort | ☐ |
| I have extreme pain or discomfort | ☐ |

ANXIETY / DEPRESSION

- | | |
|--------------------------------------|--------------------------|
| I am not anxious or depressed | ☐ |
| I am slightly anxious or depressed | ☐ |
| I am moderately anxious or depressed | ☐ |
| I am severely anxious or depressed | ☐ |
| I am extremely anxious or depressed | ☐ |

We would like to know how good or bad your health is TODAY.

This scale is numbered from 0 to 100.

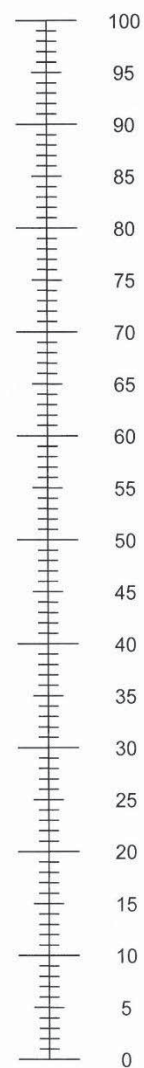
100 means the best health you can imagine.

0 means the worst health you can imagine.

Mark an X on the scale to indicate how your health is TODAY.

Now, please write the number you marked on the scale in the box below.

Your Health Today =



Section 4:

Choose the best answer for how you felt over the past week.

- | | |
|---|-----------------|
| 1. Are you basically satisfied with your life? | YES / <u>NO</u> |
| 2. Have you dropped many of your activities and interests? | <u>YES</u> / NO |
| 3. Do you feel that your life is empty? | <u>YES</u> / NO |
| 4. Do you often get bored? | <u>YES</u> / NO |
| 5. Are you in good spirits most of the time? | YES / <u>NO</u> |
| 6. Are you afraid that something bad is going to happen to you? | <u>YES</u> / NO |
| 7. Do you feel happy most of the time? | YES / <u>NO</u> |
| 8. Do you often feel helpless? | <u>YES</u> / NO |
| 9. Do you prefer to stay at home, rather than going out and doing new things? | <u>YES</u> / NO |
| 10. Do you feel you have more problems with memory than most people? | <u>YES</u> / NO |
| 11. Do you think it is wonderful to be alive? | YES / <u>NO</u> |
| 12. Do you feel pretty worthless the way you are now? | <u>YES</u> / NO |
| 13. Do you feel full of energy? | YES / <u>NO</u> |
| 14. Do you feel that your situation is hopeless? | <u>YES</u> / NO |
| 15. Do you think that most people are better off than you are? | <u>YES</u> / NO |

Section 5:

Please circle the most appropriate option:

- I. I experience a general sense of emptiness.
Yes! Yes More or less No No!
- II. There are plenty of people I can rely on when I have problems.
Yes! Yes More or less No No!
- III. There are many people I can trust completely.
Yes! Yes More or less No No!
- IV. There are enough people I feel close to.
Yes! Yes More or less No No!
- V. I miss having people around.
Yes! Yes More or less No No!
- VI. I often feel rejected.
Yes! Yes More or less No No!

Thank you ☺

Appendix C. Permission to use EQ-5D-5L and EQ-VAS

RE: New registration

Mandy van Reenen

Wed 26/08/2015, 8:45 p.m.

Dear Ms/Mr. Bogati,

Thank you for registering your research at the EuroQol Group Foundation's website.

As the study you registered involves low patient numbers (60) you may use the EQ-5D-5L instrument (Paper version) free of charge. Please note that separate permission is required if any of the following is applicable:

- Funded by a pharmaceutical company, medical device manufacturer or other profit-making stakeholder;
- Number of respondents ≥ 5000
- Routine Outcome Measurement;
- Developing or maintaining a Registry;
- Digital representations (e.g. PDA, Tablet or Web)

Please find attached the English EQ-5D-5L version (word format). A brief user guide is downloadable from the EuroQol website (www.euroqol.org).

Please note that over the next months the first value sets associated with the EQ-5D-5L system will be published. It will take time before 5L value sets will be available for most countries. Please check our website to see which 5L value sets are currently available. In the meantime, the EuroQol Research Foundation has developed a “crosswalk” between the EQ-5D-3L value sets and the new EQ-5D-5L descriptive system, resulting in interim value sets for the new EQ-5D-5L descriptive system. Please find all information about the crosswalk from EQ-5D-5L data to the EQ-5D-3L value sets online at the EuroQol website (<http://www.euroqol.org/about-eq-5d/valuation-of-eq-5d/eq-5d-5l-value-sets.html>).

Best regards,

Mandy van Reenen

Communications Specialist

EuroQol Research Foundation

T: + 31 88 4400190

E: vanreenen@euroqol.org

W: www.euroqol.org

Appendix D. Participant information sheet



Loneliness among older people living in long term care facilities in New Zealand

Participant Information Sheet

What is the Purpose of this study?

The purpose of this study is to explore the degree of loneliness in a group of older New Zealanders living in long term care settings, to identify if sociodemographic and health characteristics relates to the levels of loneliness in this group, and to determine if depression is associated with increased levels of loneliness. Loneliness has been linked to poorer physical and mental health in older people. The findings of this study may provide evidence of the presence of loneliness and assist in understanding the factors that are linked to increased levels of loneliness in older New Zealanders living in care facilities. If loneliness exists, it is very important to understand and address this problem to enable older New Zealanders to be healthier and happier in care facilities.

What will be involved if you choose to take part?

If you agree to participate then, you will be asked either to complete a questionnaire or if you are unable to, the researcher will ask you questions from a questionnaire. The person asking the questions will record your answers on the questionnaire. The questionnaire includes questions about your perception of your health, your level of activity, your level of social engagement, your mood and demographic details. It should take approximately 20 minutes to complete it.



What are the requirements to be a part of this study?

To be a part of this study, you would need to meet **all** of the criteria outlined below:

1. Aged 65 or over living in long term care facilities,
2. Cognitively capable to make your own decisions as indicated by a minimal state examination, MMSE test score of 27 or higher (conducted previously by one of the Registered Nurses in your facility), and
3. Proficient in English, and
4. Able to either self-administer a questionnaire or answer the questions asked by an interviewer.

Your rights as a participant:

You are under no obligation to be a part of this study. Participation is completely voluntary and your details and those of your care facility will be kept confidential and anonymous throughout the study process. The data you have provided will be relevant, stored safely and will not be used for any other purpose than this study itself. Each participant will receive a small gift for participating in the study.

What if there is a problem:

Please feel free to inform the researcher if you feel uncomfortable answering any question. You are not obliged to answer questions you are uncomfortable with and you can withdraw from the study up to the time the collected information is analysed. If you feel distressed and choose to discuss this with someone outside the facility you are living in, you may contact Age Concern. Age Concern's contact numbers are 098200184 or 094894957.



MASSEY UNIVERSITY
COLLEGE OF HEALTH
TE KURA HAUORA TANGATA

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application 15/048. If you have any concerns about the conduct of this research, please contact Dr Andrew Chrystall, Acting Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800 x43317 email humanethicsnorth@massey.ac.nz

Researcher: Rubina Bogati, Contact Ph # 0226580474
Email: Rubina.bogati@live.com.

Supervisor: Dr Alison Pirret, Contact Ph # 094140800 43345
Email: A.M.Pirret@massey.ac.nz

Thank you for your participation ☺

Appendix E. Participant Consent form



Loneliness among older people living in long term care facilities in New Zealand

Consent Form

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to participate in this study under the conditions set out in the Information Sheet.

Name:

Name of Facility:

Signature:Date:

Te Kunenga
ki Pūrehuroa

School of Nursing
Private Bag 102904, North Shore, Auckland 0745, New Zealand T +64 9 441 8166 www.massey.ac.nz

Appendix F. Coding Sheet

Coding Sheet for data analysis

Section 1

Demographic variables will explain the sample size.

Gender : male (1)

 Female (2)

 Gender Diverse (3)

Age will be a categorical scale.

Marital status:

 I am legally married (1)

 I am in a civil union/de facto/partnered relationship (2)

 I am permanently separated from my legal husband or wife (3)

 I am divorced or my marriage has been dissolved (4)

 I am a widow or widower (5)

 I have never been legally married (6)

Ethnic group:

 Pakeha / New Zealander of European descent (1)

 Māori (2)

Samoan (3)

Cook Island Maori (4)

Tongan (5)

Chinese (6)

Indian (7)

Other (8)

Q 5-6 will be used to determine the frequency of visits.

In response of Q5-6; ‘less than once a month’ will get a score of 3, ‘once or twice a month’ will score 2 and ‘once a week or frequently’ will get a score of 1.

Section 2

The Barthel Index

1. How do you mobilise indoors? Score for
data analysis

- Immobile 0
- Wheelchair independent (including comers/doors) 5
- Help of one untrained person, including supervision 10
- Independent (may use aid) 15

The total sum of the participants’ scores will range from 0 – 100, with lower scores indicating increased disability.

Section 3

EQ-5D-5L

For each question; the first level answer will score 1 and last level answer will score 5.

For e.g.

MOBILITY

I have no problems in walking about	- this will score 1
I have slight problems in walking about	- this will score 2
I have moderate problems in walking about	-this will score 3
I have severe problems in walking about	-this will score 4
I am unable to walk about	-this will score 5

For EQ-VAS section at the end of EQ-5D-5L

The participant will rate a number out of 0-100 for how good/bad their health is today.

Section 4

The Geriatric Depression Scale- 15 item

Each question has a bold underlined response which will get a score of 1 and the other response will get score of 0. For e.g.

1. Are you basically satisfied with your life? YES / **NO** (No = 1 and yes = 0)
2. Have you dropped many of your activities and interests? **YES** / NO (No = 0 and yes = 1)
3. Do you feel that your life is empty? **YES** / NO (No = 0 and yes = 1)

A score > 5 points is suggestive of depression.

A score ≥ 10 points is almost always indicative of depression.

Section 5

De-Jong Gierveld Loneliness Scale

Each question has 5 response ranging from absolute yes to absolute No.

For question # I, V, and VI; 'Yes!', 'Yes', and 'More or less' will get a score of 1, 'No', and 'No!' will get a score of 0. For e.g.

I. I experience a general sense of emptiness.

Yes! = 1 Yes = 1 More or less = 1 No = 0 No! = 0

For question # II, III, and IV; 'Yes!', and 'Yes' will get a score of 0, 'No', 'More or Less', and 'No!' will get a score of 1. For e.g.

IV. There are enough people I feel close to.

Yes! = 0 Yes = 0 More or less = 1 No = 1 No! = 1

Score more than equal to 2 is an indicator of loneliness.

Appendix G. Massey University Human Ethics Committee approval



MASSEY UNIVERSITY
ALBANY

2 December 2015

Rubina Bogati
88 Stanhope Road
Mount Wellington
Auckland 1051

Dear Rubina

HUMAN ETHICS APPROVAL APPLICATION – MUHECN15/048
Loneliness among older people living in long term care facilities in New Zealand

Thank you for your application. It has been fully considered, and approved by the Massey University Human Ethics Committee: Northern.

Approval is for three years. If this project has not been completed within three years from the date of this letter, a re-approval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

A handwritten signature in black ink, appearing to be 'A. Chrystall'.

Dr Andrew Chrystall
Acting Chair
Human Ethics Committee: Northern

cc Dr Alison Pirret
School of Nursing
Albany Campus

Professor Annette Huntington
Head of School of Nursing
Wellington Campus

Te Kunenga
ki Pūrehuroa

Research Ethics Office
Private Bag 102 904, Auckland, 0745, New Zealand Telephone +64 9 414 0800 ex 43276 humanethicsnorth@massey.ac.nz

Appendix H. Graduate research fund approval letter



MASSEY UNIVERSITY
COLLEGE OF HEALTH
TE KURA HAUORA TANGATA

8th July 2016

Rubin Bogati
88 Stanhope Road
Mount Wellington
Auckland, 1051

Dear Rubin Bogati,

Re: School of Nursing, Graduate Research Fund

Thank you for your application for the above-mentioned fund towards your Master of Philosophy program this year, entitled:

Loneliness in older people living in long term care facilities in New Zealand

You have submitted an application for \$760.40. For a Master's project the maximum funding is \$750 per application round. The Graduate Research Fund Committee is pleased to inform you that \$750 has been approved for research related costs as itemised in your application.

Please contact our School of Nursing, Senior Administrator (Nicole Wee; N.Wee@massey.ac.nz, phone DDI: 09-2136348) to process/obtain your funds.

As part of this funding approval, the Committee request that acknowledgement of this fund be noted in your completed thesis report and in any publication/s that may result from your research. Furthermore, upon completion of your thesis we look forward to receiving a copy of your abstract/acknowledgement section, for our records.

We would like to take this opportunity to wish you the very best for your research.

Sincerely

Dr Felix S F Ram
Chair, Graduate Research Fund

Committee members: Dr Catherine Cook, Dr Kim van Wissen & Dr Stacey Wilson

Appendix I. NZNO grant approval letter



The New Zealand
Nursing Education and Research Foundation
Incorporated under the Charitable Trusts Act 1957



23 August 2016

Rubina Bogati
88 Stanhope Road
Mount Wellington
Auckland 1051

Dear Rubina

Gretta and Harry Hamblin Trust and NERF Grants and Scholarships

Thank you for applying for the Postgraduate Study grant. The panel have now met and made their decisions on the scholarship and I am delighted to inform you that they have approved your application for the sum of \$500.00.

Payment will be made by direct credit into the account given on your application form within 7-10 working days.

A certificate that you can add to your portfolio will follow in the post.

The Board have requested a report back on how the funds have assisted you within six months. A form for this purpose will be sent to you by email in three months' time.

If you have any further queries, please do not hesitate to contact me.

We respectfully remind you that the panel's decision is final.

Yours sincerely

Dr. Jill Clendon
Nursing Policy Advisor/Researcher

Appendix J. Consultation Email I

On Aug 2, 2015, at 7:48 PM, Rubina Bogati <rubina.bogati@live.com> wrote:

Good Evening Dr Gagan

My name is Rubina - a Registered Nurse who used to work in Caughey Preston - upland and ventnor. I am currently working with WDHB. I got your email address from one of your publications. I am writing this email to you to seek your expert advice regarding research with older people in care settings.

I am currently enrolled in MPhil at Massey University and doing a study on rate of loneliness in older people living in care settings in NZ. My supervisor Dr Alison Pirret suggested to try contacting you for your advice in recruitment of participants for this study. Would you be able to suggest me on how I should go about recruiting participants for my study? This is a cross sectional survey and postal questionnaires will be used for data collection.

I would be very grateful if you could guide me in the right direction. I hope I am not asking for too much.

Thank you.

Kind Regards

Rubina Bogati

Ph # 0226580474

Subject: Re: Seeking your advice regarding study in older people

From: mjogagan@yahoo.com

Date: Mon, 3 Aug 2015 08:47:36 +1200

To: rubina.bogati@live.com

Hi Rubina, nice to hear from you. I guess the first place to start is with admin of a couple different settings to secure their support for a project like this in their setting. Then you would need to talk to other RNs on staff at the settings to identify residents who could participate. Then approach residents.

I would suggest you use at least three different settings to try to capture different socioeconomic and cultural backgrounds as those could be variables that contribute to or reduce loneliness.

Good luck.

Mary Jo Gagan PhD, NP, FAANP

Sent from my iPad

On Aug 14, 2015, at 6:29 PM, Rubina Bogati <rubina.bogati@live.com> wrote:

Good Evening Dr Gagan

Re: Research on loneliness and the impact it has on health and wellbeing of older people living in care settings in NZ.

Thank you so much for your reply. As you know I am currently pursuing Mphil. I am currently designing a study utilising a tool used by La Grow, et al. in 2012, to explore loneliness in NZ older people living in the community and it's impact on their self-reported mental and physical health (Please find attached my research proposal). For my study the participants will be older people living in aged care settings. I am hoping to study residents in 3-4 aged care centres. I was wondering if you would look at my proposal and provide any feedback that would develop the proposal further.

I would also like your advice on care settings that I could approach that would be ammenable to supporting this research once it has been developed further. If you know of any, would you please let me know the contact person for me to get in touch with.

Many thanks for your time. I look forward to hearing from you.

Kind Regards

Rubina Bogati

Re: Seeking your advice regarding study in older people

Mary Jo Gagan

Reply

Mon 17/08/2015, 2:31 p.m.

Ok I have reviewed and have a few comments. In the conclusion of the background section, the last two lines do not really speak to your study. Even though both statements are probably true. First it might be helpful to include some prediction about number of elderly in residential care for 2041 or some date close. Then draw together the growing population of elderly, the apparent increase in loneliness in elderly, especially for those in res care, and the relationship between loneliness and poor mental/physical outcomes, and finally the concern about impact on provision of healthcare. Make these hypothesized links clear. Then conclude given the above hypothesized links and concerns the potential links raise it is very important to establish whether the link between loneliness and poor outcomes exists for this population. Your research will contribute to the body of knowledge around residential elderly levels of loneliness and health outcomes.

Next in the aims. Are you trying to determine the levels of loneliness of elderly in residential care and explore the relationship between levels and health outcomes? What exactly are your research questions? It is vital you are very clear on what you are actually trying to do. I suggest writing one or two research questions you intend to answer with this study.

Next under data collection. Grammar issues I think you are using self administered questionnaires, not a self administered questionnaire. You are using three different questionnaires to collect data? And in line four I think tthe plural have instead of has? Also a citation or two demonstrating who has used the scales in the past would be good to support your claim the scales have been validated.

Sample size section please state how many subjects you would ideally like to include this is $N=30$ or something like that. Also line 3 use small not smaller. If you say smaller then you must say smaller than what. Same in limitations say small, not smaller.

Finally in the data analysis section I would expect more detail. For example to address research question one simple descriptive statistics will be used to categorize levels of loneliness. To answer research question two about the relationship between Loneliness and health outcomes... Will be used. You need to see your statistician now and have them help you develop questions, determine how to analyze data and help you decide how many subjects you need to have enough power to draw conclusions from results.

Interesting stuff, good luck!

Mary Jo Gagan PhD, NP, FAANP

Sent from my iPad

Appendix K. Consultation Email II

From: Rubina Bogati [mailto:rubina.bogati@live.com]

Sent: Friday, 14 August 2015 6:40 p.m.

To: Julia Russell

Subject: Seeking your feedback

Dear Julia

Re: Research on loneliness and the impact it has on health and wellbeing of older people living in care settings in NZ.

As you know I am currently pursuing Mphil. I am currently designing a study utilising a tool used by La Grow, et al. in 2012, to explore loneliness in NZ older people living in the community and it's impact on their self-reported mental and physical health (Please find attached my research proposal). For my study the participants will be older people living in aged care settings. I am hoping to study residents in 3-4 aged care centres. I was wondering if you would look at my proposal and provide any feedback that would develop the proposal further.

Many thanks for your time. I look forward to hearing from you.

Kind Regards

Rubina Bogati

RE: Seeking your feedback

Julia Russell

Reply

Sun 16/08/2015, 1:57 p.m.

Thanks for letting me look at this and it looks great. Just the spell check option – the first line of your inclusion criteria says requires it should be require. Also in the data collection paragraph line 4 – the has needs removed and the sentence could then read – Both of the scales have been validated for use in older people, and used extensively in previous studies.

Other thoughts

Many residents would require assistance to complete this as it is very long and quite complicated. Is there a possibility that those who receive assistance may be in a different position than others who would have no one to assist them or indeed their answers might be different if they have assistance?

Some of the questions in this survey are not relevant to someone living in a setting - have you considered a modified questionnaire which would remove questions that would make the exercise seem a little silly and perhaps a barrier to complete given the environment people are in such as 28, 29. Question 3 refers to household tasks most people are with us because they cant do these tasks and if they have been with us for a while then they wouldn't be doing these. Have you done a small trial – run a focus group to

Recruiting - have you identified settings that you will use - are you going to use a middle person to introduce the idea or how will you obtain access to these people. If so I think this needs to be said and if not I wonder how you will access folk?

Some other thoughts for your discussion, you refer to older people as those over 65

- do you think loneliness may be affected by increased age ie those younger in a setting may still have friends, spouse - children. Our age range at present in our settings is 49 – 102. Average age 85 – in doing this I do remove the outliers as they change the average significantly.
- I look forward to seeing how this progresses. We have been looking at doing some more focussed actions on satisfaction for people and I cant remember the tool but it is a commonly used smiley faces approach to measuring a variety of things – happiness, satisfaction etc. We thought we could do this by utilising a tablet with older people

Take care

Julia

Julia Russell RN, MPhil Nursing

Director of Services for Older People | Presbyterian Support Southland

Research into loneliness in older people

Rubina Bogati

Mon 7/09/2015, 10:34 p.m.

julia.russell@pss.org.nz

Dear Julia

Thank you so much for your suggestions regarding research proposal. They were very helpful in further designing the study. Replicating Dr Neville's study in rest home setting did not appear feasible therefore, the methodology of the study has now been changed based on an international study completed on loneliness in long term care settings. Hence the questionnaire of the study has been changed and instead of sending postal questionnaire, I will interview participants in person.

I would be very grateful if you could provide further feedback regarding this revised study design? (Please find attached the research proposal).

Prior to submitting an ethics application I would also like to identify possible long term care settings that would be willing for their residents to participate in the study. Would any of your centres be willing to be one of three to four centres allowing me to interview residents?

I look forward to hearing from you.

Kind Regards

Rubina

From: Julia Russell

Date: 08/09/2015 07:14 (GMT+12:00)

To: 'Rubina Bogati'

Subject: Research proposal.docx

Good morning

Yes I think this looks better and more achievable, I have only noted one point which is are you calling them – participants, patients, older people ?

I m sure we could help find some people but we are a long way down here. I think it would also be good for all participants not to all be at the same setting or the same group?

I am happy for you to decide what you wish to do.

Regards Julia

Appendix L. Recruitment email to Managers of long term care settings

From: Rubina Bogati [mailto:rubina.bogati@live.com]

Sent: Tuesday, 8 September 2015 12:16 a.m.

To:

Subject: Research on loneliness in older people

Dear

I am searching for settings as a possible site for research I am wanting to undertake following Massey University Humans Ethics Approval. Prior to submitting an ethics application I would like to identify possible long term care settings that would be willing for their residents to participate in this study. I am emailing to ask if you would consider your centre to be one of three to four centres allowing me to interview residents.

I am a Registered Nurse currently doing a research to complete a Master's of Philosophy - Nursing Degree at Massey University. My research will explore the degree of loneliness among older people living in long term care settings in New Zealand. Numerous studies explore loneliness in older people living in communities however, very limited information is known about loneliness of those living in long term care settings. In older people loneliness has been found to be associated with increased risk of mortality, poorer physical and mental health, and increased risk of institutionalisation. Institutionalisation in itself, is believed to cause an increased level of loneliness, with older people living in long term care settings twice as likely to feel lonely than those living in community settings (Prieto-Flores et al., 2011).

I have attached a copy of my draft research proposal which outlines the research.

Please do not hesitate to contact me if any further information is required. I look forward to hearing from you.

Sincerely,

Rubina Bogati

Ph # 0226580474

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