Registered Nurses' Experiences with, and Feelings and Attitudes Towards, interRAI-LTCF in New Zealand in 2017

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Abstract

Background

The International Resident Assessment Instrument for Long Term Care Facilities (interRAI-LTCF) is a web-based assessment tool designed to comprehensively assess older adults (>65 years) living in aged residential care. InterRAI-LTCF is used in over thirty countries, but in 2015 New Zealand (NZ) was the first country where it was made mandatory in all facilities. No previous research about Registered Nurses' (RN) views on interRAI-LTCF in NZ has been conducted. The purpose of this study was to explore RNs' experiences, feelings and attitudes towards interRAI-LTCF, and what they believed would improve their experiences.

Methods

The study was qualitative, using an exploratory and descriptive approach. Twelve interviews were conducted 18 months after interRAI-LTCF became mandatory in NZ. The interview questions were based on a United Theory of Acceptance and Use of Technology (UTAUT) model with some modifications. Findings were analysed thematically.

Results

The findings reveal that RNs of all ages embrace technology, and have mostly positive attitudes towards interRAI-LTCF as a standardised and comprehensive assessment tool. Limited value however is seen in dementia and end of life care. RNs report good experiences with trainers and venues, but inconsistency between training courses. Negative feelings towards interRAI-LTCF were caused by insufficient time to complete assessments, often due to duplication of data entry and insufficient RNs trained. RNs also feel apprehensive about the annual Assessment & Intelligence Systems, Inc. (AIS) competency tests. RNs believe the development of automated care plans and an automated password retrieval system would improve their experience. They also suggested that specific cultural considerations for Māori residents should be reviewed.

Conclusion

Overall RNs supported the use of interRAI-LTCF as a comprehensive assessment tool. Duplication in data entry, insufficient training, and the annual AIS tests caused most stress and negative feelings. Recommendations were made to rectify this.

Key Words

Older adults, interRAI-LTCF, Registered Nurses, aged residential care, UTAUT

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Table of Abbreaviations

AIS   Assessment & Intelligence Systems, Inc. (interRAI annual competency test)

ARC   Aged Residential Care

ARCF   Aged Residential Care Facility (e.g resthome, private hospital, dementia unit)

ARRC   Age-Related Residential Care (services agreement)

BEL-RAI   Belgian Resident Assessment Instrument

CAP   Clinical Assessment Protocols

CHESS   Changes in Health, End-stage disease, Signs and Symptoms

DHB   District Health Board

DRS   Depression Rating scale

EE   Effort Expectancy

FC   Facilitating Conditions

HC   Home Care

HCA   Health Care Assistant

HCI   Human-Computer Interaction

interRAI   International Resident Assessment Instrument

ICR   Internal Consistency Reliability

IOM   Institute of Medicine

LTCF   Long Term Care facility

MDS   Minimum Data Set

MDS-RAI   Minimum Data Set Resident Assessment Instrument

MOH	Ministry of Health
NASC	Needs Assessment and Service Coordination services
NZ	New Zealand
NZACA	New Zealand Aged Care Association
OBRA	Omnibus Budget Reconciliation Act
OECD	Organisation for Economic Co-operation and Development
PE	Performance Expectancy
RAI	Resident Assessment Instrument
RN	Registered Nurse
SE	Self Efficacy
SI	Social Influence
SNA	Support Needs Assessment
TAS	Technical Advisory Centre
UTAUT	United Theory of Acceptance and Use of Technology

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Chapter One – Introduction

1.1 Mandatory interRAI-LTCF

In July 2015, the New Zealand (NZ) Ministry of Health (MOH) made history by announcing NZ to be the first country in the world to implement a mandatory International Resident Assessment Instrument in Long Term Care Facilities (interRAI-LTCF) assessment software tool to be used in all aged residential care facilities (ARCF). This decision was made despite the fact that a large proportion of Registered Nurses (RNs) had not yet received training to use the tool. The discussion about the value of interRAI-LTCF in nursing and medical publications had also been predominantly negative. The interRAI-LTCF assessments in ARCFs are usually completed by the RNs, however their thoughts about the tool had not been heard prior to this study. This study was the first to explore RNs' experiences, feelings and attitudes relating to interRAI-LTCF training and use in NZ.

In this first chapter, the background, rationale and the aim of the study are presented. This research project is about the international resident assessment instrument (interRAI), which is designed to be used in a long-term care facility (LTCF), such as a resthome, private hospital or dementia care for older people. The interRAI collaboration has named the tool *interRAI-LTCF®*. Overall, interRAI-LTCF is a relatively complex assessment instrument, and it is not possible to include all the information about it in this thesis. Full information concerning the interRAI-LTCF assessment tools can be found in user manuals (Morris et al. 2007; Morris et al., 2011). The main areas – the purpose, Minimum Data Set (MDS) assessment

categories, Client Assessment Protocols (CAPs), outcome measures, training, and the current situation in New Zealand – are briefly discussed as an introduction to interRAI-LTCF. Use of technology in LTCFs, which is closely related to the topic, is also discussed. The rationale and aim of the project are explained at the end of this chapter. Before focusing on interRAI-LTCF, it is essential to understand why it is relevant in New Zealand, and why it deserves attention now.

1.2 Growing and Ageing Population in New Zealand

In order to understand why the study about interRAI-LTCF is currently pertinent, it is important to first look at the statistical trends in NZ's ageing population and the changes in nursing work force, and examine the challenges this brings to health care. The NZ Ministry of Health (NZMOH) statistics are used to show how significant the future changes will be in NZ.

1.2.1 Population Statistics

The NZ population is growing and ageing (MOH, 2014). Statistics New Zealand (2016) recorded the population of New Zealand in 2016 as 4.69 million. This is projected to increase to 4.89–5.14 million by 2020, to 5.01–5.51 million by 2025, and to 5.29–6.58 million by 2043. Population growth will slow as New Zealand's population ages and the gap between the number of births and deaths narrows (Statistics New Zealand, 2016b).

The proportion of the population aged over 65 years is expected to increase (Statistics New Zealand, 2016b). In 2016 the proportion of population aged 65 and over was 15%. This is expected to increase to 21-26% by 2043, and to 24–33% in

2068 (Table 1). The population aged 85 and over is projected to grow even faster. This population numbered 83,000 in 2016, and is expected to increase to 239,000–284,000 in 2043, and further to 333,000–467,000 in 2068 (Statistics New Zealand, 2016b). The main reasons for New Zealand's ageing population are declining fertility, the ageing of the baby boomer generation (people born 1946-1964), and an increase in average life expectancy (Cornwall & Davey, 2004). Statistics New Zealand predicts considerable growth also in minority ethnic groups such as Māori, Pacific and Asian populations aged 65 and over (Statistics New Zealand, 2016b), which needs to be taken into account when planning aged care services.

Table 1. Population aged 65 years and over 1981-2068
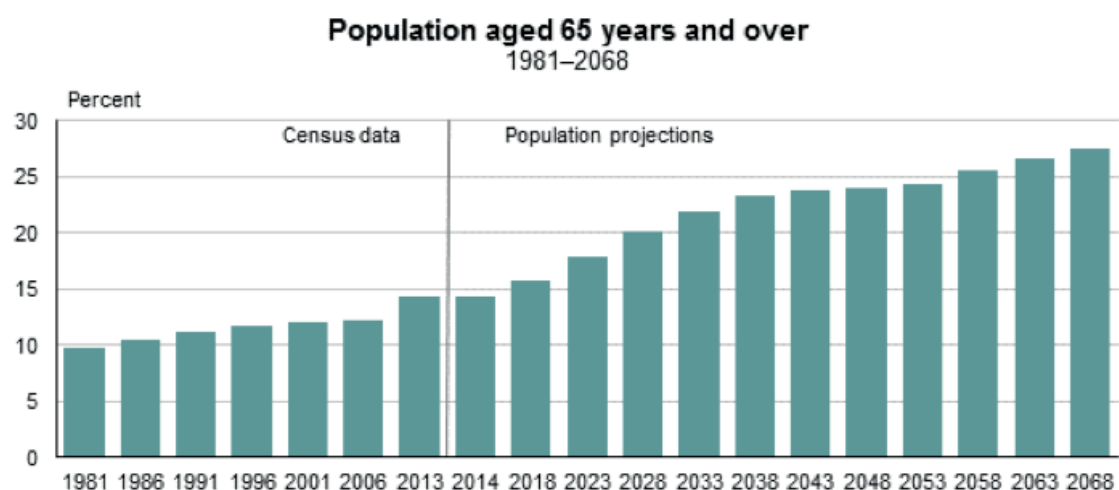
(Statistics New Zealand, 2016)

1.2.2 Increase in People Needing Long-term Care in New Zealand

Internationally, literature shows some conflicting views on frailty and the need for long-term care associated with ageing. On one hand, people are living healthier and longer lives, having received extensive health education with better access to medical care (Cornwall & Davey, 2004). Furthermore, statistics confirm that life

expectancy has increased in the last century (Cornwall & Davey, 2004; Metz 2001). On the other hand normal ageing is usually associated with some level of decline in functional ability, and older adults naturally have some level of impairment in their physical health (cardiovascular and musculoskeletal), sensory function (hearing or eyesight), and cognitive function (memory) (Goulding & Rogers, 2003). This growing ageing population is expected to increase the demand for health care services not only in New Zealand but also in many developed countries around the world (MOH, 2002; United Nations, 2017). Also, chronic diseases affect older adults disproportionately more than younger people, which increases the demand for long-term health care (Evans, McGrail, Morgan, Barer, & Hertzman, 2001; Goulding & Rogers, 2003).

The current consensus in New Zealand is that the demand for health care services will likely increase as the population becomes older (MOH, 2015; Statistics New Zealand, 2016). At present, the most common causes of death in the over 65 years in New Zealand are ischaemic heart disease, strokes, chronic obstructive pulmonary disease and cancer (Cornwall & Davey, 2004). The rates of these illnesses increase significantly with age. A large number of Māori and Pacific people represented in the older age ranges; their health demands are increasing according to MOH data (Cornwall & Davey, 2004). Incidence of dementia is also expected to increase significantly over the coming decades (Cornwall & Davey, 2004). Older people with dementia often need long-term care, which means that a greater demand for these services can be expected in the future.

1.2.3 Health Care Needs, Cost and Quality of Care in New Zealand

Increasing numbers of older people will need care either at home or in a long-term care facility in the future. According to NZMOH, while the number of older people needing care will grow, the proportion needing care is expected to decline. Older people use 42% of health services, while they make up only 15% of the population. As the population of older people increases, this group will therefore use an even higher percentage of health services, estimated at 50% by 2025/2026 (MOH, 2016).

The cost of older peoples' health services has also increased in the last ten years. MOH statistics (2016) show that District Health Boards' (DHB) spending on services for older people has increased twice as fast as their overall expenses, and five times as fast as the consumer price index (CPI). Aged residential care takes a large portion of the health budget; DHBs spend $983 million on support services for older people, of which 60% is allocated to aged residential care (MOH, 2016).

Focus on quality of care is also a big part of future projections. One method by which the MOH promotes and monitors quality of care is by ensuring older people are assessed comprehensively whether they receive care at home or in residential care facilities. The most recent statistics (updated 13 July 2016) include data on interRAI assessments (MOH, 2016). InterRAI assessments are expected to help care providers seek appropriate assistance with reversible health conditions, when a referral for further assessment and treatment may be needed, and also help with care planning. Aged residential care is seen as part of a continuum of care, supported by acute care and community services (Cornwall & Davey, 2004;

MOH, 2016). It is also seen as an area in which policy setting will have a significant influence (Cornwall & Davey, 2004).

1.2.4 The New Zealand Health Strategy

The New Zealand Government released a new *Health Strategy* in April 2016 (MOH, 2016) The Strategy addresses challenges that affect health services and places significant demands on budgets by setting goals for the next ten years. The Strategy identifies the ageing population as a significant challenge for health services in the future. Increase in long-term conditions, especially dementia, is recognised as a challenge that must be addressed now. The cost of providing health services at the current rate is seen as unsustainable unless new ways are found to deliver services (MOH, 2016).

The Health Strategy vision statement is: "all New Zealanders live well, stay well and get well" (MOH, 2016, p.3). The use of interRAI-LTCF supports the vision of the Strategy, as interRAI NZ has set similarly focused goals. The suite of assessment tools is designed to support the maintenance and improvement of health, and to prevent decline for as long as possible. Furthermore, interRAI NZ has stated the goal is also to improve the effectiveness and efficiency of the NZ health system by using interRAI data (interRAI NZ, 2015).

The Health Strategy has set five strategic themes to address future health service demands in NZ: 1) People powered, 2) Closer to home, 3) Value and high performance, 4) One team, and 5) Smart system (MOH, 2016). The fifth theme particularly is closely related to interRAI. "Smart system" refers to discovering,

developing and sharing effective innovations across the health system (MOH, 2016). It focuses on collecting data through technology in order to improve health outcomes and develop health care systems. Well-organised data is believed to help target different population groups, such as the ageing population, and track their progress, and eventually increase effective care. Because interRAI is a standardised worldwide system that already exists and is able to be implemented nation-wide, it fits well with the Strategy goal: "To share new technological innovations, we must have sufficient scale and standardisation to introduce them across our system as a whole" (MOH, 2016, p.35). One of the visions of the Health Stategy 2016 for smart systems includes sharing information between health care providers and promoting high quality care, which is what interRAI proposes to accomplish also (interrai NZ, 2015; MOH, 2016). Infact, according to the latest interRAI NZ Governance Board (2017) publication *InterRAI vision and future directions 2017 – 2020,* interRAI will be the key tool in implementation of all five themes of the Strategy.

1.2.5 The Workforce in the Aged Care Sector and interRAI

One of the greatest challenges that the New Zealand aged care sector faces is how to ensure an adequate number of nursing staff working in aged residential care. Gerontology nursing is not a popular specialty amongst newly graduated nurses and medical professionals (Algoso & Peters, 2012). Another challenge the sector is currently trying to overcome is that many of the older, experienced RNs in aged care will soon reach retirement age (Cornwall & Davey, 2004). In order to meet the increasing demand, many aged care facilities are employing RNs and other health care workers from overseas. Recruitment, training and certification of new RNs

takes time, and facilities have a great challenge ahead to ensure both safe numbers and quality of staff. At the same time, it is expected that future cohorts of older people will have higher expectations of health care services than ever before (Cornwall & Davey, 2004).

Comprehensive assessments of people aged over 65 years are important in order to ensure quality care at an appropriate level. As the MOH now requires facilities to use the interRAI-LTCF, the aged residential care providers must ensure new staff have competency to use this tool. As the need for new RNs in aged residential care increases, so also does the need for interRAI-LTCF training. Aged residential care facilities must not only ensure safe staffing levels but these staff must be highly trained to meet the demands of older residents and provide quality care.

1.3   InterRAI-LTCF

InterRAI-LTCF is an assessment tool designed to assess older adults (over 65 years) in a long-term care facility, such as a resthome, private hospital, or dementia care (interRAI NZ, 2013). According to interRAI organisation (www.interrai.org) interRAI-LTCF is a highly validated comprehensive assessment tool, and currently used in over thirty countries across North America, Europe, Asia and the Middle East, and since 2015 in New Zealand. To date the interRAI collaborative has developed twenty assessment instruments for different care contexts varying from Community Mental Health (CMH) to Acute Care (AC) (interRAI NZ, 2013). Current versions of interRAI used in New Zealand include Contact Assessment (CA), Community Health Assessment (CHA), Home Care (HC) and Long Term Care Facilities (interRAI NZ). One advantage of using interRAI-

LTCF is that the assessments can be shared between registered providers, for example public hospitals and ARCFs. InterRAI is a secure online database requiring users to be computer literate. The resident assessment section of interRAI is called Minimum Data Set (MDS) and includes coding and writing notes on 311 items in 19 areas (Morris et al., 2011) (Table 2). The RNs must also record a full medication list including the name of the medication, dose, route and frequency. InterRAI instruments include manuals with coding rules and case examples (Morris et al., 2011).

Table 2. InterRAI-LTCF Minimum Data Set

1. Identification Information
2. Intake and Initial History
3. Cognition
4. Communication and Vision
5. Mood and Behaviour
6. Psychosocial Well-being
7. Functional Status
8. Continence
9. Disease Diagnoses
10. Health Conditions
11. Oral and Nutritional Status
12. Skin Condition
13. Activity Pursuit
14. Medications
15. Treatment and Procedures
16. Responsibility and Directives
17. Discharge Potential
18. Discharge
19. Assessment Information

(Morris et al., 2011)

At the end of the MDS assessment, areas of health concerns and risks are automatically alerted by the system. These alerts are called "triggers". The RN is

required to evaluate the triggers in the Client Assessment Protocols (CAPs) section

(Table 3), and write a care plan accordingly (interRAI, 2013).

Table 3. InterRAI-LTCF Client Assessment Protocols [1]

Number	CAP
	FUNCTIONAL PERFORMANCE
1	Physical Activities Promotion
3	Activities of Daily Living
6	Physical Restraint
	COGNITION/ MENTAL HEALTH
7	Cognitive Loss
8	Delirium
9	Communication
10	Mood
11	Behaviour
	SOCIAL LIFE
13	Activities
15	Social Relationships
	CLINICAL ISSUES
16	Falls
17	Pain
18	Pressure Ulcer
19	Cardiorespiratory Conditions
20	Undernutrition
21	Dehydration
22	Feeding Tube
23	Prevention
24	Appropriate Medications
25	Tobacco and Alcohol Use
26	Urinary Continence
27	Bowel Continence

(InterRAI, 2013)

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[1] The 27 CAPs are used across the interRAI suite of assessments, but some are not relevant to every assessment instrument. The CAPs listed here are the ones that are used in the interRAI-LTCF.

Along with CAPs, Outcome Measures are other products of an interRAI assessment (interRAI, March 2016). Embedded within each interRAI instrument, there are various scales that can be used to evaluate the resident's clinical status. Changes over time can also be compared when longitudinal data is collected. The Outcome Measures used in interRAI-LTCF are listed in Table 4.

Table 4. InterRAI Outcome Measures

Activities of Daily Living Scales (ADL Scales) – Long and Short Form
ADL Self-performance Hierarchy
Aggressive Behaviour Scale (ABS)
Body Mass Index (BMI)
Changes in Health, End-stage disease, Signs and Symptoms (CHESS score)
Cognitive performance Scale (CPS)
Communication Scale
Depression Rating Scale (DRS)
Pain Scale
Pressure Ulcer Risk Scale (PURS)

(InterRAI, 2013)

Quality Indicators and Resource Utilisation Groupings (RUGs) are other functions of interRAI-LTCF, which can be used for analysing RN practice patterns, and comparing programmes and health care interventions. They can also be used in financial planning. While RNs are not expected to use these functions, they are discussed in the training.

1.3.1 InterRAI-LTCF Training and Competency

In order to gain an interRAI-LTCF qualification, all users must attend training, which usually takes 50 to 55 hours over a two-month period (interRAI NZ, 2016). The training begins with self-directed *e-Training,* which takes a minimum of two

hours. After the *e-Training* session the trainee attends three full days offsite in a computer room with other trainees, and receives training by an interRAI trainer. Before attending their training sessions, the trainees are required to read the first chapter of the *Assessor Workbook - Welcome to interRAI* (5 out of 190 pages), the first part of the *interRAI LTCF Coding Manual* (3 of 123 pages), and the introduction part of *The interRAI CAPs in interRAI Clinical Assessment Protocols* manual (36 of 179 pages) (interRAI NZ, 2016). By the end of the training the trainees are expected to be familiar with all three manuals. The trainee must also complete ten online *Assessment & Intelligence Systems, Inc.* (AIS) evaluations.

Once face-to-face offsite training is completed, the trainee completes a minimum of five interRAI-LTCF assessments of residents at their employing facility. These assessments are closely supervised and evaluated by a designated tutor, who also evaluates the residents' care plans derived from the interRAI-LTCF assessments. In order to gain the full competency, the tutor must approve all assessments and care plans, and assess the trainee's skills in coding, understanding CAPs and outcome measures, and complete a phone evaluation with the trainee (interRAI NZ, 2016).

The need for a faster way to gain competency resulted in another option being offered. An intensive two-week course requires the nurse to work only on interRAI-LTCF assessment learning (interRAI NZ, 2016b). InterRAI training in both cases puts considerable pressure on the facility, as during training these nurses' shifts need to be back-filled.

Each interRAI-qualified nurse is required to maintain their competency by completing at least two full interRAI-LTCF assessments each year, no more than six months apart. The assessment quality must meet the standards set by national guidelines and pass a quality review if selected for audit. Each assessor must also complete a set of three online AIS evaluations annually (interRAI NZ, 2016). Failure to complete all requirements may result in an assessor having their interRAI access reduced to 'view only' status. This would allow the assessor to enter non-clinical details in the resident overview page, but not to complete any resident assessments. To be reinstated as an assessor, the RN would have to attend additional training sessions, and, with the help of a designated tutor, complete a further set of resident assessments (interRAI NZ, 2016).

1.3.2 InterRAI Assessments in LTCFs

According to the MOH guidelines an interRAI-LTCF assessment should be completed within three weeks of a resident's admission to an ARCF, and every six months thereafter. If, however, there has been a major change in the resident's condition, a revised assessment must be completed. The more frequent assessment need means an increase in workload for the RN assessor (MOH, 2015). The Organisation for Economic Co-operation and Development (OECD)/European Commission report on interRAI-LTCF in 2013 suggests that one assessment takes between 40 and 120 minutes to complete depending on the nurse's familiarity with the resident and the complexity of the resident's care needs (Carpenter & Hirdles, 2013). The interRAI organisation states that completing one assessment takes 60 to 90 minutes (interRAI, 2013). Discussion in nursing publications (INsite, 2015 Aug/Sep, p.4; INsite, 2016 May/Jun, p.14) suggests the reality differs from

both of these claims; RNs state that completion of one resident assessment can take several hours, sometimes even days. The time depends on the nurse's computer skills, familiarity with the resident being assessed, and the complexity of the resident's medical history and nursing needs. Another issue that has been identified is that the computers are usually situated in busy nurses' stations where nurses are interrupted constantly (INsite, 2015).

1.3.3 InterRAI-LTCF in New Zealand

In July 2015 interRAI-LTCF became a mandatory requirement for all facilities with an Age-Related Residential Care (ARRC) agreement. According to the first newsletter from interRAI NZ in April 2016, interRAI Education and Support team had trained over 2500 RNs in New Zealand. A total of 3,210 nurses were trained by April 2016, and each of the 680 ARCFs in NZ had at least one interRAI-trained nurse. Additionally, 390 facility managers had been trained in the use of the Integrated Management Report Suite and software tools, which enables them to monitor interRAI-LTCF activity and produce Operational Summary Reports (interRAI NZ, 2016 April).

According to the interRAI NZ Governance Board Annual Report 2015-2016 (2016, p.14), seven percent of RNs failed to become competent after completing their training course. It appears that some RNs are finding interRAI-LTCF training difficult. Maintaining interRAI-LTCF requirements in the facility is similarly challenging. High turnover of nursing staff has been identified as a hindrance in keeping up with interRAI requirements, which adds pressure for RNs and facility managers to comply with the new requirements (INsite, 2015 Aug/Sep).

1.4 Use of Technology

The use of technology is becoming more common in LTCFs. For example, assessment and care planning software such as *VCare* (www.vcaresoftware.com) and *Leecare Solutions* (www.leecare.com.au) have been used in some facilities in New Zealand prior to mandatory implementation of interRAI-LTCF. For those facilities, adding another assessment and care planning system, such as interRAI-LTCF, could be seen as duplication of information collection, a waste of RN's time and a costly exercise.

Not all RNs are computer literate; others may be reluctant to learn the new system. Some RNs may believe that technology brings no benefits to their current performance, but rather, time spent on the computer takes away their contact time with the patients/residents (Boorsma et al., 2013).

Social influence (the degree to which the user perceives the importance of others' opinion with respect to technology use) is thought to be a significant factor where technology is made mandatory in health care settings, particularly among women who are using the new technology (Venkatesh, Morris, Davis, & Davis, 2003; Wills, El-Gayar, & Bennett, 2008). Older females especially are thought to be most resistant to adopting new technologies (Nägle & Schmidt, 2012). This is important as a large proportion of RNs in NZ aged residential care facilities are older females (Nursing Council NZ, 2011). Nursing Council NZ statistics show that 91% of RNs working in ARCFs are females, and more than half (55.7%) are older than 45 years of age.

1.5   Rationale for the Study

It is vital that RNs complete interRAI-LTCF assessments accurately to facilitate the best health outcomes for residents. If there are any gaps in interRAI training or lack of support for nurses, the assessments may not be accurate or completed in a timely manner. With the ageing population there will be an increased demand for RNs in aged residential care. If RNs do not think interRAI-LTCF is beneficial as an assessment tool, or completion of the training or assessment is too difficult or time consuming, some may consider employment in other areas of nursing. Such loss of nurses would be detrimental to the aged care sector. It is beneficial to the aged residential care industry that RNs feel competent and comfortable in using the interRAI assessment tools and that they receive adequate support.

Prior to this study, no previous studies were conducted in the area of understanding NZ RN's experiences with interRAI-LTCF, or what their attitudes and feelings towards it were. This study is particularly relevant in New Zealand where the MOH has mandated the use of interRAI-LTCF. Based on the knowledge of interRAI training requirements, the complexity of the software, the time it can take to complete an assessment, deadlines set by the MOH, and the characteristics of the workforce (older, female) in NZ LTCFs, it was expected that RNs could have some negative feelings towards interRAI-LTCF. However, it was possible that some RNs had embraced the new system and believed interRAI-LTCF was useful. Understanding RNs' experiences, feelings and attitudes is important in order to further develop support systems that work in practice.

1.6   Research Aim

The aim of this research was to explore how RNs perceived interRAI-LTCF 18 months after it became compulsory in all New Zealand aged residential care facilities, and why or how their attitudes may have developed. This was done by describing RNs' experiences with interRAI-LTCF, and exploring their feelings and attitudes towards it. Did RNs regard it as something useful or as something that simply had to be done? The study further aimed to discover what the RNs thought would improve their experience with interRAI-LTCF.

1.7 Chapter Conclusion

There are six chapters in this research thesis: introduction, literature review, methodology, findings, discussion and conclusion. This introduction chapter began with an overview of the projected New Zealand population and the challenges the growing and ageing population brings to health care and work force. The first chapter also introduced the basic elements of interRAI-LTCF: MDS, CAPs and outcome measures. The training and competency requirements for RNs were discussed. It was acknowledged that there are known challenges with completing resident assessments, and there is conflicting information available about it. Furthermore, interRAI-LTCF in NZ and the use of technology were discussed. Finally, the rationale and the aim for the study were provided.

The next chapter, literature review, presents an overview of the literature search on interRAI and RNs' experiences with it. Search strategies are discussed first, followed by search findings. The literature review concentrates on previous research on interRAI and RNs' experiences with it globally, history of interRAI,

interRAI instrument reliability and validity, comparison of interRAI with other well-known assessment tools, and methodology and methods used in previous studies. The chapter also includes a review on previously used concepts - including experiences, feelings, and attitudes - that are used as a basis in this study.

Chapter Two – Literature Review

2.1 Introduction

This chapter explores the literature related to interRAI-LTCF. The literature search strategy is discussed first. This is followed by a brief history of interRAI, studies on interRAI instrument reliability and validity, and comparison of interRAI with other well-known assessment tools. Whilst there were no previous studies about RNs' experiences with interRAI-LTCF in New Zealand, a few studies have been conducted about other discipline's (e.g. Needs Assessors) views, in another sector (e.g. home care), and overseas. These studies and the concepts they used – including experiences, feelings, and attitudes - are further discussed in this chapter. The remaining literature review relates to interRAI and comprises the methodology and methods used in previous studies.

2.2 Literature Search Strategy

The literature review commenced with an online search. Health and medical databases, including *CINAHL, Medline, Ovid, PubMed, Scopus, Google Scholar* and *Cochrane Library,* were examined*.* CINAHL and Medline proved to be the most useful databases. The keywords used were 'interRAI' and 'nurse/nurs*' and/or 'attitude* / perception* / opinion* / acceptance / experience* / knowledge / implementation / adaptation / insight* / view*/ feeling* / involvement/ use / using / usage /user'. It became evident that the focus in interRAI research has been in validation of the assessment tools.

Internationally there have been three studies from Sweden, Belgium and the Netherlands about RNs' views on interRAI. There was also one study about adaptation of interRAI in Estonia. Literature on staff views on interRAI will be further discussed later in this chapter.

The literature search showed no studies available about RNs experiences, feelings or attitudes specifically about interRAI-LTCF in NZ. One study based in New Zealand (Smith, Whiddett, & Hunter, 2013) did not involve RNs or LTCF, but Needs Assessors and the interRAI-Homecare (HC), which is a different version of the tool. The other study, about interRAI-LTCF in NZ, was an independent review of the tool, but it did not include RNs either. In New Zealand interRAI-LTCF tool has received attention in professional magazines.

InterRAI-LTCF and interRAI-HC as assessment tools have similarities; according to interRAI homepages (www.interrai.org) interRAI-HC has a similar content to interRAI-LTCF. They share the same 181 core assessment items, e.g. identification details, nutrition, and mobility, as do all interRAI versions, plus 64 other items specific to the living environment. Overall, 245 out of 311 (almost 80%) items are the same between HC and LTCF. InterRAI-HC is also often used to assess a similar client group – older adults.

2.3   History of interRAI in the United States and New Zealand

The development of interRAI started in the late 1980s in the United States of America (USA) (Carpenter & Hirdles, 2013), after reports of inadequate care in nursing homes, which prompted the US Congress to seek advice from US National

Academy of Sciences and its Institute of Medicine (IOM). The IOM's expert committee examined the quality of care in the nursing homes. The recommendations by IOM in 1986, after a two and a half year investigation, included development of a standardised and comprehensive resident assessment system. It was also recognised that it was necessary to be able to measure and compare residents' progress over a period of time and between organisations, in order to monitor and improve the quality of care. Within a year of the IOM's recommendation, the minimum data set resident assessment instrument (MDS-RAI) became a federally-mandated system as part of a comprehensive set of nursing home reforms passed by the US Congress in the Omnibus Budget Reconciliation Act of 1987, known as OBRA '87 (Fries et al., 2003). The first version of MDS-RAI was implemented in all nursing homes in the USA between 1990-1992. In the following years, further instruments were developed to assess people in home care (RAI-HC), post-acute care (RAI-PAC), palliative care (RAI-PC), assisted living (RAI-AL), acute care (RAI-AC), and mental health (RAI-MH). Over the years the instruments were adapted internationally and the name changed to "interRAI". It has grown into a not-for-profit collaboration of seventy clinicians, researchers and health officials from over thirty countries (www.interrai.org). Their vision statement since 1992 has been 'the assembly of accurate clinical information in a common format within and across services sectors and countries enhances both the well-being of frail persons and the efficient and equitable distribution of resources' (Fries et al., 2003, p. 1).

Politics has played its part in the history of interRAI. In 1995 it was nearly discontinued (Fries et al., 2003). In 1994, the Republican Party took power from

the Democrats in the US Congress. The members of the Republican Party criticised OBRA '87 for placing the federal government in the position of "micromanaging" the nursing homes (Pear, 1995). They wanted a law change that would make the states accountable for nursing home standards and regulations. At the same time some large providers in the nursing home industry resisted the mandatory implementation of the new system, and delayed its enforcement for nearly five years after the OBRA '87 regulations came into effect. The interRAI collaboration felt strongly that the suggested law change was likely to cut funding for nursing homes and put the whole national assessment system in jeopardy. The RAI development and evaluation team began to fight for consumer rights and quality of care in the nursing homes. They presented research findings along with testimonies from family members, consumer advocates and supportive care providers in Congress (U.S. Senate 1995; Vladeck, 1995). They were able to demonstrate that quality improvements in care, without any increase in cost, were already happening with the new assessment system. A heated discussion in the press followed, and the public started showing interest in the debate. Even the president at the time, Bill Clinton, supported retaining federal nursing home standards, and he used this argument to veto the planned budget bill. In the end, the Senate reversed its initial agreement with the House budget bill and retained the nursing home standards. This chapter in interRAI history demonstrates both the political vulnerability of the interRAI and the underlying factors that make changes in health care legislation challenging, and conversely, how research can be used to influence politics.

The mandatory aspect of the new system has provoked much discussion in the nursing and medical magazines in NZ, e.g. in *INsite* (2016, May/Jun) and *NZ Doctor.co.nz* (Wattie, 2015). Some large aged care providers have been particularly opposed to interRAI in NZ, just as they were in the US decades ago. The owners of large facilities in NZ have argued that their current practices and the quality of service are already of a very high standard, and the training of staff to use the new system is too expensive and time consuming with no apparent gain (INsite, 2014, Aug/Sep).

Because only RNs with interRAI-LTCF competency are authorised to complete the assessments (Morris et al., 2011), concerns have been voiced over a delay in training and not having enough interRAI qualified RNs (INsite, 2016, Mar/Apr). This is especially important as the ARRC certification audit requires all residents who were admitted after July 2015 to be assessed with the new tool (MOH, 2015). New Zealand Aged Care Association (NZACA) and Care Association New Zealand (CANZ) join the concerns that RNs are not being trained for interRAI in a timely manner (INsite, 2016). The Technical Advisory Centre (TAS), the national provider of interRAI services, selected by the MOH and DHBs in association with NZACA, confirms that they have experienced exceptional demand for training (INsite, 2016). The chief executive from NZACA has also stated, that "it [interRAI] has been a huge cultural change for the [aged care] sector – not in terms of the clinical side of things, but from the inclusion of technology into their work" (INsite, 2016 March/April, p.19).

In New Zealand, the need for a validated and comprehensive assessment process was first recognised around 1994 when "Needs Coordination" (now called Needs Assessment and Service Coordination services (NASC)) was introduced (MOH, 2004). A decade later, in 2004, the Guideline for Specialist Health Services for Older People reinforced this need (MOH). A worldwide search for a comprehensive, multi-dimensional and standardised assessment tool resulted in selection of the interRAI-HC as the best available tool (MOH). NASC were first to use the tool to assess needs for home-based support services. The rollout to all DHBs using interRAI-HC for their community clients was completed in 2013 (MOH).

According to interRAI NZ (www.interrai.co.nz), a pilot programme for interRAI-LTCF was carried out in Canterbury, the Bay of Plenty and Waitemata in 2008, and it was deemed "a success". No official data, however, has been released about this programme. The absence of results from this pilot programme was publicly criticised in a nursing magazine (INsite, 2014), and it raises some questions: In what way was the pilot deemed to be a success? What did the RNs think about interRAI? How long did it take to complete the assessments? Did the RNs believe interRAI-LTCF was a useful assessment tool?

2.4   Reliability, Validation and Comparisons to Other Assessments

The interRAI organisation states that it seeks expert input in development of the system and assessment instruments that comprise the tool (www.interrai.org). The software is constantly evolving and has been updated multiple times over the

years (www.interrai.org). The organisation aims to develop comprehensive and accurate tools suitable to assess older adults (www.interrai.org).

One of the largest interRAI reliability studies (Hirdes et al., 2008) investigated integrated health information systems in twelve countries: Australia, Canada, Czech Republic, France, Iceland, Italy, Japan, the Netherlands, Norway, South Korea, Spain, and the United States. Paired assessors, who were blind to each other's assessments, assessed 783 patients on interRAI within 72 hours of each other (Hirdes et al., 2008). A majority of items exceeded the reliability standards when tested using weighted kappa coefficients.

It is noted that the researchers in the above study currently form the board of directors of the interRAI organisation. Naturally, this raises an issue of potential bias and conflict of interest. Nevertheless, the interRAI organisation encourages and financially supports their Fellows to conduct research to strengthen the validity and reliability of the tool (www.interrai.org). This is in line with the interRAI organisation's mission and vision to improve the assessment tool by continuous and rigorous research (Morris et al., 2011). The organisation supports independent research also (www.interrai.org).

Indeed, extensive validation processes have been conducted in many countries by independent researchers. InterRAI-LTCF has been found to be relevant in assessment of the activities of daily living (ADLs) in frail older adults across various long-term settings and across different countries, languages and cultures (Kim et al., 2015; Mor, 2004; Onder et al., 2012). Moderate to high correlation was

found between many well-known, licensed, domain-specific tools and interRAI instruments, including Mini Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975), which is equivalent to interRAI CPS2 assessment (Frederiksen, Tariot, & De Jonghe, 1996; Snowden et al., 1999; Travers, Byrne, Pachana, Klein, & Gray, 2013), and Depression Scale (Yesavage et al., 1982), which is equivalent to interRAI DRS assessment (Huang & Carpenter, 2011).

The research has shown that some clinical domains of interRAI may need to be developed further. Depression, problem behaviour and mood scores remain less well validated (Fredericksen et al., 1996; Lawton at al., 1998; Penny et al., 2016). The Depression Rating Scale of interRAI and Geriatric Depression Scale were first compared in 2005 by the interRAI team (Koehler et al., 2005). No correlation was found between these scales, the reason being that these instruments measure different aspects of the depression syndrome. A recent study (Penny et al., 2016) confirmed that interRAI instruments have failed to identify depression in older adults. Also mood scores have been found not to correlate nearly as well with scores on comparable scales (Fredericksen et al., 1996). It is thought that depression, behaviour and mood are difficult to assess with simple instruments (Fredericksen et al., 1996).

In New Zealand, interRAI-HC was compared with another comprehensive geriatric assessment tool – Support Needs Assessment (SNA) - on identification of needs and service provision for older people (Parsons et al., 2013). InterRAI-HC was deemed superior in recognising support and rehabilitation needs and identifying preventative health screens, but SNA better identified social and carer support

needs. The same study also identified the fact that if recommended services were not available locally, or the resident was not able to access the services, the resident outcomes did not improve. Furthermore, the investigation of the resident outcomes between interRAI-HC and SNA revealed that the clinical judgment by the assessor determined the service use; even when the rehabilitation need was not identified by SNA, the assessor referred the resident to services, such as physiotherapy and occupational therapy, if the assessor intuitively thought it would be beneficial to the resident.

2.5   Literature on Staff Views on interRAI

Staff views on interRAI have been studied previously in Sweden (Hansebo, Kihlgren, Ljunggren, & Winblad, 1998), Belgium (Vanneste, Vermeulen, & Declercq, 2013), the Netherlands (Boorsma et al., 2013) and New Zealand (Smith et al., 2013). The first three were interRAI-LTCF based, and the one in New Zealand was interRAI-Home Care (HC) based. The participants in these studies consisted of not only RNs, but also included Needs Assessors, Enrolled Nurses and Managers. Other participants included unregulated occupations such as "care givers" and "nursing assistants". The Swedish study was carried out before the advent of computer based assessments in 1998.

The research produced similar findings across studies. Problems with information technology (IT), such as lack of computers or laptops, and problems with logging into the system or network issues, were found in all studies (Boorsma et al., 2013; Smith et al., 2013; Vanneste et al., 2013). Time constraint was also a common issue in all these studies. Because interRAI assessment requires so much detailed

information, the health care staff found it very time consuming. In Sweden and NZ the health care staff also stated that they did not understand why so much information was required (Hansebo et al. 1998; Smith et al.). Nurses' frustration increased in work environments with an already heavy workload, lack of personnel and a high staff turnover (Vanneste et al., 2013). Furthermore, as interRAI assessments require concentration, any interruptions, such as attending to residents with acute medical problems, were perceived to prolong the assessment process. In some facilities RNs were required to complete both interRAI and pre-interRAI assessments. Vanneste et al. (2013) recommended integration of interRAI into existing assessment requirements in the organisation. Other advice by the same authors was to ensure that staff were supported and received appropriate training; this could be theoretical or practical training as required. Furthermore, training facilities, reliable computers and a quiet space to complete assessments were thought to reduce the barriers for adopting interRAI.

Positive findings in the four studies were also similar. Generally, participants thought that interRAI was comprehensive and it could improve the quality of care for the patients/residents/clients (Boorsma et al., 2013; Hansebo et al., 1998; Smith et al., 2013; Vanneste et al., 2013). InterRAI was found to increase nurses' knowledge about their patients and to assist with care planning. While difficulties were found in obtaining information from a patient or a family member who was not able or willing to give information, in some cases interRAI was also thought to promote communication with the family members (Hansebo et al., 1998).

In December 2016, an independent report by *Evaluation Consult*, prepared for interRAI Services NZ, was published (Bandaranayake & Campin, 2016). This review on interRAI-LTCF implementation between July 2011 and July 2015 investigated whether intended objectives were met, what the key enablers and barriers were, and identified recommendations. As interRAI-LTCF became mandatory in July 2015, the study reviewed the period before it was implemented in all aged care facilities in NZ. The study included participants from the interRAI Services Management Team (TAS), the interRAI New Zealand Governance Board, DHBs (including NASC Managers), the MOH, New Zealand Aged Care Association (NZACA), Care Association New Zealand (CANZ), and ARC providers and facilities. A total of 297 facility managers completed an email survey, and eighteen ARC provider interviews were conducted. The interviews included individual (9), pair (6) and group (3) and interviews with a purposive sample of large, medium and small facilities in urban and remote areas of NZ. This review did not include RNs, the largest group of people who complete interRAI-LTCF assessments.

The review results indicated that participants believed there was a need for a standardised clinical assessment tool. However, the mandatory aspect of the implementation was received in a negative manner. As some facilities already had assessment systems in place prior to July 2015, the implementation of interRAI-LTCF caused duplication of assessments, which was seen as a barrier for effective use of interRAI-LTCF. Those facilities using the care planning section of interRAI-LTCF were more positive about using the tool. Negative impacts for staff included reduced time with the residents, increased workload and working in their own time to complete the required assessments. An unforeseen negative impact to both

large and small facilities was the cost of implementation of the new system. Comprehensive assessment and a systematic approach to resident care triggers were some of the positive effects of interRAI-LTCF. Also upskilling RNs' clinical knowledge was seen as being valuable. Participants in the review considered processes between the facility and NASC/DHBs as an improvement. Overall, however, providers and facility managers indicated that the implementation of interRAI-LTCF had not added value for money thus far. They questioned whether continuing with the system was sustainable. The researchers concluded that if interRAI-LTCF was integrated into a facility's current systems, and if more staff were trained, this would have a more positive effect on the ongoing sustainability of interRAI-LTCF.

In February 2017, the interRAI governance board responded to the independent review (interRAI NZ, 2017). Issues acknowledged by the governance board were: care providers not finding interRAI-LTCF beneficial; assessment not linked to care plan; duplication of processes; lack of interoperability with other software; time spent on the assessment; and the cost of back-filling the roles during training. Essentially, the governance board's answer to all these issues was more training (interRAI NZ, 2017). More education was required for managers to understand the tool and utilise it to its full capacity in order to avoid unnecessary duplication of processes. Training more RNs and integrating interRAI-LTCF fully into the facility's systems would solve the identified issues. InterRAI NZ offers training and skills booster workshops to managers and RNs. Support to facilities with software issues is provided by interRAI Software Service. InterRAI NZ acknowledges the high cost during the implementation phase of the new tool, as back-filling staff during

training is expensive. However, in the future, when most RNs have gained competency, the demand for training and therefore cost will reduce, and the benefits will outweigh the initial cost. InterRAI NZ commits to continue evaluating their processes, increase communication with all stakeholders, and upgrade the system as required (interRAI NZ).

Saks and Urban (2008), who studied adaptation of interRAI in Estonia, emphasised the need to consider the cultural context and to adapt the system to local requirements. InterRAI was found to be a reliable and comprehensive tool to assess long-term patients. In order to gain the benefit of using interRAI, however, staff were required to follow clear processes when entering data. Inter-rater and intra-rater reliability were thought to be enhanced, and high standards ensured, if the user of the interRAI system received training from a qualified instructor. Assessment standards have been developed since this study (Morris et al., 2011). Cultural information, however, is not collected per se; according to interRAI guidelines, cultural information must be integrated locally into the different parts of the assessment (Morris et al., 2011).

2.6 Previously Used Concepts

The literature review revealed that the researchers had used many different theoretical concepts to study RNs' use of interRAI: Smith et al. (2013) talked about 'views', 'experiences' and 'perceptions'. Vanneste et al. (2013) used the words 'acceptance', 'attitude', 'experiences', 'intentions', 'feelings' and 'preferences', while Hansebo et al. (1998) discussed 'views', 'feelings', 'attitudes', 'opinions' and 'thoughts' and Boorsma et al. (2013) 'opinions', 'attitudes', and 'perceptions'.

The researcher in this study decided the concepts experiences, feelings and attitudes would cover the necessary aspects related to RNs' interRAI-LTCF use. These concepts are discussed in methodology chapter in more detail.

2.7   Methodology and Methods Used in Previous Studies

Most studies exploring staff views on interRAI, or adaptation of interRAI in a country, have used quantitative methodology (Boorsma et al., 2013, Hansebo et al., 1998; Saks & Urban, 2008; Vanneste et al., 2013). In these studies data were collected with questionnaires. One study used a simple Yes/No questionnaire (Boorsma et al., 2013), other studies used a 1 to 4-point (Hansebo et al., 1998) or a 1 to 7-point Likert scale (Vanneste et al., 2013). In the Likert scale studies, the participants were asked to rate their perceptions on a scale ranging from "strongly agree" to "strongly disagree" The use of the questionnaires was beneficial in these studies where large numbers of participants (50 to 661) provided information, and when the purpose of the study was to find out answers to questions such as "how many?" or "what percentage?" or "how strongly the participant agreed or disagreed?" Surveys were also useful when researchers wanted to compare findings before and after an intervention (Boorsma et al., 2013).

Boorsma et al.'s research in 2013 was a mixed method study on implementation of interRAI in Belgium; both quantitative surveys and qualitative interviews were used to gather information on staff views. Also Hansebo et al. (1998) asked participants to write comments and express their views in an unstructured manner. Whilst the purely quantitative results showed divided opinions, the free

form answers explained the issues further and allowed the researchers to make more informed conclusions.

The researchers in the only available NZ study about staff views on interRAI-HC used phenomenology as their research methodology (Smith et al., 2013). Phenomenology is a qualitative methodology that focuses on the meaning of experiences for the individual (DePoy & Gitlin, 2011). This approach is useful in gaining insightful and rich data on complex issues. In the NZ study the main aim was to discover participants' perceived barriers to using interRAI-HC, so the research team selected a methodology that allowed in-depth questions and free-form responses from the participants. The qualitative research had limitations; some interviews had to be excluded because of possible bias, and the resulting sample size was small, with only five participants' answers taken into account.

The United Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) is a model that can be used to predict technology use intention or actual use. The UTAUT model provided a framework and clear structure in two of the previously mentioned studies (Smith et al., 2013; Vanneste et al., 2013). The UTAUT appears to be a useful method in nursing related studies, not only in interRAI research, but also to understand nurses' perceptions towards other newly implemented electronic systems (Holtz & Krein, 2011; Maillet, Mathieu, & Sicotte, 2014). A search revealed that between 2000 and 2016 the UTAUT had been used 17 times in quantitative research, three times in qualitative and twice in mixed method research; a total of 22 times, in interRAI related studies. The UTAUT will be further discussed in the following chapter on methodology.

2.8　Summary

The online search strategy and key words have been discussed in this chapter. The literature review supporting this study comprised previously studied staff views of interRAI nationally and internationally, the history of interRAI in the United States and NZ, interRAI instrument reliability and validity, and comparison of interRAI with other well-known assessment tools. The previously used concepts - including experiences, feelings and attitudes - were discovered. Methodology and methods used in previous studies, including the UTAUT, were also discussed.

The literature review revealed that there have been no studies published about RNs' experiences with interRAI-LTCF in NZ. This study therefore explores a previously unknown area, and describes what is experienced in practice at this time.

The following chapter explains how this study was conducted, what methodology was used and the reasons why it was chosen. Participant selection, recruitment, data collection, data analysis, rigour and ethical considerations are also discussed.

Chapter Three – Methodology

3.1   Introduction

This chapter explains how the study was conducted and what guided the research design. The choice of methodology is discussed first. As the UTAUT is used as a basis for the questions in the study, it will be discussed in more detail. Also, the used concepts (experiences, feelings and attitudes), and how knowledge about them may affect the interviews, are examined further. Ethical considerations, the process for participant selection, recruitment and data collection will follow. The method for data analysis, rigour and pilot interviews are also discussed in this chapter.

3.2   Methodology: Qualitative - Explorative and Descriptive

The theoretical framework adopted in this study is qualitative; more specifically explorative and descriptive. The framework was chosen to correspond with the aim of the research. The aim of this study was to gain information on RN's experiences, feelings and attitudes. There was no specific problem, neither was the purpose to test a hypothesis. The aim was to gain information about the RN's current thinking about a practice that is relatively new. Theoretical concepts such as attitudes or feelings toward something are latent variables. These types of variables cannot be measured directly (Chin, 2001; Straub, Boudreau, & Gefen, 2004). Most of the previous studies relating to interRAI adaptation were quantitative. They were useful in gathering data from large groups, and where the research team wanted to test a clearly formed hypothesis. The results were

presented using numbers and percentages. It could be argued that the surveys that were used did not allow the participants to freely articulate their own thoughts about the topic (Denscombe, 2014). Also, many individual experiences may not 'fit' the categories in the previously mentioned questionnaires (Denscombe, 2014).

Qualitative research concentrates on a participant's verbal description and the meaning of the experience for the individual, making this type of research suitable for this study (Fain, 2004). Participants' experiences are always subjective (Fain). The NZ based qualitative study by Smith et al. (2013) investigated experiences with interRAI-HC. By using qualitative approach, the researchers believed they were able to gather insightful and "rich" data as the participants were allowed to express both positive and negative feelings. Some excerpts of the interviews were published in the article (Smith et al., 2013). Some of the findings were written verbatim, which enables the participant's voice to come through (Corden & Sainsbury, 2006). This is what was hoped for in the present study also. The researcher believes that only an honest discussion about issues that may exist can truly help develop the assessment system in the future, and therefore benefit the patients/residents in LTCFs. Because each RN's experience is different, one-on-one interviews were considered most appropriate. One-on-one interviews also allowed each individual to discuss the issues that were important to them (Stewart, Shamdasani, & Rook, 2015).

Qualitative design is naturalistic, purposeful, and emergent in style (Frey, Botan, & Kreps, 1999). Naturalistic design is based on real-world situations as described by the people who are experiencing them. The researcher's task is to record the

situation as it is without manipulating it. Purposeful design means that the informants - in this case RNs - were selected because they have insightful information about the situation that is being studied. RNs are the ones who need to complete the interRAI-LTCF assessments. They are able to describe their own experiences, feelings and attitudes about their current situation. Emergent design refers to adapting inquiry as understanding deepens and when situations change. The researcher needs to avoid too rigid design and be able to respond to any opportunity to pursue new paths of discovery as they emerge. This requires skill from the researcher. A small pilot study helped the researcher to be more prepared to manage new directions that were likely to emerge. The challenge was to gain more information from the participants, but at the same time to keep the interviews on topic. Structured interviews with open-ended questions and researcher's prompts helped to encourage conversation but at the same time keep the interviews manageable.

Exploratory design was seen to be suitable in this particular case: because there was no specific problem or hypothesis in the proposed study, the topic had not been previously studied from the RN's point of view in NZ, and the sample (i.e. RNs) had personal experience with, and knowledge about the topic (Brink & Wood, 1998). Exploratory design is often the first step in a longitudinal research programme, as the focus is on gaining insights and a knowledge base for later investigation (Ritchie, Lewis, McNaughton-Nicholls, & Ormston, 2014). This type of research is flexible, as the researcher can probe into the matters that the participants uncover (Ritchie et al., 2014). Exploratory design can answer different research questions - what, why, how – which is why this type of design was

thought useful in this study. Furthermore, this type of study can help establish research priorities for further study in the future (Ritchie et al., 2014).

This study was also descriptive in approach. The purpose of a descriptive study is to illustrate what the situation is like at the time of investigation (Sandelowski, 2000). Descriptive research can determine what variables are worth testing, and lead to further quantitative research designs (Vaismoradi, Turunen, & Bondas, 2013). Descriptive studies can yield a large quantity of rich data, and this type of data requires detailed analysis (Vaismoradi et al, 2013). In this study the analysis was conducted using thematic analysis, which is a method for identifying and analysing patterns of meaning in a dataset (Braun & Clarke, 2006).

3.3 Theoretical Framework: The United Theory of Acceptance and Use of Technology

In order to give the interview some structure and a basis to start thematic analysis, the United Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh, Morris, Davis, & Davis, 2003, p. 447) was adapted in the study. This theoretical framework underpinned the current research. The UTAUT model is a synthesis of eight previous models of technology acceptance. The UTAUT has integrated elements from the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Reasoned Actions (TRA) (Fishbein & Ajzen, 1975), the Motivational Model (MM) (Davis, Bagozzi, & Warshaw, 1992), the Theory of Planned Behaviour (TPB) (Ajzen, 1991), a combined TAM and TPB model (C-TAM-TPB) (Taylor & Todd, 1995), the Model of PC Utilization (MPCU) (Thompson, Higgins, & Howell, 1991), the Innovation Diffusion Theory (IDT) (Rogers, 1995), and the Social

Cognition Theory (SCT) (Bandura, 1986). The UTAUT is the most cited model (13948 times by June 2016) according to Google Scholar) for understanding technology acceptance. The model is one type of so called Human-Computer Interaction (HCI) method. The original UTAUT comprises four main constructs: performance expectancy, effort expectancy, social influence and facilitating conditions. The first three are direct determinants of behaviour intention, and the fourth is a direct determinant of use behaviour (See Figure 1).

Figure 1. Original UTAUT model
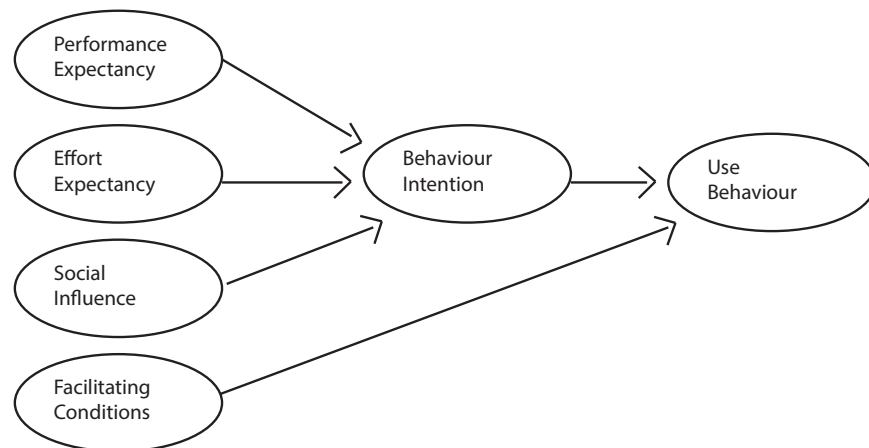
(Venkatesh, Morris, Davis & Davis, 2003, p. 447)

In the UTAUT model, performance expectancy (PE) is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p.447). Effort expectancy (EE) is defined as "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p.450). Social influence (SI) is defined as "the degree to which an individual perceives that important others believe that she or he should use the

system" (Venkatesh et al., 2003, p.451). Finally, facilitating conditions (FC) are defined as "the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2003, p.453).

The model has been validated in different culturally diverse countries (Anderson & Schwager, 2004; Oshlyansky, Cairns, & Thimbleby, 2007; Venkatesh et al., 2003). The study by Oshlyansky et al. (2007) tested the UTAUT model and collected data from a sample of 1570 people in nine countries: Czech Republic, Greece, India, Malaysia, Saudi Arabia, South Africa, United Kingdom, United States, and New Zealand. Principal component analysis (PCA), which included omnibus factor analysis, resulted in acceptance of the UTAUT model as robust enough to withstand translation to different languages and to be used cross-culturally. (Oshlyansky et al., 2007). It was also thought that the use of the UTAUT model could give insight into cross-cultural technology acceptance differences (Oshlyansky et al., 2007). This finding is useful, as usually cultural models, which have not been validated in HCI field, have been used to explain cultural differences.

The UTAUT model has been used in numerous information system studies, and in two studies directly related to interRAI. The previously mentioned study in New Zealand (Smith et al., 2013) used the UTAUT only as framework in a qualitative study (n=5). A research team in Belgium (Boorsma et al., 2013) on the other hand ran a quantitative (n=661) UTAUT analysis to study healthcare professionals' acceptance of their local interRAI, BEL-RAI (Vanneste et al., 2013). They found adequate reliability of the UTAUT when investigating interRAI acceptance. Each

UTAUT construct was evaluated for internal consistency reliability (ICR), and the values for Cronbach's alpha (CA) were set to a minimum of 0.70 as recommended by Nunnally & Bernstein (1994). All construct values exceeded the set 0.70, which confirms the acceptable level of ICR. Average Variance Extracted (AVE) and Composite Reliability (CR) were also completed as part of Partial Least Squares (PLS) analysis; recommended AVE threshold of 0.50 and CR threshold of 0.70 for reliability of each construct were exceeded. These findings confirm adequate construct reliability of the UTAUT model (Vanneste et al., 2013).

The research by Vanneste et al. (2013) tested the four main UTAUT constructs and also three additional constructs: self-efficacy (SE), anxiety and attitude towards using technology. Unexpectedly, through PSL analysis, their results found self-efficacy to be an important construct in the context of studying interRAI acceptance. Self-efficacy is defined as the degree to which an individual judges their ability to use a particular technology to accomplish a particular job or task (Vanneste et al., 2013). The questions that were used in Vanneste et al.'s (2013) study seem appropriate in exploring interRAI-LTCF use, as they investigate the usefulness of IT helpdesk or colleague assistance scenarios. One example of a question in the study was: *"Using interRAI, I could complete the task if I can call someone for help if I got stuck"*. In the final interview questions this was changed to "*Tell me about the support systems available to you*" (Appendix 4, question 5). Also, because the analysis strongly suggested that self-efficacy was a particularly important influencing factor of behavioural intention in interRAI environment, it was added to the study. The final model for the study was as shown in Figure 2.

Figure 2. Adapted UTAUT model
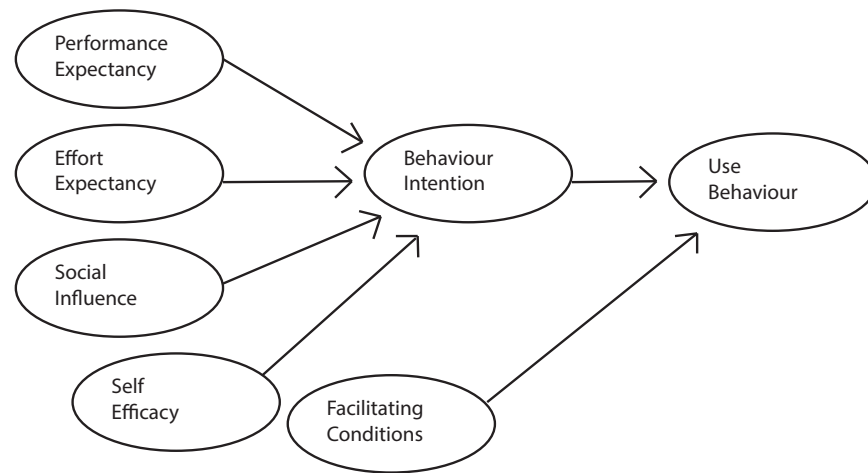
The UTAUT is a usable and modifiable model that can and should be modified depending on the information system being studied (Oshlyansky et al., 2007; Vanneste et al., 2013; Venkatesh et al., 2003). The UTAUT model allows flexibility in terms of how different components of the model are used. In this study it was used as a framework for the questions. Questions were developed based on the main four UTAUT categories: PE, EE, SI, FC plus additional SE. The questions were mostly open-ended and easy to understand, as they needed to encourage RNs to elaborate their experiences with interRAI-LTCF. The questions were tested outside the study sample in a pilot interview before the actual research. The main focus of questions in each category was:

PE: Benefit of interRAI in RN's job (for RN and for the residents)

EE: Learning and using interRAI (training, assessments, AIS)

SI: Support from manager and the company

FC: Organisational or technical support available (personal, IT, books)

SE: Confidence in using a computer and knowledge about interRAI

The final questions were chosen to meet the aim of this study, which was to explore RNs' experiences with interRAI-LTCF, and their feelings and attitudes towards it. The final interview questions can be found in Appendix 4.

The original UTAUT model consists of modifying constructs: voluntariness of use, experience, age, and gender. Because the use of interRAI-LTCF is part of an RN's employment requirement in an aged residential care facility and a compulsory requirement in New Zealand, there will be no need to collect data about voluntariness of use. InterRAI-LTCF became mandatory 18 months before the study was conducted. There were some RNs who were "early adopters" of the system, and had experience in using interRAI-LTCF prior to it becoming mandatory. The maximum experience anyone could have had using the interRAI-LTCF was four years. All RNs, that met the inclusion criteria in this study, had used the interRAI for between zero and four years. The purpose of this study was to gain knowledge of RNs' experiences in learning and using the interRAI-LTCF, therefore including users with different lengths of experience with the software was beneficial to the study. Length of experience as an RN, however, was outside the purview of this study. As discussed earlier, Venkatesh et al. (2013) and Wills et al. (2008) believe social influence is important in an environment such as an aged residential care facility; using technology is mandatory and the workforce is mostly female, and in relatively early stages of their interRAI experience. Furthermore, Nägle and Schmidt (2012) stated that older females especially are thought to be most resistant to adopting technology. Age and gender were noted, but they were not the focus in this study. As this was the first study to investigate interRAI-LTCF in New Zealand, the main focus of the study was to explore RNs'

experiences, feelings and attitudes, and analyse the answers using thematic analysis based on the categories offered by UTAUT, in a qualitative explorative way. Future studies on the same topic may include UTAUT modifying constructs, and studying variables in quantitative studies.

3.4 Theoretical Concepts: Experiences, Feelings and Attitudes

The theoretical concepts of experiences, feelings and attitudes were chosen to investigate RNs' relationship with interRAI-LTCF. These concepts required more investigation in order to understand how they could affect planning the interview questions.

3.4.1 Experiences

Experiences are stories recounted by participants from their perspectives; they describe what happened, when it happened, and where it happened (Hurlburt & Schwitzgebel, 2007). According to Hurlburt and Schwitzgebel (2007), relaying experiences does not require much effort from the participant, only memory recall. However, human memory can be susceptible to errors. Hurlburt and Schwitzgebel also questioned whether experiences could be described by one person (participant) and understood by another (researcher) accurately, and call for some scepticism when analysing the interview data.

3.4.2 Feelings

Emotional connection with experiences can be conveyed by expressing one's feelings (Jones & Jenkins, 2007). Feelings can also be verbally described by the participants. It may be harder to describe one's feelings than experiences, but

providing that participants are honest during interviews, it is possible to obtain an impression of what feelings participants had at the time of their experience, especially if the feeling was strongly positive or negative (Jones & Jenkins, 2007). Face-to-face interviews are thought to be a suitable method to build up trust with the participant and encourage verbalisation of feelings (Oltmann, 2016). The strength of the feeling can be described with words and also by non-verbal communication, such as voice and facial expressions (Matsumoto, Frank, & Hwang, 2013).

3.4.3 Attitudes

The third concept, 'attitude', can be harder to uncover and express. The more detailed investigation concentrated on the definition of attitude, how attitudes influence behaviour, and how they are measured. There is much interest in research in trying to understand which methods are the most appropriate to measure attitudes, how they are developed and how they can be changed (Cooper, Blackman, & Keller, 2016; Maio & Haddock, 2014).

3.4.3.1 *Definition of attitude*

Fazio (1995, p.247) stated that attitude is 'an association in memory between a given object and a given summary evaluation of the object'. A similar view is offered by Maio and Haddock (2014, p.4), who describe the basic characteristic of attitude as 'an association in memory between an attitude object and an evaluation of it'. They continue saying that 'attitude is an overall evaluation of an object that is based on cognitive, affective and behavioural information'. Each of these definitions include an aspect of evaluation of the object, and making a judgement

of like or dislike. This knowledge assisted designing the interview questions about attitude; participants were asked whether they had more positive or negative thoughts about the topics discussed, e.g. interRAI training or AIS assessments (Appendix 4).

3.4.3.2 Attitudes and behaviour

Attitudes influence people's view of the world, what we think and what we do (Maio & Haddock, 2014); our thoughts, feelings and experiences are seen to form our attitudes. Attitudes cannot be directly observed, they can only be concluded by a person's responses (Fazio & Olson, 2003). Attitudes are generally believed to affect our behaviour, although some research findings have disputed this. Recent studies showed that attitudes may predict behaviour more strongly in some conditions than others, depending on such factors as time, place, and the social groups we belong to (Ajzen, 2015; Eiser & van der Pligt, 2015).

Fishbein and Ajzen's Theory of Reasoned Action (Fishbein & Ajzen, 2015) recognises that there are situations or factors that limit the influence of attitude on behavior. In relation to the interRAI study, an example would be that the RN has a positive intent towards completing an assessment, but does not have the time to complete it, therefore the attitude varies from the actual behavior.

The Theory of Reasoned Action includes two elements that predict behavior intent: attitudes and norms. It recognizes that others' conflicting expectations can influence a person's behaviour intent. For example, the RN wants to learn a new skill to improve their career and gain interRAI competency, but their colleagues

say that the tool is very difficult to use. These conflicting attitudes would make the RN's decision to attend the training more challenging.

The Theory of Reasoned Action states that three factors influence how much behavioral intent affects our actual behaviour. Firstly, we must have control over our behaviour. For example, if there are no computers available, the RN is not able to complete an assessment whether they want to do it or not. Secondly, there must be a high correspondence between measures of attitude and behaviour. For example, the interview questions relating to behaviour should be very specific: Instead of asking "Do you think interRAI is useful?" the question should be "In what way do you think interRAI is useful to the resident or to you personally?" It is possible that the RN thinks that the interRAI is useful to the resident but not for themself. Thirdly, attitudes change over time. Therefore, behavioral intent and behavior should be measured at the same time to ensure that they relate (Ajzen, 2015).

3.4.3.3 Measuring attitudes

The current consensus is that attitudes reflect how much we like or dislike something. Attitudes differ in valence (the direction of person's evaluation towards negative or positive) and strength (Maio et al., 2014). The question arises: how can attitudes be measured? Two of the most well known pioneers in attitude research, Louis Thurstone and Rensis Likert, were able to demonstrate that attitudes can be quantifiably measured. Thurstone (1928) developed the Equal Appearing Intervals method (EAI), and this idea was developed and simplified by Likert (1932), who

developed Likert scales. Likert scales are still widely used to scale responses and to measure attitudes in survey research (Johnson & Morgan, 2016).

Attitudes can be explicit or implicit (Maio et al., 2014). Explicit processes require conscious attention, while implicit processes do not (Maio et al., 2014). In relation to attitude measurement, this means how much the participant is aware that their attitudes are being assessed. When using explicit measures in research, the participant is asked directly about their attitude towards something. Implicit measures, however, measure participants' attitudes without their awareness of the fact that their attitude is being assessed (Maio et al., 2014).

Explicit measures, such as Likert scales, are regarded as useful in research. However, there are some limitations that the researcher must be aware of. One limitation might be that the participant is not actually aware of their underlying attitude about the topic (Altmann, 2008; Petty, Fazio, & Brinol, 2009). Another consideration that may affect a participant's response can be as simple as the order in which the questions are asked (Silber, Höhne, & Schlosser, 2016). Awareness of other people's opinions can also alter a participant's stated opinion (Olson, Goffin, & Haynes, 2007). These issues must be considered in both qualitative and quantitative research.

One of the greatest challenges that a researcher must take into account is that sometimes the participants may not be honest with their answers relating to their attitudes (Altmann, 2008; Paulhus & John, 1998). Paulhus and John (1998, p.1029) talk about 'impression management'. Participants may want to impress the

researcher by giving more positive responses than what their reality is, feeling they have to meet a certain societal norm, or in this study, professional standard. For example, as interRAI-LTCF is already a compulsory requirement in every ARCF in NZ, the RNs may feel they should be more positive about it, or at least they should say that they feel positive even though they may not. They may also feel obliged to say positive things about the company and how well they are keeping up with the standards and completing the interRAI-LTCF assessments.

One method to increase reliability in the study would be interviewing many respondents from the same facility in the hope that the 'truth' prevails, although one must bear in mind that the truth is subjective to each individual (Sandelowski, 1996). Another method to obtain more reliable data is triangulation i.e. using multiple data sources to confirm what is actually happening (Holloway & Wheeler, 2016). Triangulation in a qualitative study can be achieved by comparing voiced attitudes to behaviour (e.g. by checking the interRAI data). In this study, however, the main goal was to find out about RNs' perceptions of their experiences. Therefore, ensuring participants' answers were kept strictly confidential, having rapport between interviewer and participant, and emphasising the benefit of open disclosure was believed to encourage the participants to give sincere responses (Seidman, 2013).

3.4.4 Concept use in the study

The concepts of experiences, feelings and attitudes were chosen to assist gaining a wider range of information from participants. By asking the same question from a different "perspectives" was thought to better expose participants' views about

interRAI-LTCF, and how they accept the new technology, which links back to the UTAUT (Venkatesh, Morris, Davis, & Davis, 2003).

3.5 Sample

3.5.1 Participants

The participation inclusion criteria for this study was being an interRAI-LTCF qualified RN, employed in a long-term care facility (dementia, rest home or private hospital) in Auckland. Participants also needed to be willing to talk about their interRAI experience, and have time to take part in the study. RNs working in the same facility as the researcher were excluded. The researcher reduced the bias by not selecting participants she knew personally before the study. Furthermore, the participants' views about interRAI-LTCF were not known to the researcher prior to the study. To ensure the volunteering participants met the inclusion criteria, a baseline checklist (Appendix 3) was used prior to starting the interviews. The form included questions about being a Registered Nurse, being qualified to use interRAI-LTCF, having completed the AIS tests, and whether the volunteer had worked in the same facility as the researcher. Had any volunteering participant not met one of the inclusion criteria, they would have been excluded from the study.

3.5.2 Purposive Sampling

A purposive sampling method (Etikan, Musa, & Alkassim, 2016), i.e. including participants because of their qualification and knowledge, was used in this study. The sampling strategy was chosen to match the aim of the study. The aim was to gain in-depth information from participants who were able and willing to talk about their experiences with interRAI-LTCF. The objective was to gain as much

information about the research topic as possible, having the concept of information "saturation" in mind (Boddy, 2016). Even though saturation is usually not a fully realistic goal in a time-restricted study, as discussed by Green and Thorogood (2013) and Guest, Bunce, and Johnson (2006), it can act as a guide determining the sample size. In this explorative study, the emphasis was on quality rather than quantity. The aim was to gather in-depth information.

3.5.3 Sample Size

The literature review revealed that definitive instructions about a sample size in qualitative study have not been established. Guest et al. (2006) proposed that fifteen is the smallest acceptable sample in qualitative study. The authors do not however justify this number in any empirical way. Guest et al.'s study, where 60 interviews were conducted, suggested that saturation started occurring within the first twelve interviews. Basic elements for meta-themes were present as early as six interviews. Boddy's (2016) study demonstrates twelve participants can be satisfactory providing the sample population is reasonably homogeneous. Jette, Grover and Keck (2003) suggest that expertise in the chosen topic could reduce the number of participants needed in a study. In the similar, previous NZ study (Smith et al., 2013) the sample size was only five participants, yet the study gained valuable in-depth information about the participants' experiences. After considering available information, the researcher believed that a sample size of twelve participants was a large enough number to gain an insight into RNs' experiences with, and feelings and attitudes towards, interRAI-LTCF. This number meant that collecting and analysing data would be manageable by the researcher conducting the study. The sample size was flexible however, as it was not known

beforehand what quality and quantity of information would be received from the participants. More participants may have been needed if the information received was sparse. Similarly, if all participants had verbalised the same views early on, saturation could have been reached sooner. However, twelve participants were thought to be sufficient.

The research goal was to obtain data that reflects the views of RNs using interRAI-LTCF in NZ. Selecting participants from several care provider groups increased the validity of the study, as different companies have different policies and practices relating to interRAI-LTCF. RNs from small and large facilities were thought to have different issues and experiences with interRAI-LTCF, therefore it was thought to be beneficial to have participants from different sizes of facilities. Because it was not financially possible for the researcher to travel around the country, facilities for the study were sampled from around the Auckland area only (Auckland Central, Counties Manukau, Waitemata North and Waitemata West). Auckland is the largest city in NZ, with a population of approximately 1,454,300. (Statistics New Zealand, 2016b). According to *Eldernet* (www.eldernet.co.nz), an up-to-date nationwide database for aged residential care facilities, there were 152 facilities in the wider Auckland area, which is 22.4% (n=680) of all facilities in NZ. Contact details for these facilities were obtained from *Eldernet*. Sites where the researcher was working at the time or had worked in the past (three sites) were excluded from the study in order to minimise bias.

3.5.4 Ethical Considerations

Participants were informed verbally and in writing about the purpose of the study, and about their right to withdraw from the study at any time without consequence (See Participant Information Sheet, Appendix 1). The participants were encouraged to ask questions. Verbal consents were obtained from managers of the participating aged residential care facilities. Individual informed consents were obtained in writing from all participants (Appendix 2). The researcher ensured there was no conflict of interest, by excluding participants from the facility the researcher was working at the time of the study. The researcher had not worked with any of the participants before. Confidentiality and anonymity of participants was maintained by the researcher. Participants' names and other personal details are not published in the study. Interview transcripts are confidential, and accessible only by the researcher and the supervisor of the study. Participants from several facilities were used in order to minimise recognition of people or places.

A potential risk of harm was thought to arise if non-participating people (e.g. managers) knew who participated in the study and 100% of participants verbalised the same – possibly negative – opinion or experience. This risk was potential but very unlikely, as it was expected that there was sufficient variation between the participants' answers. The risk was minimised by informing participants of the risk, and allowing them to decide whether to participate. Having participants from many sites minimised the risk also.

Purposive sampling could be seen as an ethical dilemma (Ritchie, Lewis, McNaughton-Nicholls, & Ormston, 2014). Because the researcher wanted to ensure that the study was of high quality, the participants were selected in a way that provided diverse and detailed data. However, the participation was voluntary and the researcher did not use coercion to obtain participants.

Another possible ethical issue could have been the questions asked during the interviews (Ritchie et al., 2014). While the interviews were structured, they allowed an opportunity for the researcher to ask more in depth questions. The researcher was careful not to be over-intrusive or insensitive, and allow the participant to stop if they wished to do so. Occasionally the researcher reminded a participant during the interview to answer the question only if they felt comfortable with it, and also reminded them about confidentiality and anonymity.

Interviews were transcribed and this data was protected by a password and limited to researcher and supervisor only. Antivirus software was updated in order to provide information technology security. Voice recorder and printed documents were stored securely at all times. The researcher ensured deletion the audio recordings after the completion of the project and the hard disc will be cleared of data when disposing of the computer.

The researcher, who is an RN, follows The *Code of Conduct for Nurses,* which is a set of standards defined by the Nursing Council New Zealand (Nursing Council of New Zealand, 2012). *The Code of Conduct* includes values such as: respect, trust, partnership, integrity, dignity, individuality, respecting cultural values, privacy,

confidentiality, and maintaining public trust and confidence in the nursing profession. *The Code of Conduct* describes the behaviour or conduct that nurses are expected to uphold, and was followed during this study also.

In accordance with Massey University (2015) ethics protocols this project was evaluated by peer review and judged to be low risk. Consequently it was not reviewed by one of the University's Human Ethics Committees. The researcher named in this document was responsible for the ethical conduct of this research.

3.5.5 Recruitment

The researcher advertised the study briefly in aged residential care meetings in the selected area, and enquired if there were any volunteers to participate in the study. The participant inclusion criteria were given. Volunteers gave their email or phone contact details, and the researcher contacted them later with more detailed information about the study. The first three volunteers were asked to participate in the pilot interviews. Some managers in the aged residential care facilities were contacted via email, and they were asked if they knew any RNs who would like to participate in the research. Some RNs contacted the researcher and volunteered to be part of the study. The researcher supplied an information letter about the study personally to each participant (Appendix 1). All participants gave written consents (Appendix 2). The participant search continued until three pilot interviews were conducted and twelve participants were recruited from small and large facilities/ provider groups.

3.6 Data Collection

3.6.1 Interviews

To investigate RNs' experiences, feelings and attitudes, the researcher compared and considered one-on-one interviews and focus group methods. The one-on-one interview method was chosen in the end. It was tempting to use focus groups, as they can be a more economical and efficient method for obtaining data from multiple participants (Krueger & Casey, 2000). Also some participants might find focus groups less threatening, and the group environment could encourage them to talk spontaneously (Krueger & Casey). However, there was a risk that an individual participant's voice could be easily missed, especially when the researcher would be working alone to capture everyone's opinions and levels of agreement in the group (Onwuegbuzie, Houston, Dickinson, Leech, & Zoran, 2009). Conducting one-on-one interviews, rather than focus groups, ensured that all participants had a chance to express their own views about the topic, and other participants could not influence their answers (Stewart, Shamdasani, & Rook, 2015). Also, from the analysis point of view one-on-one interviews had an advantage; determining the strength of opinions and attitudinal consensus could have been difficult, even impossible, if data had been created by a focus group, compared to data created by one person (Stewart et al., 2015) The one-on-one interview method also supported the use of UTAUT in the study; one important construct of the UTAUT model is the social influence (Venkatesh, Morris, Davis, & Davis, 2003), therefore in this study it was important that the participants could freely discuss the assistance they had received, or not received, during the interviews.

The analysis started during the interview. Respondent validation technique was used. Respondent validation is a technique that is recommended by Mays and Pope (2000). This involves feeding back the analysis to the participants of the study in order to check whether the researcher's analysis matches the participant's own understanding. During an interview, the researcher can paraphrase or summarise participant's answers, and question the participant to determine accuracy. Participants are allowed to examine the findings themselves and make adjustments if needed. A participant can either confirm that the summary reflects their experiences or feelings, or that they do not reflect them. These respondent validation processes aim to decrease the incidence of incorrect interpretation of data. The process can increase reliability and validity of the study (Mays & Pope, 2000).

Each interview varied in duration, because participants' experiences varied. The length of each interview depended on how much each participant wanted to talk (Holloway & Wheeler, 2016). The average interview time was 40 minutes, which was also suggested by the pilot interviews.

Participants appointed suitable times and venues for the interviews. Some interviews were conducted at work, some at home; whichever was preferred by each participant. The location needed to be quiet with no disturbance or interruption during the interview. The interviews were audio recorded. The researcher transcribed and analysed all recordings at a later stage. Because the respondent validation technique was used during the interviews, transcripts did not require participant verification.

3.6.2 Questions

The questions were mostly open-ended allowing participants to express any additional comments during the interviews. Additional comments were examined at a deeper level, and probing questions were used in order to gain in-depth information from the participants. Questions like "Tell me more about that" and "what do you mean by that" encouraged nurses to expand on their answers. Probing questions could not be easily planned in advance. It was impossible to know what issues the participants might raise during the interviews.

The interview questions were developed by combining three aspects: 1) the UTAUT categories, 2) the aim of the study to investigate experiences, feelings and attitudes, and 3) the questions from previous studies (Holtz & Krein, 2011; Simeonova, Bogolyubov, Blagov, & Kharabsheh, 2014; Vanneste et al., 2013). The previous studies were interested in interRAI and other newly-implemented hospital-based electronic systems and virtual learning environments. Firstly, the questions covered all five UTAUT categories (PE, EE, SI, FC and SE). Under these categories there were questions about RNs' experiences, feelings and attitudes. Sample questions were derived from previous UTAUT-based questionnaires.

Attention was paid to the order the questions were asked. The questions were asked in chronological order, in a way that made the participants think about their journey with interRAI-LTCF. The first questions were about the training process and were thought to be easy for the participants to answer, with the aim of making the participants feel at ease with the interview. The interview process lead to a question about how participants thought that learning and using interRAI-LTCF

had been useful to them personally. One final question was added to gather information on what the RNs thought would make it easier to learn and use interRAI-LTCF. This was thought to give guidance to what areas could to be developed in the future. The questions were pilot tested before the main study began.

3.6.3 Piloting the Interview Questions

According to Teijlingen and Hundley (2002), pilot studies are a crucial element of good study design, and increase the likelihood of a successful main study. In a study of twelve participants, a small pilot interview of three RNs can ensure the questions are relevant to the study, and understandable to the participants (Teijlingen & Hundley, 2002). Any issues with recruitment or ethics could be resolved before beginning the main study. Discussing the process of the pilot interviews is considered to increase rigour in qualitative research (Crosswaite & Curtice, 1994), and some researchers even see it as an ethical obligation (Teijlingen & Hundley, 2002).

Initially three participants responded to emails sent to the facilities, or enquiries made at regional meetings. They were given information about the study verbally and in writing, and were told that they were part of the pilot interviews, which would involve giving honest feedback to the researcher after the interview. The pilot interview process began by inviting those RNs that met the criteria to participate in the pilot interviews. A feedback form was used to collect information (Appendix 6). Three participants provided a satisfactory number to ensure questions covered all aspects of interRAI use, and if any changes were needed.

Some changes were made after piloting the questions. One question was removed: "How do you learn best?" Most people were thought to answer in a similar way, and it was decided the question did not add much to the study. There were other questions about support systems, e.g. "Tell me about the support systems available to you." A new question was added: "Are you up-to-date with your assessments?" This question was thought to better describe the situation of pressure in completing assessments, as the third pilot participant mentioned pressure from the auditing point of view. A question about access to interRAI training was added, after one participant raised this in response to another question. This topic has been discussed in nursing magazines (INsite, 2016, March/April), and it was thought to be relevant to the study.

When asked about how interRAI-LTCF can benefit RNs personally, the RNs tended to talk about the benefit for the resident more than to themselves. It was decided it was better to ask about benefit to residents first, and then about benefits for the RN, therefore the order of the questions was swapped. During the pilot interviews the interviewer accidentally asked "Do you think it is worthwhile to use interRAI?" instead of "In what ways is it worthwhile to use interRAI?" The researcher believes that a more honest answer was received by asking a closed question first and then elaborating the question as needed. "How could interRAI be improved?" was added during the pilot interviews, and this question turned out to be very fruitful. Various useful answers were given during the pilot interviews. The black and white "more positive or negative thoughts...?" question turned out to be a good way of getting clear answers, and prompting the participants to elaborate their answers. Some had both positive and negative thoughts about the same topic. They

were able to verbalise and explain these further during the interview. The participants confirmed that the questions appeared to cover matters that were commonly experienced with interRAI-LTCF use, there were no uncomfortable or ambiguous questions, the language and wording were suitable for RNs, and the order of the questions was logical.

The pilot interviews gave the researcher an opportunity to practice the interview process, use the audio recording device, and establish the time that the interviews took. After the pilot interviews the researcher gained more confidence with the questions and the routine in the interview process.

All interviews were conducted in quiet settings with minimum interruption. The pilot interviews took between 25 and 33 minutes depending on how much the participants wanted to elaborate their answers and how many ideas they had. The baseline questions ensured the participants were qualified to participate (Appendix 3). All pilot participant engagement, including completing the baseline questionnaire, doing the interview and answering the questions after the interview (Appendix 6), was completed within 40 minutes.

The findings of the pilot interviews were not included in the main study. This is because the pilot was not identical to the main study; some alterations were made after the pilot interviews, and including this data could be inaccurate (Peat, Mellis, Williams, & Xuan, 2002). It should be noted that the pilot interviews and the main study findings were similar. Exclusion of the pilot interview responses did not exclude any findings in this study, as the main study participants confirmed the

pilot participants' views. This indicates approaching sample saturation, and strengthens the study findings.

3.7 Data Analysis

3.7.1 Thematic Analysis

Exploratory descriptive studies can produce a large quantity of data that requires detailed analysis (Vaismoradi et al., 2013). Data in this study was analysed using thematic analysis. The analysis started during the interviews, when the researcher gained a feel for the RNs' experiences, feelings and attitudes. Respondent validation technique – the researcher confirming understanding of responses with participants – used during the interviews also helped the process of analysis. The more rigorous and labour intensive analysis started after all data was gathered, with the researcher transcribing the audio recordings of the interviews verbatim. The researcher then read all the transcripts again in order to familiarise herself with the data.

The research questions were created using a deductive approach (Ritchie et al., 2014), which means that before the study, the researcher was able to create pre-determined categories based on what was previously known about the topic and the method (UTAUT). The pre-determined categories enabled the participants' answers to be arranged according to the questionnaire structure into main UTAUT categories (PE, EE, SI, FC, and SE), under "experiences", "feelings" and "attitudes". After data was divided into categories in a pre-determined deductive manner, following the UTAUT categories, there were no other pre-set methods utilised. The sub-themes were identified by using an inductive approach.

Inductive analysis involved immersion in the details, then discovering important patterns, themes, and inter-relationships, and moving from specific observations to broader generalisations (Gabbay & Smets, 2000). In each category, there were sub-categories based on the emerging "themes", which derived from the answers given by the participants. Similar answers by participants were grouped under one theme. To ease the organisation of data into analytically meaningful categories, keywords, sentences, phrases, or paragraphs were coded with the name of the theme (Saldana, 2013). In thematic analysis, the themes are not just words identified in the data, but also meanings are important (Joffe & Yardley, 2003). Furthermore, the aim was to examine and describe not only meanings, but also context and implications of the themes. The remaining steps in the process of analysis were: searching for themes among codes; reviewing themes; defining themes; and producing the final report (Saldana, 2013).

3.7.2 Epistemological Issues Affecting Analysis

It is always possible, and almost likely, that the researcher's own theoretical epistemological views will have an influence on what is found to be important from a large amount of data (Willig & Stainton-Rogers, 2017). The researcher's own views and experiences about how to best learn about reality are believed to affect the research, especially when it comes to adopting an inductive or deductive process (Ritchie et al., 2014). The pure form of deductive "top-down" approach means that a hypothesis or theory is first developed, and evidence is then collected to confirm or reject it. The pure form of inductive "bottom-up" approach, on the other hand, means that observations are carried out before formulating patterns. Some researchers (e.g. Blaikie, 2007) argue that there is no such thing as pure

induction or deduction. For example, an inductive minded researcher would not be able to create interview questions without pre-assumptions or an idea of what might exist in the field, whether a hypothesis is used or not. This study used both deductive and inductive approaches.

Another epistemological issue remains around the relationship between the researcher and the study participant, and how this relationship influences the connection between facts and values (Ritchie et al., 2014). Some researchers believe it is not possible to remain objective due to the interactive nature of the interview, therefore the findings may not be objective either. In order to increase objectivity, some researchers suggest "empathic neutrality"; it is important, that the researcher is aware of their own assumptions and values. Awareness of one's own beliefs assists in remaining neutral and non-judgemental in the approach, and avoiding bias. The researcher's intention in this study was to remain as objective as possible during the interviews and in the analysis process. Transparent and descriptive analysis, giving examples of the process of analysis, and including quotes from the interviews, assists in keeping the analysis as truthful and objective as possible (Mays & Pope, 2000).

3.8 Rigour

In order to increase rigour in this study, special consideration was given in each step of the study: 1) prior to beginning the study, 2) when selecting participants, 3) during the interviews, and 4) during analysis.

3.8.1 Beginning The Study: The Pilot Interviews

Before the study began, the interview process was piloted. The focus was on the recruitment of the participants, testing the new audio recording device, assessing the interview questions and highlighting any ethical issues. Minor changes were made to the order of the questions. Some questions were dropped altogether and some were added. Issues with the audio recording device were resolved prior to the main study. The pilot interviews were useful and enhanced the chances of achieving a successful study.

3.8.2 Rigour In Selecting Participants

Purposive sampling with selecting participants from several provider groups, large and small, increased the validity of the study. As previously mentioned, the aim was to obtain in-depth information with the emphasis on quality. The site where the researcher was working was excluded from the study in order to minimise bias. The researcher did not know any of the participants beforehand.

3.8.3 Rigour During Interviews

The clear and systematic way of conducting the data collection assisted achieving quality research. The relatively structured interview template enabled the researcher to remain focused and systematic. Open-ended questions allowed participants to talk about anything related to the given topic. More in-depth information was obtained when the participant brought up a new insight. Ensuring anonymity strengthened the study: If the participants felt confident that their privacy was protected, they were more inclined to speak freely and give truthful information (Ritchie & Lewis, 2003).

The researcher's own experience and familiarity with the research topic was believed to strengthen the study (Jette, Grover, & Keck, 2003). The researcher in the study is an RN, who has used interRAI-LTCF since 2012, being one of the first RNs in Auckland to use the tool, providing an important insight into the subject matter. The RN's experiences and feelings were understood because the researcher had experienced many similar situations and feelings. This does not mean that the researcher's own opinions affected the participant's opinions in any way. The benefit was that the researcher's own experiences allowed for a more intuitive understanding during interviewing (Jette et al., 2003). Respondent validation affirmed participants' responses, and was one way of ensuring that the researcher came to the correct conclusions, independent of her own views (Mays & Pope, 2000).

3.8.4 Rigour During Analysis

The use of audiotapes and transcribing ensured that the information obtained could be documented verbatim. The researcher was then able to read the transcripts many times. The reader of good quality research should be able to follow what the researcher has done during the analysis (Mays & Pope, 2000). Giving examples of the process of analysis and excerpts from the interviews increases the quality of the research. The quotations, which are allowed in descriptive thematic analysis, increase rigour, as the readers have an opportunity to examine the validity of the analysis for themselves (Fain, 2004; Mays & Pope, 2000). The reader should also be able to judge the transferability of the findings, which in qualitative research usually depends on the settings, contexts and participants (Joffe & Yardley, 2003), all of which are clearly stated without

compromising confidentiality. The supervisor in this study provided expert advice, and ensured all processes were followed correctly. The supervisor in this study was able to confirm that the data had been interpreted correctly and the findings and conclusions were appropriate.

3.9 Summary

This chapter explained the rationale for the qualitative methodology selected. The UTAUT method was presented, and development of the interview questions was explained, including the pilot interview process. Participant selection by purposive sampling was also discussed, as were the ethical issues considered prior to the study. The use of thematic analysis was presented. Rigour was an important aspect in this study, and special consideration given in each step of the study was discussed. The next chapter will present the findings of the study.

Chapter Four – Findings

This chapter presents the participant characteristics and findings of the study. The interviews were analysed thematically (Vaismoradi et al, 2013), which resulted in identifying five main themes. The researcher's objective was to analyse and present data in an unbiased and neutral manner. To demonstrate this, some representative narrations have been extracted from the raw data, and are presented in this chapter.

4.1 Participant Characteristics

Twelve participants were interviewed in the main study between November 2016 and March 2017. The researcher used a checklist (Appendix 3) to ensure participants met the criteria for the study. All participants were RNs with interRAI-LTCF qualification, and employed in ARCFs. At the time, nine participants were employed as RNs, and three were in management positions (clinical leader/manager or facility manager). In all cases participants were regularly completing interRAI-LTCF assessments.

Participant characteristics are presented in Table 5. One participant was male and the rest (11) were female. Three participants were aged under 30 years, three were between 30 and 50, and the rest (6) were older than 50 years. Three participants worked predominantly in dementia care, and the rest (9) were working in a rest home or private hospital. Participants came from eight facilities and seven companies from the Auckland area. Companies included four small providers (owning one or two facilities in New Zealand), and three were larger

providers (owning three or more facilities in New Zealand). Participants identified with different cultural backgrounds, including European/Pākehā (4), Pacific peoples (3), Filipino (2), African (1), Chinese (1), and Indian (1).

Table 5. Participant characteristics

Position	
Registered Nurse	9
Clinical Leader/ Manager (RN)	3
Age	
<30	3
30-50	3
>50	6
Gender	
Female	11
Male	1
Company size	
Large company	5
Small company	7
Ethnicity	
NZ European	3
Other European	1
African	1
Filipino	2
Chinese	1
Indian	1
Pacific Peoples	3

Some participant characteristics in this study were noted to be similar to the NZ nursing workforce statistics (Nursing Council, 2015). For example, 8.1% of RNs in aged residential care are male (compared to 8.3% in this study), and 55.7% of RNs in aged residential care are older than 45 years (half of the participants were over 50 years of age in this study).

In New Zealand, the largest proportion of RNs (28%) work in the Auckland region. Auckland has a multicultural nursing work force. Although no statistics are

available for RN ethnicities in aged care, the Nursing Council list of ethnicities of RNs (Nursing Council, 2015, p. 30) appears similar to this study. The only ethnicity not represented in this study was Māori.

4.2   Data Analysis

After all interviews were transcribed, thematic analysis (Vaismoradi et al, 2013) was used to identify themes that arose from large amounts of interview data. The findings can broadly be divided into five major thematic categories: attitudes to interRAI-LTCF, lack of time, engagement with technology, training needs and relevance of interRAI-LTCF in aged residential care. These will be discussed next.

4.2.1   Theme 1: Attitudes Towards interRAI-LTCF

4.2.1.1 Positive attitudes

Positive training experiences

Most RNs in this study expressed positive attitudes towards interRAI-LTCF. The positive attitudes were developed in the beginning of the interRAI experience, during the training. Trainers appeared to have a big influence on how RNs attitudes towards interRAI-LTCF were formed.

> *"I felt really excited and elated when I was chosen to do the training, and then I read through the interRAI and what it is and…resident assessment instrument…I was like wow, this could be an amazing tool to help and I really liked that." (P8)*

"Positive. It was down to the tutors. The personality of the tutors, they were supportive, they were helpful, they were beside you in a moments notice. You could ring them anytime." (P3)

"Positive, because the trainer that I had was quite good. She was very helpful. I can ring her anytime. For me it was positive." (P6)

"It was good. We had a very helpful teacher. We went through the basic stuff and we completed the first assessment together, which made it easier. It was quite good, like simple and easy for me. Plus because of my computers skills, it was easy for me. Not a hard thing. It's just a matter of reading the books and how you code the assessments." (P7)

Trainers were usually very available and often the first person RNs would contact if they needed assistance. Many reported having a good relationship with their trainers, even after their training.

"I know my tutor's numbers, they are in my book. She's always available." (P7)

Usefulness of interRAI-LTCF

RNs also had positive attitudes towards interRAI-LTCF assessments if it meant that the resident would benefit from it. RNs believed that completing interRAI-LTCF assessments was their responsibility, and a part of the care they provide.

"It's part of my job. It's part of the care I provide for my resident. In the end of it I know that it will create an outcome, which will help me create a care plan, which will help provide best care for my resident. So if there are any changes in the resident, I'm always happy to do an

interRAI assessment, so that we can all get together and create best possible care for the resident. So I'm happy about it." (P10)

The most useful aspect of interRAI-LTCF, according to RNs, was when admitting new residents to an ARCF; RNs valued receiving comprehensive information about the resident's medical history, and their baseline nursing assessment.

"I've learned more about the resident from interRAI. You get the background of them prior to admission, and see the change what's happened. It's just better understanding my residents and seeing them holistically." (P12)

"It's a very handy tool for me, and it's a very good experience…helping to get to know the residents. Normally we find details like drug allergies or little intolerances on the interRAI rather than in the discharge letter…and about the family histories…and little things that may affect the residents." (P7)

"It gives you the knowledge how to look after the residents and what is expected there." (P10)

"The positive side is that it's really handy to trace the resident's past history. If you look at the interRAI and who ever completed it before, you will find a lot of detail that you may have missed out from discharge letter…so that's good." (P7)

"It will benefit them because they all have the same assessments, then you can compare them easily, like you can actually make a graph about it, because everybody is doing the same assessment. Unlike if you don't have the same assessment, how do you know if it works? Because it's not the same, you know. I think it benefits them." (P6)

InterRAI-LTCF was also perceived as useful when there was a change in a resident's condition, and the level of care needed to be reviewed by NASC. InterRAI-LTCF output scores assist in the decision of placing a resident in the appropriate level of care in rest home, hospital or dementia unit.

> *"It indicates to us if they are at the right level of care. That's what I have noticed. Especially after it's all done…The CHESS[2] scores. And then when you go back and look at why they had that score, it opens your eyes a bit, that I need to do something." (P12)*

> *"The NASC people call me: Resident A appears to be needing more cares. And I tell them, yes, I already updated the interRAI, you can look at it. And they look at it, and they go to the geriatrician…The geriatrician will ask the NASC assessor to do everything, and they will be moved to other place. Very useful for us in New Zealand. In moving to another facility." (P9)*

Some RNs recognised the value in collecting data for research and statistical purposes.

> *"We are collecting data, who doesn't want data? The future is all about collecting data. You could do miracles if you have information in your hands. If there's no information, nobody can do anything. Maybe we can't see the fruits right now, but it's really useful in next few years." (P8)*

> *"Everything will have its own positives and negatives, we can't just ignore that looking at a few negatives, that interRAI is waste of time, I*

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[2] CHESS = Changes in Health, End-stage disease, Signs and Symptoms

wouldn't say that. It is a useful thing what we are doing. Maybe not useful for me now right away, but it might be useful in future." (P8)

RNs appreciated a shared interRAI database that is used nation-wide, and which enabled multidisciplinary approach.

"Besides the fact that it takes time, sometimes, that you have to actually make time for it. Overall it's useful, and everybody is on the same page, and we understand all the assessments." (P6)

"We're using the same software, we're using the same code, so it will be very easy for us to know their past medical conditions and easier for us to understand their conditions. Before you know the resident well, you can't do a proper care plan for the residents." (P7)

"InterRAI is a very good tool where no part of the person's...like elimination...physical, mental, spiritual...everything is assessed there, and then in the end you create a care plan according to that. I'm not the only one assessing the resident. The staff...my activities people, the kitchen people are involved...physiotherapist are there, GPs input is there. They get the best possible care, nothing is missed." (P10)

In some companies using interRAI-LTCF meant a reduction in paperwork and streamlining processes.

"Everything is in one neat package, and it eliminates all those assessment forms we used to use." (P5)

"It's a good general assessment, without having to pull out four different things to do. I actually like the whole system, because before

we had probably five or six different sets of stuff we had to fill in, now it's just all in one." (P1)

Personal gain

Besides learning more about the residents, and being able to produce organised and thorough assessments, most RNs believed learning to use interRAI-LTCF had been useful to them personally. They believed they had gained more confidence in using the computer, and felt proud of passing the AIS tests and gaining interRAI-LTCF competency. Recently graduated nurses in particular appreciated this learning experience. Furthermore, RNs believed competency in interRAI-LTCF would be a beneficial skill when applying for future employment.

"I'm proud of myself that I am able to understand those kind of things. At the beginning I was…how can I do that? I can't do that." (P11)

"I'm happy that I've got that knowledge, because these days when you look at the vacancies anywhere in aged care – interRAI competency is a must!" (P10)

Some RNs suggested they felt confident in their assessments because interRAI-LTCF allowed them to assess the resident in a structured, objective manner, while giving them the flexibility to use their own clinical judgement, and draw their own conclusions.

"Every assessment is different. You might assess this person to be like that, but when I did my interview, I have seen differently. So I have the freedom to do all the assessment there and nobody can question my assessment. Because that's my own assessment." (P9)

"It makes me think deeper. Why this gets triggered, you know? I didn't see anything, but if it is triggered... there must be something there. It is helping me." (P8)

"It's a good thing, especially it gets all your theoretical parts of nursing, because before nurses were only seen as practically doing cares and all, but now it's shifting more to paperwork and it does get your brain stimulated." (P12)

Manager and company support

RNs talked about the support they received from the company and their managers. They expressed gratitude towards their employers for organising their training.

"They paid for that study that we did. And then when we were training we had a few days off, so that was quite good and that was helpful... and they always say just ask the manager to help, because she did it too. I think they are quite supportive, because it's quite expensive if you do it by yourself. They paid for it, even though they know that we might leave the facility and go somewhere else, which is quite good, I think they are quite helpful with that." (P6)

In most facilities the manager was responsible for ensuring the assessments were up-to-date. The ways the managers supported RNs were: talking about any problems that came about; giving time to complete the assessment; organising shifts to enable completion of the assessments; sharing the workload between RNs; completing some of the assessments themselves; and keeping track of assessment due dates. Participants felt that they could ask for help if needed,

which appeared to have influenced developing positive feelings and attitudes towards interRAI-LTCF.

"Last year, end of April I don't think half of the residents were on interRAI, so when the new manager came, she ensured all residents were put in interRAI." (P4)

"She gives us time to finish it. She knows that this date this person is about to finish interRAI...so if I have interRAI to finish tomorrow, there are two nurses in the morning, so she knows that... She'll make sure that the second nurse will stay until 5.30 and is on the floor looking after the residents and medicating, so I'm given all the time to finish my interRAI. She gives the time to us to complete it." (P10)

"If we run into a problem we can talk about it." (P2)

"If we really struggle with time to complete the assessment, she will always say that I will do this resident and I will do that resident, so she will complete some of the residents for us, so that's really good. Between the colleagues, we always ask each other, like how we should code this resident." (P7)

"When a resident passes away she [the manager] just comes here and discharges the resident and puts some comments. And she is up-to-date with our current situation, the current due days, we keep on referring to. She puts up a list of all the residents and when are they due for assessments. So that way we keep on looking up and see, oh, my one is due next week, so we prepare. We get ourselves prepared well in an advance. The new manager got all residents placed in interRAI – that is significant." (P4)

4.1.1.2 Negative attitudes

Difficulty understanding triggers

This study also revealed some reasons behind negative feelings towards interRAI-LTCF. Difficulty understanding triggered items appeared to result in negative thoughts towards use of interRAI-LTCF. For example, some RNs expressed difficulty in understanding what generated some mood triggers, e.g. depression.

> *"But another thing that really caught me is, there are some questions again in the mental behaviour of the residents, and depression scale rating comes up as 1 to 2, but I know my resident – definitely not depressed, you know, why do I need a care plan for depression?"(P8)*

Not practical for non-clinical staff

InterRAI-LTCF was not seen as practical for non-clinical staff, e.g. HCAs. Being unable to read residents' assessments could affect HCAs' ability to provide care for the residents. Some RNs had resolved the issue by printing the MDS comments that are easier for non-interRAI trained staff to read.

> *"They [HCAs] are not trained to look at interRAI assessment, they can't understand what we are trying to do there in interRAI when you tick something. You have to go into envelope and look at the comments and everything. The paper-based assessments are pretty much straight forward." (P8)*

> *"We need the health care assistants to be able to use the computer. Many of them would be unable to. We try to employ people with computer skills. But if you've got someone there with a fabulous*

personality - warm, relates well to people - but can't use the computer,
you've probably gonna take them, because you need that interaction,
that warmth for the residents. This is a problem sometimes." (P3)

"I print the summary of the assessment and the comments, so that care
staff can read what the patient needs are. The summary is hard to read
because it's coded, comments are easy to read." (P9)

Some RNs thought that the information in interRAI-LTCF assessments was not easy to read. Some RNs found it easier to obtain information in the facility assessment document than in the interRAI printout. This was because the staff (especially the HCAs) were not yet familiar with interRAI-LTCF documents. Some RNs also mentioned that doing the assessments strained their eyesight.

"...so we go back to our initial assessment we did before interRAI, and
then you can find all the answers really easily there. Is it because we
are used to that form, and we know where things are? We designed the
form ourselves. It probably has something to do with that." (P3)

"I'm not much of a computer person, I don't like sitting at the computer
typing away. It's not good for my eyesight. " (P12)

InterRAI-LTCF assessments not necessary

Experienced RNs (participants in >50 year old category) appeared more resistant towards interRAI-LTCF. They were confident with their assessment and care planning skills, and did not find value in the new system. They felt that they could easily identify care needs without interRAI-LTCF.

"Wouldn't regret it if interRAI disappeared. Care plans and assessments...We've been doing it for years before interRAI." (P2)

Those RNs who did not think interRAI-LTCF was useful to the residents also had negative thoughts about how interRAI-LTCF affected their performance at work. Some RNs did not know how interRAI-LTCF could positively impact the care provided. RNs in dementia units thought their time was better spent with the residents, or doing something else. Negative thoughts did not mean that these RNs did not complete their interRAI-LTCF assessments. In fact, these RNs stated they worked hard to get all their assessments completed to a high standard.

"Negative [feelings]. No one looks at them. We do them every six months. We have people who haven't changed for four years, yet every six months we have to redo the assessment, and no one looks at them! The only time anyone looks at the assessment is when we transfer them. They are assessed every six months and eventually they die. In end stage of life I don't see any use for it, apart from transferring them from the dementia unit to the hospital, and they deteriorate and that's.... Who looks at them? The NASC people look at them." (P2)

"I think my thoughts are probably more negative. But I try to get over the negative to move on, because it's staying, and it's no good complaining about it. You need to do something with it and try your best." (P3)

InterRAI-LTCF assessments not sufficient

Some RNs considered six monthly interRAI-LTCF assessments were not sufficiently frequent. Sometimes the RNs were completing risk assessments, such as pain or nutrition assessments, at more frequent intervals. RNs also took

initiative to take action when they thought it appropriate, without interRAI-LTCF assessment triggers.

> *"Not really beneficial. We're still doing the pain [assessment] because it's not six monthly, it's not adequate. Some things you need to do more frequently." (P3)*

> *"For example, some straight forward things like nutrition and hydration, they wouldn't be triggered obviously. If they are triggered it means we already know about it, whether their monthly weight is showing up clearly. I would have done something then and there, I wouldn't wait for interRAI to tell me that his nutrition is getting triggered."(P8)*

Manager not interRAI trained

One reason for negative feelings toward interRAI-LTCF was if the manager was not interRAI trained. RNs want their manager to know more about the interRAI and be able to provide clinical support.

> "*It would be nice to have your manager to have a background in interRAI.*" (P12)

Other aspects of interRAI-LTCF causing negative feelings

The biggest causes for negative feelings were the annual AIS tests, not having enough interRAI-LTCF trained staff, and lack of time to complete the assessments. These issues are discussed in detail under other themes.

4.2.2 Theme 2: Lack of Time to Complete Assessments

Not enough allocated time

According to some participants, they were struggling to get interRAI-LTCF assessments up to date. The main reason for not keeping up with the requirement was the lack of time, especially on the morning shift. RNs also had an increased workload when they had to provide cover for absent staff. Some RNs believed there should be a day allocated for interRAI-assessments only.

"When do we have time to sit down in front of the computer and just concentrate on the interRAI? No. I need about two to three hours if I'm off the floor. But if I'm on the floor, sometimes I log in and then something comes up from the resident, it's an emergency, I have to log out and run and attend…and then I don't know when next time I'll be off the floor." (P4)

"I would prefer if we had time to do the assessment…if it was possible…like maybe just one day a month…then we can sit and at least complete four or five residents for that month. That would be helpful. At the moment it's not available. I'm doing morning shift, Monday to Friday, so I have to deal with a lot of things. Very busy. Because all the other departments work mainly Monday to Friday, especially the public hospital side, patients have appointments…" (P7)

"We do need a day for interRAI. But they are thinking maybe next year they will start giving us one day a month that we can sit and do interRAI, and then on one day we can finish a lot of work, and then it will be paid as well, so I think they should put it in place." (P6)

"If you are given the time, then it's a big support, because that's what you need." (P10)

In some facilities it appeared that RNs completed assessments in their own time at home, as they felt the pressure to complete the assessments in time. One RN said that it was unfair having to take work home, and this was the cause of her negative thoughts about manager and company support also. However, it appears sometimes it was the RN's own choice to take work home, and it was not requested or encouraged by their manager.

"At the moment I find it negative, because we don't have a day allocated for interRAI, and most of the RNs take it home. I don't think it's fair to take work home." (P6)

"Sometimes like when I do my interRAI I would like to do it when there's no interruption. So most of my interRAIs I do at home. My manager doesn't…she goes like 'Why do you have to do it at home?…Like it's your own time.' But I find it like, once you start working with your resident you know then so well…I don't bring any information of them with me home, those things I do at work, but other things like ADLs and all those things, how much they need help…I'm always there on the floor with the girls, all those things I can update it at home, but other things like medication and all those things I do it at work." (P10)

Participants stated they were completing the interRAI-LTCF assessments between once a month and daily. Those RNs solely responsible for the interRAI-LTCF in the facility were the most frequent users. RNs had a shared perception that they were focused on ensuring the assessments were holistic and correct. Assessment completion times varied between 30 minutes and three days. The wide variation in time depended on how well the RN knew the resident, how much information was available, and how often they were interrupted during the assessment.

"It depends on how easy it is for me to access the information as well, because the whole day I have to catch up with the pm shift RN and staff and ask about how the resident is, so I can have the whole picture." (P7)

"I'd say I could do it in half an hour or so... you know once you know the resident. Routine assessments, easy, because if there's not much change, you don't need to write so much about it. But the first assessment – yes – you need a really good time and focussed information there, so it makes it easy for everybody." (P8)

"If the patient is new it will take me at least a day, because I still have to gather information from the staff and everything. But if it's a routine assessment I can do three patients a day." (P9)

"If it is a six monthly review, I do take three days. I try to do most of it within two days, and on the third day, when I have to close it off, I'll go through it again. I close it on the third day." (P10)

The assessment workload was shared in various ways in different facilities. In facilities where all RNs were not yet interRAI-LTCF trained, the interRAI qualified RNs completed all interRAI-LTCF assessments, whilst the non-interRAI trained RNs were completing other documentation. In facilities with only one interRAI qualified RN, or where the RN was responsible for the entire facility (in a small facility), the RN had to complete all interRAI assessments. In one facility one RN would start the assessment and another one would continue it, i.e. one resident assessment was shared by RNs.

> *"Other RNs help us with MDT meetings in exchange of doing the interRAI. No one else can do it but us, because they don't know how, they're not trained for it. (P6)*

Not enough interRAI-LTCF trained staff

Not having all RNs interRAI-LTCF trained was another reason for not completing the assessments in time. Some facilities had chosen to hire extra staff to complete the interRAI-LTCF assessments, but not the separate care plans, which then caused other issues with compliance, as the care plans were not corresponding interRAI-LTCF assessments.

> *"Because interRAI was suddenly been pushed through, we did interRAI assessments in just like one month. All twenty residents' interRAIs were rushed in one month, because my owner hired a Registered Nurse to do interRAI assessments for everybody. I struggled when I went there. I really struggled with trying and getting the interRAIs to match with the six-monthly assessments and everything. But after, now that everything is streamlined, it's going smoothly, so it will be easier from there after." (P8)*

In the interviews the participants were asked whether their facilities were up-to-date with their assessments. Half of the facilities were reportedly up-to-date with their assessments, while others were labouring to meet the requirements.

> *"No. Main reason is not many staff trained in interRAI, and just being short of staff. Some days a lot of staff, health care assistants, call in sick, so nurses are helping out on the floor. Most days. And just the previous ones, from last year...there were a lot of nurses who didn't*

have interRAI competency, so we are still catching up on all the ones that are behind." (P12)

"It's a struggle at the moment to keep assessments up-to-date. I just had a look at my facility's updates...it's not really up-to-date...we're trying. I think the reason for this is not everyone trained. So, by the time you do your own paperwork, it's already very tight time, and then you have to help other people to update their residents' interRAI assessments. Plus if you don't really know the residents well, it's really hard." (P7)

Duplication of data and lack of interoperability

RNs felt that they were duplicating information and the existing databases lacked interoperability. Multiple databases or paper-based assessments were used by facilities. Some facilities had other computerised assessment and care planning systems, e.g. *VCare*, and medication management systems (e.g. Medimap). None of the participating facilities used interRAI-LTCF care plans but rather their own computer or handwritten care plans. In almost all cases, interRAI-LTCF had increased the RNs' workload. RNs stated that their companies required them to continue using previous assessment and care planning tools, as well as completing the interRAI-LTCF assessments.

"I do other assessments and I do interRAI. The main reason being my caregivers don't have access to interRAI. And they're not trained to look at interRAI assessment. I do all of my assessments, my paper-based, according to my policy – the facility's policy – so I do that and develop a care plan. I'm not following the interRAI care plan again here. But one thing what I did was I developed care plan domains in a very much similar to the interRAI. Duplicating the work,

assessments…but it's definitely a need for my caregivers, because the files and everything are kept in the office for them to access, but they don't have interRAI or computer access." (P8)

"They are requiring lots of writing in the comment boxes, which is really care plan stuff. Doing this, and writing all that in those little boxes, and writing it again in the care plans. I feel like these comment boxes are going to be your care plan. That's the feeling I get. Seems waste of time." (P2)

"It's more like an additional for us to use, and it benefits the health organisation to collect data and stuff. For us it's an additional assessment…Company could think about reducing the paperwork, so you would do the assessments on interRAI only…and that'll keep you up to date too, and you're using it more frequently, and will be easier to do it. " (P7)

In the long run it will be very useful for everybody, as long as will be synchronised with other databases. (P9)

In only one participating facility had the management decided to stop all previous assessment systems and exclusively adopt interRAI-LTCF. In this facility all previous assessments were integrated in interRAI-LTCF. This meant that all assessment information was written in the comment sections, e.g. falls assessment, nutritional information, and diet requirements. Only the initial assessment, which was paper-based and completed on admission, was still used. The new way of using interRAI-LTCF was time consuming, but the reduction in paperwork was welcomed. This facility had been audited recently, and the auditors were satisfied with the new system.

"What we discovered last year was that we got all that we need on interRAI so it's lessening paperwork, but having said that, on the other hand, you have to put more comments on it so that it will include everything you want to have for the resident". (P4)

Inconsistency of information

A new finding in this study was the RNs' reports of inconsistency of available resident information. For example, sometimes information about diagnosis did not match the medication list, which caused a delay in completing the assessment. In practice, this means a GP's input is required in order to have consistent documentation. Some RNs suggested it would be beneficial if GPs could also receive some interRAI-LTCF training.

"Sometimes there's some inconsistency in information…for example the resident is on antidepressant, but there's no diagnosis of depression."

(P1)

4.2.3   Theme 3: Engagement with Technology

Computer literacy of Registered Nurses

Most RNs believed they had adequate computer skills to learn and use interRAI-LTCF. However, many RNs stated that they were interested in learning more about computers if training was available. At work RNs used computers not only for interRAI-LTCF, but also email, Word, Excel, Medimap medication software, and VCare assessment and care planning software. At home they also used the computer for social media (e.g. Facebook). A variant perspective was provided by

the youngest participant (aged early twenties), who preferred using a smart phone to a computer.

> *"I think [my computer skills] are adequate for what I do." (P2)*

> *"I suppose I'm not highly skilled. But I suppose I'm moderately skilled. I use Word, Excel...yes...so reasonable." (P3)*

> *"Well, to be honest ten years back I didn't know anything about computers. I came to NZ to learn about computers. I was introduced to computer and I'm so glad where I am today." (P10)*

> *"Fairly competent I suppose. I can't do anything complicated but I can do what I'm shown...Work. Email. I help sometimes when they get stuck around here, I can sort their computer."(P2)*

> *"I've got good computer skills. I know a bit more than the basics. It's not hard for me, I find it easy using a computer, and if there're things I get stuck on I can get through it myself. Usually I use it for care plans and interRAI and printing out. At home...I don't usually use it at home. I use my phone. A little bit faster on the touch screen. I've got a laptop at home, but I don't really use it." (P12)*

An RN who had difficulty using the computer in the beginning of the training, and consequently failed to gain interRAI-LTCF competency, suggested there should be an initial baseline test to assess computer skills prior to interRAI-LTCF training. If computer training is needed, it should be organised first. Alternatively, the training itself could be longer for those who need it.

"If it's their first time, it's good to have more time…as I mentioned before, might do a little assessment of your student before you start. Like if you wanna do interRAI, you need to do computer level one, more easier and more understanding that way." (P11)

Positive attitudes towards computers

During the interviews participants were asked whether they had mostly positive or mostly negative thoughts towards the use of computers. This was the question most agreed on by participants. Use of computers at work was seen as a very positive thing and part of the current way of life. Computer use was expected to reduce paperwork and keep documents tidier. Many found it easier and faster to complete documentation on the computer than by hand. One participant thought she still preferred handwriting, as she was more comfortable with her "old school ways". However, this RN admitted that computer entry gave more flexibility and was more efficient in the long run.

"Positive, it's useful, makes the work easy." (P6)

"Everybody should know how to do that, because it's what we have to do now." (P1)

"Everything should be on computer. We shouldn't have these bits of paper everywhere." (P3)

Information Technology Support

The majority of RNs felt the IT support systems were adequate, and the interRAI Helpdesk personnel were perceived as being helpful and supportive. However, the

frustration with the 8am to 5pm service was experienced by RNs who worked outside of these hours.

> *"They're not that fast, but they usually get there in the end. The frustration of the 8 to 5, and the time that one took…I would like to be on with things and do it, and get on to the next thing." (P5)*

The most common reason given by participants to contact the interRAI Helpdesk was to retrieve a forgotten password. Many RNs reported wanting to be able to retrieve their forgotten password through automated service or correct errors in their assessments themselves. This would reduce the number of calls to the Helpdesk, and make it faster for the user to obtain their password especially out of office hours.

> *"The helpdesk, the one when you forgot your passwords. I have rang them twice only. It's quite easy to access. They answer the phone and they just give me the temporary password, and straight away I have access to it. So, not bad." (P7)*

> *"I can say in total they are quite helpful, because we email them and they reply in the next few days. In total I would say it's positive, but I would love to have that IT number there in stream. Because you can just click forgot password and contact this number. Should be quicker, so we do our work as well on time." (P6)*

> *"Just the thing about fast reply…IT that can help us…the number, like any other website, like if you forget your password, they say contact this number, or re-send your password to your email…Like what happens in Facebook or your email. Then it's easy – we don't have to*

contact anyone if we forgot our password…send a code through the phone, or something like that… because people do forget passwords!" (P6)

"If we do have any problems, like a while ago we couldn't log on to things, and then we got in touch with IT desk. Actually they couldn't do it from there, so they came down physically and helped us, and got both of our computers running." (P10)

Some RNs had not had good experiences with their IT support.

Helpdesk is quite useful, but I don't know about IT. I don't think it's good support there for IT. The Helpdesk is quite all right but I don't know the contact number. (P6)

"Probably the IT support is just mediocre, but the rest of it is pretty good." (P1)

RNs also reported delays in having the interRAI-LTCF records transferred from the DHB to the facility when a new resident was admitted.

"We are supposed to admit someone after so long, but very rarely have the file in that time to be able to do it. So we often email and say that this NHI has been here so many weeks now…might you get the file to me soon? Because that seems very slow as well." (P6)

Participants complained they were not always aware of changes made in the interRAI-LTCF software or processes, and suggested a need to have better communication about any updates in the IT systems.

"Very recently I had a bit of a bad experience I think, because all this time you have that paper when someone transfers to your facility, you need to write their name and NHI number, and you fax or email that to that particular place and the file gets transferred. Very recently it has changed. It has changed to a different email system I think. I haven't been notified by anybody." (P8)

Despite various issues that RNs had experienced, the majority of RNs stated they had mostly positive thoughts about support systems. Even RNs who had negative experiences with IT support, appreciated the help. It generally it depended on the people and their willingness to help.

"Who wouldn't want support? Especially someone like me. I definitely need all the support systems that I could get from external sources, so it's really a good one." (P8)

"It does happen, it's just slow. I'm not sure if that's a positive or negative. I know it will happen eventually. I just find it frustrating waiting." (P5)

"Probably negative [feelings], but having said that the people are very kind. It's down to personalities. You know it's the people that make it easy to contact." (P3)

Some RNs suggested the introduction of automated care plans. According to some RNs, other software that automatically creates a care plan from an assessment already exists. The suggestion was to have an auto-generated care plan that allows the user to modify it as needed. In the current interRAI-LTCF, there is a care plan section available, however it appears it is rarely used in NZ. None of the

participating facilities had adopted the interRAI-LTCF care plans, and continued using their own systems. It was not made clear why this is.

> *"I used to have training with Leecare, which is in Australia as well. It's assessment and care planning...Where you do an assessment with Leecare, automatically care plan is generated. But for interRAI it's different. But interRAI has a care plan itself, but nobody's using it."*
> *(P8)*

4.2.4   Theme 4: Training Experiences and Needs

Training experiences

In some facilities interRAI-LTCF training had been left to the last minute, as the management was not convinced that the assessment tool would become mandatory. After interRAI-LTCF did become mandatory, RNs were promptly booked into the training.

The findings of the interviews showed that the standard six-week interRAI training course was the most common option, as none of the participants had completed the intensive two-week course that is currently offered. One participant had failed the first time round, but passed on the second attempt.

The training venues were generally regarded as suitable, but for some RNs it was hard to find parking around the venue. Some training venues were located in the Auckland city area, where parking is known to be limited and expensive. One participant attended a venue 60 kilometres from central Auckland. It can be

challenging for interRAI training organisers to find a suitable venue in Auckland that would be easy for all trainees to attend.

According to interRAI NZ (www.interrai.co.nz) preparation for training includes reading the introduction of three manuals, completing an online training session and test, and gathering information about five residents for their interRAI assessments. Some participants found the training and reading the manuals time consuming. InterRAI NZ advises that the online training and test take two hours to complete, which participants confirmed. According to participants the preparation takes approximately four hours in total.

Trainers

The trainers appeared to most influence how participants felt about their training. (See theme 1 – positive attitudes). If the trainer was helpful and approachable, as in most cases, learning a new tool was perceived to be easy, particularly after some time and practice. The trainers were found to be knowledgeable, willing to help and contactable during the six-week training and thereafter. Participants appeared comfortable with contacting their trainers when they had questions or needed assistance. However, one participant felt the trainer was not competent and some questions were left unanswered.

> *"I can honestly say that our trainer didn't have enough knowledge to impart. Because there were some questions not answered. We were struggling. Although we are, I would say, computer literate people, for my age...but there were some issues that were not resolved at the time." (P9)*

There was also one unexpected finding about a trainer whose behaviour was clearly unprofessional. The participant who raised this was relatively new to New Zealand, but doubted this behaviour (aggressive teaching method) was common practice. It is not known if this incident was reported or not, and whether the trainer continues working in their position.

> *"I didn't like the way the trainer taught us, she was quite rude, compared to New Zealand standards…I was like Oh God… she was very rude, shouting at trainees, yelling at them, she in fact slapped one participant for making a mistake. (P8)*

All participants had to complete five resident assessments within the two-month training programme. Their trainers checked each assessment as it was completed and provided feedback. The feedback was perceived as helpful in most cases. The assessments needed to be very thorough, and rationale had to be provided for each tick box answer in the assessment. Some felt as it was too thorough.

> *"Just feels very nit-picking at times, because everything's gonna have to be just like they want it." (P5)*

Many participants reported inconsistency between training sessions; they noticed that their colleagues had been taught differently.

> *"I know like when I did it, we were taught to put in PRN medications. The other nurse who did it 6 months after me was told to do it otherwise…we were talking about it…I don't like it when they don't put*

the medications over here...I was told to put it in the notes. If the interRAI people are changing their practises they should tell everyone. We discuss things in the team and agree how to do things." (P10)

She didn't teach us some of the aspects during the training...maybe she expected us to go through the reading material, but frankly speaking in this busy world were we have our family responsibilities on top of working as full time registered nurses in a facility...expecting us to read those big manuals...you know from end to end...she should have touched some basic things, important things...like how do you deal with this...because the next batch of registered nurses who went there, they were taught some of things in the class room...so we were like ...Ooh, we didn't know this...How do you know this?...I mean simple things like printing the assessment report." (P8)

Previous computer skills affecting learning

Lack of computer skills had a negative impact on learning. The ratio of two trainers to eight students was not regarded as sufficient for some. There was a suggestion that trainees' computer skills should be tested prior to the training.

"In my training I found it hard. Because there might be eight of us, but we only have two tutors. I find that when I'm still writing it, they already moved from that site to another one. I find it hard to catch up. Too fast! But I mean like, it's ok for those who know the computer, but I find it myself that I'm sort of struggling." (P11)

" One of my friends said she doesn't want to do interRAI because 'I'm too old', and 'I don't know much about computer and things'. So she goes like 'what's the use?' So it's also about technology and people who don't use that much computer and stuff. It would be hard for them I would say. But for me it was good, and I really enjoyed doing it." (P10)

English as a second language

Where English was a second language, this made it somewhat challenging for some to understand what was taught in the classroom. All RNs, however, had sufficient English to ask further questions during the training or obtain the information from the manuals.

> *"You know I'm not good with the computer…very slow with the computer…plus my English is my second language. But when I go back and keep reading, then I understand." (P11)*

On-going training and multidisciplinary approach

RNs voiced a need for on-going training for interRAI-LTCF users. RNs thought it would be useful to have basic training also for HCAs, GPs and other service providers (e.g. mental health services) closely working with ARCFs.

> *"So you can't just assume that someone who is living in a rest home is an old person. There are YPD[3]s there…Why not the team that are involved with them be also given a little bit of knowledge about what interRAI is? Mental health, psych team…for under sixty fives… I met someone from community psych team who are involved with my residents. Because they are under sixty five, they don't go into old people category… so that was like you know…there is a bit of a gap there." (P8)*

Some RNs appear to need more training to understand the purpose of interRAI-LTCF, outcome measures, scales, and especially how triggers are activated.

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[3] YPD = Young Persons with Physical Disability

"I don't know how it works! The healthcare delivery system, honestly I don't know....I'm just doing it – it's mandatory – it's my duty to do it...how it works? Heaven knows! Not helpful. It gives you to that end what you need to look at, so you don't need to think which are my triggers, it will show you there already, then you concentrate on those triggers, how am I going to address these triggers, how am I going to put it in the care plan...so it's a positive thing on interRAI I would say... But how it works in the broad area – section of the healthcare system – I don't know... How it impact on the way we deliver, our services, I don't know, but it's good for triggering to say address this and address in care plans... But we have been doing care plans well before interRAI! ... Of course the only thing is those triggers, it's quite helpful, we don't have to stress." (P4)

"I know a resident who has DRS 1 to 2...maybe if I look deeper and deeper and deeper, there might be something there where I can address and pinpoint that particular issue, which would have been benefited for us, but as I said time...it would definitely be a benefit if we look closely at those outcome measures and those scales and read things...there is something there...we can take action...timely action, and see whether we're gonna help them or not. (P8)

"Why this gets triggered, you know? I didn't see anything but if it is triggered there must be something there." (P8)

AIS

RNs' experiences with the AIS assessment have not been previously studied. Useful information and ideas for improvement emerged during the interviews. Generally, RNs did not enjoy completing the annual AIS tests. The main reason given for this was the difficulty in passing the tests. Participants stated that in the multi-choice

questions there were too many similar answers to choose from. The questions were also vague and not reflective of real-life situations. One RN had experienced errors in the marking system; previously correct answers became incorrect in the next round of questions. The RN concerned had reported the issue to the Helpdesk who had undertaken to investigate it.

> *"When you go into those AIS questions, I'm sure that they're just trying to fool you, because they are absolutely ridiculous. Physio et cetera time is difficult to enter...zero minutes, thirty minutes et cetera. AIS is really annoying. I think that if you were clearer about what you are expected, you could get it right the first time." (P1)*

> *"I don't understand the way they ask the questions. I'm looking in the book...those books that we read through to go to find the exact matching code. From there I'm reading and I'm seeing, oh, this is what they are looking at, I click on the answers, and then I save complete so that it comes up with my mark...and I see that's not right!" (P4)*

RNs felt frustrated with the AIS tests. Not passing the test reduced the RNs confidence and caused stress.

> *"Every time I didn't get it, I was like "scary, oh my god! Oh my god! Oh my god!" So I kind of took a break, I didn't go back there for another four or five days you know, because I didn't have that great confidence in me to...I don't know if I don't get that...I don't know what's gonna happen." (P8)*

> *"I get worried when it's three times, that I won't pass it. It was only that one set of questions that I just couldn't pass. I totally gave up and I said I need to ask for help where to find answers, so the trainer told me*

> *"Go back to this page and read it properly, you have to read it word by word"...because if you just miss one or two words, you won't get it right. I think it's hard." (P6)*

RNs sought help with the AIS test from colleagues, family members and the interRAI helpdesk. Some found completing AIS tests easier if they were able to discuss them with their colleagues, or even at home with someone who was not interRAI-LTCF trained. Talking about the questions would clarify what was actually being asked. Some found it better if they were in a quiet place and able to really concentrate on the tests. One RN found it better to try to complete a test in one go, rather than being disrupted, in order to keep the right answers fresh in mind.

> *"At my previous workplace we had to come together as a group to say look shall we put our heads together and try to answer this question?" (P4)*

> *"I say the best way to do the assessment is to have someone with you and talk about it. Because you read the question like how often does a physiotherapist do the training, and then when the question says the nurse does the training - not at all - but when you're so into it, that you can't think straight, I believe." (P5)*

Some RNs confessed they had tried to cheat in order to get their answers correct, quicker. One RN had saved the previous questions and answers. Another one had tried to find answers from Google. One RN was wondering how AIS would even know who was doing the test. Most RNs agreed once a year testing was enough.

"When it comes up I think "Oh my god"…What I do is I cheat! I save the ones from last time and number them and word them and if I can' t get one, I go " that's the answer" and I'll tick it… because I'm like I 'm not wasting my time…sitting here for half an hour answering that one question. I find it frustrating that in AIS they say go to page whatever…and they give you this whole spiel about it and they still don't tell you what the answer is and why. I never mind testing if it gives you a little brush up. (P1)

"I'm always nervous, but I just tend to be determined and think I will get it…Google can help too…There's ways of getting the answers isn't there, if you really don't know!" (P5)

"Just to keep our competency… How do they know who does it? That's one thing too…"(P10)

"I have experienced that some questions there are quite tricky. And even those people who are the ones supposed to be having those answers, were having difficulty getting the answers right. It's quite tricky though. Lucky it's only once a year!" (P9)

When participants were asked whether they had mostly positive or mostly negative thoughts about AIS assessments, positive, negative and neutral thoughts were quite evenly distributed amongst the participants. Some had strong negative thoughts, some were definitely positive, but many had mixed feelings. Participants explained why they had certain thoughts about this topic. Some had negative thoughts mainly because they found it very hard to pass the test. Some found the test hard but still had positive thoughts about it. Some had somewhat positive thoughts about the test, because they felt that competency should be tested, but they felt the questions did not necessarily relate to real life situations. Participants

who had neutral or mixed feelings about AIS believed the test was part of their job, or necessary in order to maintain their interRAI competency.

"The fourth time when I get the less than expected mark I have to ring the Helpdesk to find some help, so for me that's totally negative." (P4)

"Not a good experience for me, because sometimes you can't find the answer in the book. It's just the way the words are put in together. I mean, I guess I just find it hard. It's useful; it makes you want to read the book again. It's useful in a way, but it's just hard for me to do it." (P6)

"It's hard to say positive...but probably I would say six out of ten, so falling into positive, it's just because I know we should have some kind of a test. But I'm not sure if it does really help, because I'm not sure if it actually relates to doing the interRAI to be honest." (P3)

"Positive, even though it's hard. That means we are not using the interRAI very well, so by completing the AIS, that helps us to make sure we do the interRAI the right way." (P7)

"Positive. We are going to do it and pass it, we are!" (P5)

"I think: Thank goodness that's it for another year! It's just one thing you need to do to keep your interRAI going. You just do it. You don't think if it's positive or negative – you just do it." (P2)

"Just to keep your knowledge and everything, that's why they are done. So it is part of your training, it's part of your daily life and everything that you have to do to keep it up. Like if you are a vaccinator you have to do an exam every two years to keep that. You have to do your

portfolio ready to present it. So this is part of their programme that you have to be ready." (P10)

Most RNs stated that they were doing the annual AIS tests because they had to, as it remains a compulsory requirement. On the other hand the RNs said they understood why annual tests were required. Some felt refreshing their skills was beneficial. They felt more confident and competent in completing the interRAI-LTCF assessments afterwards. They felt that the AIS assessments improved their coding skills. The general feeling was that the AIS should be transformed into a formative learning tool to support RNs.

"I just think that we have to do it, because there has to be training and there has to be standards." (P3)

"I think it's very necessary to do. Even though it's hard, it's a very good thing to keep us up-to-date and refresh." (P7)

"I think we should have some system that hones in all those ones that I consistently get wrong, and sort of do something about that. I would like it to be more of a learning experience rather than trick questions." (P2)

4.2.5 Theme 5: Relevance of interRAI-LTCF in Aged Residential Care

Dementia and end-of life care

RNs found interRAI-LTCF assessments ineffective in dementia and end-of-life care. In these two areas RNs preferred spending time with the resident, not on the computer. In these areas RNs found job satisfaction greater when they were able to look after the resident's physical and emotional needs by spending time with them.

According to RNs working in dementia units, the assessments do not reflect deterioration in resident's health; sometimes the resident's condition appears to have improved according to the interRAI-LTCF assessment scores, even though the resident's condition has obviously declined. These RNs thought interRAI-LTCF assessments do not make any positive difference in the residents' lives. RNs believed there is a need for a specific assessment tool in dementia.

"Cognitive decline not coming up always really annoys me because it should come up in every single dementia person we got because we got secure dementia unit, so they need to be there because they wander or have behaviour related problems…and yet the behaviour comes up, but I think it's a bit of a cop out that cognitive decline doesn't come up. Sure, ok, someone is so cognitively declined that there is nothing we can do to improve that because it's a progressive disease, we can't change it, but can we just have that ticked, because the person has dementia." (P1)

"There are some things that are not actually triggered…that's because they are too far gone to trigger. InterRAI does not reflect dementia – half of them don't even trigger cognitive decline, and they totally have dementia. So I question that, and they say because we can't do anything to improve it." (P1)

"In end stage of life I don't see any use for it, apart from transferring them from the dementia unit to the hospital, and they deteriorate and that's it… Doesn't make any difference in their lives. The time you sit down to do interRAI assessment takes time away from the residents." (P2)

"For example, when they are transferred from dementia to hospital, it looks like they are improving…because they are not falling, or have

behaviour problems…but actually they have deteriorated! Dementia is really complex. People don't always get it." (P3)

Acknowledging Maori Culture

Participants thought Māori were also overlooked by interRAI-LTCF. Currently there is nothing specific for Māori residents in interRAI-LTCF. Some RNs working with Māori residents felt there could be a special section in interRAI-LTCF MDS to document important information about Māori culture. While, for example, specific group activities and food preferences could be integrated in the assessment, RNs thought there were some parts missing. Currently RNs have to document additional information in another specific document and in the care plan.

"This facility has ten Maori residents. They have specific group activities, food et cetera. Maori residents' have quite specific care needs, and these are not part of interRAI." (P3)

4.3   Summary

The findings comprised participants' responses, including outlying cases, without judgement by the researcher. The participants were considered experts in interRAI-LTCF. Many RNs had insightful thoughts, and were able to provide a large amount of information. RNs had multiple ideas on how to improve interRAI-LTCF. These findings are interpreted and discussed further in the next chapter.

Chapter Five – Discussion

5.1 Introduction

The aim of this research was to explore RNs' perceptions on interRAI-LTCF 18 months after it became compulsory in all New Zealand aged residential care facilities, and why or how their attitudes may have developed. Participating RNs provided insightful information into their experiences, feeling and attitudes. In this chapter the findings will be discussed and compared with literature and previous research. Also the UTAUT categories will be re-visited with the findings of this study.

5.2 Discussion of Findings Compared to Previous Knowledge

5.2.1 Mostly Positive Views

In nursing magazine articles, the views about the interRAI-LTCF tool have been largely negative (e.g. INsite, 2016, May/Jun); these were predominantly the views of management. This current study, however, is the first one that has given voice to RNs' views, and generally speaking these views were more positive. These findings need to be explored further in order to be confirmed, and provide informed evidence of the value of interRAI-LTCF use in NZ from the perspective of those who actually complete the assessments.

In the current study RNs reported positive experiences and feelings towards the training process. Comparisons with training can be made with another NZ study investigating Needs Assessors' experiences with interRAI-HC (Smith et al., 2013).

Adequate training and support early in a person's learning curriculum were found important in that study also. Furthermore, the general feeling in the current study was that learning to use interRAI-LTCF had broadened the RNs knowledge base, and gaining interRAI-LTCF competency was personally valuable to the RNs. This finding is also similar to the study of Smith et al. (2015).

Collecting comprehensive information in a standardised manner, where information can be shared between providers, was seen as useful for residents. This finding concurs with Bandaranayake and Campin's (2016) finding that aged care facilities in NZ wanted a standardised system. In the current study RNs understood the purpose of collecting data. This is in contrast with many previous studies (Hansebo et al., 1998; Smith et al. 2015; Vanneste et al., 2013) where participants did not understand why such large amount of information was collected. It appears interRAI trainers in NZ have succeeded in educating RNs of the importance and benefits of interRAI-LTCF assessments.

Providing that the manager had received interRAI training, the management and company support was also perceived in a positive way. Organising interRAI training, allowing time to study, providing computers and assisting with getting assessments completed was seen as a support that influenced RNs attitudes towards the new system. In some other studies (Smith et al., 2015) management support was also seen vital in accepting new technology.

5.2.2 Negative Experiences

It is important to understand the triggers in order for the RN to take action to rectify underlying problems and improve resident care (Morris et al., 2013). Some RNs reported they could not understand what caused the activation of a trigger. For example, activation of depression trigger was difficult to associate with resident's behaviour. Similar occurrences were reported by RNs working in dementia units. Previous research confirms the RNs' observation: interRAI does not yet appear to capture depression, behaviour and mood issues appropriately, and more work is needed to develop this area (Penny, Barron, Higgins, Gee, Croucher, & Cheung, 2016; Travers, Byrne, Pachana, Klein, & Gray, 2013).

A new finding in this study was the RNs' reports of inconsistency of available resident information. For example, sometimes information about diagnosis did not match the medication list, which caused a delay in completing the assessment. In practice, this means a GP's input is required in order to have consistent documentation. Some RNs suggested it would be beneficial if GPs could also receive some interRAI-LTCF training.

RNs believed interRAI-LTCF assessments were not practical for non-clinical staff such as HCAs. A disadvantage to the resident was thought to be around staff being unfamiliar with interRAI-LTCF. Care for the resident could be negatively affected if the care staff were not able to read the assessments. Non-interRAI trained RNs would have similar issues.

Several RNs stated that interRAI-assessments were not easy to read due small print, and working on a computer was bad for their eyesight. Suggestions on how to improve interRAI-LTCF in this regard were not explored in this study, but this is a much-needed topic for future research.

Some RN believed interRAI-LTCF assessments were not necessary. Especially experienced RNs (participants in >50 year old category) appeared more resistant towards interRAI-LTCF. They were confident with their assessment and care planning skills, and did not find value in the new system. They felt that they could easily identify care needs without interRAI-LTCF. In fact, RNs also stated they would take action when they thought it appropriate, without interRAI-LTCF assessment triggers. This finding was similar to Parsons et al.'s (2013) study, where the interRAI-HC assessors were found taking action without relying on the triggers.

5.2.3 Time Restrictions

Assessment completion times varied between 30 minutes and three days. This finding is in line with the discussion in NZ nursing magazines (INsite, 2015 Aug/Sep, page 4; INsite, 2016 May/Jun, page 14), but not with the OECD report (Carpenter & Hirdles, 2013) of 40 to 120 minutes, and certainly not with InterRAI organisation's statement of 60 to 90 minutes (interRAI, 2013). The wide variation in time depended on how well the RN knew the resident, how much information was available, and how often they were interrupted during the assessment. This finding is consistent with previous knowledge (INsite, 2015; Vanneste et al., 2013).

Lack of time was found to be a hindrance for completing the interRAI-LTCF assessments in a timely manner. Especially working during the busy morning shift was challenging for RNs. Similar findings were found also in previous studies locally and internationally (Bandaranayake & Campin, 2016; Smith at al., 2013; Vanneste et al., 2013).

As in previous studies (Vanneste et al., 2013; Smith et al., 2015) there also appeared to be duplication of data entry (completing both computer and paper-based systems) and lack of interoperability between systems (e.g. between interRAI-LTCF assessments, care plans and medication management software). According to the independent review report on interRAI-LTCF, (Bandaranayake & Campin, 2016) facilities that used the care planning section of the tool felt more positive about using it. None of the participants in this study however used the interRAI-LTCF care planning section, as per their company policy. Further development is required to improve interoperability of the current systems. This should have an emphasis on minimising duplication of data entry.

A new, but not surprising, discovery was that in some facilities interRAI assessments were completed in a rush in order to meet the MOH requirements. Whilst completing assessments in time met the compulsory requirements, residents' care plans appeared to have suffered, as the assessments were not necessary linked to a care plans

Some RNs stated they completed interRAI-LTCF assessments at home in their own time, because they felt that they had to meet the strict deadlines. Sometimes it was

their choice to complete them at home where there were fewer interruptions. Not having enough time during work hours to complete the assessments appeared to cause some negative feelings about manager and company support. Training all staff and streamlining processes would likely improve this matter. This is in line with the recommendations by Bandaranayake and Campin (2016). The issue of completing assessments at home also requires attention, because this may be a breach of confidentiality regarding residents' private information, as stated in Health Information Code (Privacy Commissioner, 1994).

One small facility had been able to reduce RNs' workload by using interRAI-LTCF for all assessments. Reportedly the facility's interRAI-LTCF assessment comments were thorough, and included all information from the facility's previous (paper-based) assessments. This requires all RNs to be skilful in finding the correct documentation and following the same data entry processes. It is encouraging that the new process of using interRAI-LTCF as a sole assessment had received external auditors' approval. The conclusion is that it is possible to include all necessary information – possibly also care plans - in one database if there is appropriate training for RNs and commitment by management.

5.2.4 Positive About Computers

Nägle and Schmidt's study (2012) suggested that older females are most resistant to adopting new technology, however RNs in this study had overwhelmingly positive attitudes toward using computers, especially the older females. The computer was seen as a faster, more efficient, flexible way of completing

assessments and other documentation. RNs wanted less paperwork and hand written documentation.

5.2.5 Helpdesk and IT support

Participants suggested a need to have better communication about any updates in the software or IT systems. RNs also requested an automatic password retrieval system instead of having to phone someone between the hours of 8am and 5pm. Having automated care plans in interRAI would be another much needed improvement idea. Better communication of and further changes in IT systems is something that could be developed by interRAI NZ to facilitate effective and efficient use of the tool by RNs.

5.2.6 Training

In some facilities interRAI-LTCF training had been left to the last minute, as the management was not convinced that the assessment tool would become mandatory. After interRAI-LTCF did become mandatory, RNs were promptly booked into the training. This finding was not unexpected, as similar reports have surfaced in nursing and medical magazine articles (INsite, 2014; INsite 2016, March/April; Wattie, 2015).

The findings of the interviews showed that the standard six-week interRAI training course was the most common option, as none of the participants had completed the intensive two-week course that is currently offered. It appears the six-week option is easier for both staff and employers to manage.

Whilst not all RNs were computer literate before interRAI training, all of them were able to learn to use the computer and interRAI-LTCF assessment tool after some practice. English is not the first language for an estimated 15-30% of RNs in NZ (NZ Nursing Council, 2014). A combination of poor computer skills and English as a second language was especially challenging for some RNs. In fact one participant like this had failed the first time round, which according to the interRAI NZ Governance Board is not uncommon, with the failure rate of seven percent (interRAI NZ, 2015). Ensuring RNs had adequate computer skills prior to interRAI-LTCF training was thought useful in order to minimise participants' stress and improve learning. This could lower the current interRAI-LTCF training failure rate.

Another new finding in this study was that many participants reported inconsistency between training sessions; they noticed that their colleagues had been taught differently. This finding is unexpected because the training sessions are purported to be standardised (interRAI NZ, 2017). This finding may be of interest to interRAI NZ, and assist with programme planning.

5.2.7 AIS

Experiences, feeling and attitudes towards the AIS tests have not been studied previously. The responses from RNs indicated apprehension towards these annual tests. While RNs felt testing for competency was useful and necessary, they also felt frustrated about difficulty passing them. RNs reported the questions being too vague and not always reflective of real-life situations. One RN had experienced errors in the marking system; previously correct answers became incorrect in the next round of questions. These issues are concerning and need to be addressed.

RNs recommended developing AIS into a positive learning experience. This is another productive idea for the interRAI training and development team.

5.2.8 Relevance in Dementia and End of Life

RNs had more negative feelings towards the use of interRAI-LTCF, if they did not consider the tool to be beneficial for the residents as was the case in dementia care and for the residents in the end-of life. Most often, rather than working at the computer, they would have preferred devoting time to the residents, as they found more job satisfaction in that aspect of their role. Sometimes RNs were torn between meeting two performance expectations – looking after the residents' physical and emotional needs by spending time with them, and completing the comprehensive computer-based assessment. When time did not allow both, interRAI-LTCF was perceived negatively. In particular, in facilities where interRAI-LTCF assessment became an additional task after it became a mandatory requirement and increased RNs' workload, the RNs were unhappy about how it affected their work performance. Some RNs regarded keeping up with the interRAI-LTCF assessment deadlines stressful, therefore not beneficial. Regarding end-of-life care, interRAI NZ plans to implement the interRAI Palliative Care (interRAI-PC) assessment tool for use by competent home care assessors by the end of 2017 (interRAI NZ, 2017, May), but there are no plans yet for this in LTCFs.

5.2.9 Cultural Aspects

While, according to interRAI, cultural specifics should be integrated into interRAI-LTCF (Morris et al, 2011), the assessment tool does not recognise Māori culture specifically. RNs working in NZ bi-cultural environment and looking after Māori

residents would prefer a specific section in interRAI-LTCF MDS to document important information about Māori culture. Saks and Urban (2008) highlighted the need to consider cultural specifics when implementing interRAI in the country. Furthermore, Statistics New Zealand forecasts significant growth in not only Māori, but also Pacific and Asian populations aged 65 and over (Statistics New Zealand, 2016b), therefore cultural specifics should be taken into consideration.

5.2.10 Relationship Between Experiences, Feelings and Attitudes

Each interview question was divided into three parts – experiences, feelings and attitudes (positive/negative thoughts). The researcher believes asking the questions from different perspectives surfaced valuable insight into each topic. It was interesting how experiences did not seem to always correlate with person's voiced feelings or attitudes. For example, the participant may have been talking about a negative experience - e.g. not passing the AIS test. When asked how they felt about it, they would describe the feeling they had with a negative connotation - "I felt frustrated". When asked whether they had mostly positive or negative thoughts about the same thing, the response however was positive - "I have mostly positive thoughts". This indicated the matters were not always straight forward, and more exploring into insights was needed. The questions from different perspectives prompted for further questions, and assisted the researcher getting deeper into the topic at hand and to the "why". In the previous example, after utilising the qualitative emergent design style (Frey, Botan, & Kreps, 1999), the participant expressed mostly positive thoughts because they felt that the usefulness of regular testing outweighed the frustration of completing it.

Understanding the motives behind voiced feelings can help establish research priorities for further study (Ritchie et al., 2014).

As suggested in the literature reviewed, attitude does not always correlate with action (Ajzen, 2015; Eiser & van der Pligt, 2015). This was evident also in the current study. In this study some participants appeared to have negative attitudes towards interRAI-LTCF and how it affected their performance, yet their responses indicated they worked very hard to keep their assessments up-to-date and to a high standard. It was beyond the purview of this study however to confirm actual behaviour by checking the facility's interRAI-LTCF data.

5.2.11 Study Findings Related to UTAUT Model

Performance Expectancy

In the UTAUT model, performance expectancy (the degree to which an individual believes that using the system will help him or her to attain gains in job performance) (Venkatesh et al., 2003, p.447) is one of the modifying constructs for predicting behaviour intention. Question number 7 in the interview (appendix 4) asked participants about the benefits of interRAI for themselves and the residents. It was evident that RNs believed that gaining interRAI-LTCF competency was a valuable asset for employment. InterRAI-LTCF was useful for them as they were able to obtain residents' past medical history and assessments more easily, therefore their knowledge about the resident was increased. Knowing the resident better aided RNs in planning the care more appropriately. Furthermore, interRAI-LTCF tool gave RNs a clear structure and an ability to provide thorough assessments. All of above improved their job performance. It was also evident that

it was important to RNs that interRAI-LTCF was beneficial for the residents. Those RNs who did not think interRAI-LTCF was useful to the residents – as was the case in the dementia units and in the end of life care - had negative thoughts about how interRAI-LTCF affected their performance at work. Overall, performance expectancy was an important aspect of UTAUT in this study.

Effort Expectancy

Effort expectancy (the degree of ease associated with the use of the system) (Venkatesh et al., 2003, p.450) is another modifying construct for predicting behaviour intention. Questions number 1, 2 and 3 examined RNs experiences with learning and using the interRAI-LTCF tool. The questions were about the training process, interRAI use at work and AIS assessments. In contrast to previous NZ study (e.g. Smith et al., 2015) RNs did not mention any issues with network connectivity or the software itself. This indicates technical issues are no longer a hindrance in accepting the new technology. RNs reported having enough access to computers.

Duplication in data entry appeared to the biggest negative aspect of interRAI-LTCF use. Similar finding was acknowledged in Smith et al.'s study (2015) in NZ, with the difference that once the problem was identified the changes were implemented promptly. In most participating facilities actions to simplify systems and to avoid duplication were not yet implemented. This is an important matter that requires most immediate attention.

AIS tests are part of maintaining the interRAI-LTCF competency and therefore an important aspect to the study. Overall, RNs found AIS tests hard and frustrating. Not passing the test caused stress and reduced confidence. Whilst RNs accepted testing was required, the way competency was tested caused negative feelings. This new finding is also a matter that needs attention. There may be better way ensuring RNs remain competent while reducing test related stress.

Findings related to effort expectancy were some of the most important ones in this study. The ease of using the system appears to be a vital part in ensuring acceptance of new technology.

Social Influence

Social influence (the degree to which an individual perceives that important others believe that she or he should use the system) (Venkatesh et al., 2003, p.451) also predicts behaviour intention. Question 4 examined how RNs perceived the support they received from the management and the company. It appears completing interRAI-LTCF assessments was a key priority for managers. They ensured all residents were entered into the system, and there was a plan to get assessments completed in time. Some managers were able to complete assessments themselves in order to meet the audit criteria. Unfortunately it appears some assessments were completed in a rushed way, causing some stress to the RNs who had to ensure residents' care plans were in line with the assessments. There were negative feelings around how workload was shared in some facilities where not all RN were interRAI-trained. The pressure to complete assessments in time was evident in RNs responses. Overall there was good support from the management

and colleagues to use the interRAI-LTCF and complete AIS tests. More RNs need to be trained to share the workload and ensure more support is available from the peers.

What comes to analysing the degree of social influence, it appears the greatest pressure comes from trying to meet the new auditing requirements and the Ministry of Health standards. This is a finding only discovered in New Zealand where interRAI-LTCF is a mandatory requirement. It is possible that especially the management in aged care facilities feel the pressure most, and hence have expressed concerns and negative feelings in nursing publications (INsite, 2016, May/Jun).

Facilitating Conditions

Facilitating conditions (the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system) (Venkatesh et al., 2003, p.453) is a modifying construct of UTAUT that is a direct determinant of use behaviour. Question number 5 included questions about the number of computers available, interRAI manuals, IT support, and other assistance available if needed (e.g. Helpdesk). RNs reported having adequate number of computers and manuals available. Helpdesk support and IT were only available at certain time of the day, therefore RNs though the service could be improved by developing automated systems, e.g. for password retrieval. Some support was perceived very slow but friendly. Communication from interRAI was hoped to be clearer what comes to IT changes. There were no major issues related to

facilitating conditions but there is room for improvement. Having more timely support was thought quite important in using the new technology.

Self-efficacy

Self-efficacy construct (the degree to which an individual judges their ability to use a particular technology to accomplish a particular job or task) (Vanneste et al., 2013) was added to the theoretical framework by the researcher after considering the results of a previous study by Vanneste et al. (2013).

The questions relating to self-efficacy investigated users' computer skills (question 6) and assistance available if needed (question 5). With multi-cultural staff in NZ aged residential care, there are a number of staff who do not have previous experience in using a computer. For example, RNs from Pacific Islands appear to have less exposure to computers. Combined with English as a second language, learning to use new technology appears to be challenging for some. With a failure rate of 7% (interRAI NZ, 2015), there should be more investigation as to why this happens. This study shows it could be partly due lack of confidence in using the computer. Basic computer training prior to interRAI-LTCF training could enhance learning the interRAI tool and reduce stress. The previous study by Vanneste et al. (2013) suggested that self-efficacy was a particularly important influencing factor of behavioural intention in interRAI environment, and this study strongly supports this finding.

5.3   Summary of Discussion

There were differences and similarities in this study compared to the few available international and local studies. Numerous new findings were discovered. Being the first study to include the main users of the interRAI-LTCF tool (i.e. RNs) resulted in a vast amount of valuable information about interRAI-LTCF from the user's point of view. A distinctive difference to other international studies was the mandatory aspect of interRAI-LTCF in NZ.

The UTAUT model was used to assist developing the framework for interview questions. As well as gaining new information, it turns out this model is useful when investigating RN's perceptions towards the use of new technology. All five included constructs can be used to predict behaviour intention or use behaviour.

It appears there are some "teething problems" still with the new tool, training and facility practices, all of which need to be solved to enhance the user experience. Limitations, strengths and recommendations will be discussed in the final chapter.

Chapter Six – Conclusion

6.1   Summary of Findings

This study was the first to investigate RNs' views about interRAI-LTCF in NZ, and has revealed many new findings. This chapter summarises the findings, discusses the limitations and strengths of this study, and makes recommendations for theory, practice and further research.

A new finding in this study was that the RNs, who mostly complete interRAI-LTCF assessments, have predominantly positive attitudes towards computers and the interRAI-LTCF tool. RNs believe interRAI-LTCF is a useful and uniform assessment tool that ensures systematic documentation, and supports delivery of high quality care. The only areas where RNs believe interRAI-LTCF is not useful are in dementia and end-of-life care. In these areas RNs prefer spending more time with the resident. RNs would also like interRAI-LTCF to recognise the specific cultural needs of Māori residents.

Lack of time is a hindrance for assessments to be completed in a timely manner. Further development is required to improve interoperability of the current systems. A greater percentage of RNs should be interRAI trained in ARCFs. Operationalising these actions would ensure RNs have more time to complete interRAI-LTCF assessments.

RNs thought AIS tests were useful, because they could improve RNs' coding skills. However, many felt the tests had too many unnecessarily complicated questions that do not reflect real life situations. RNs would prefer AIS to be developed into a formative learning tool.

Overall, more training is needed to increase the number of RNs who are competent to use interRAI-LTCF. On-going training was thought to be beneficial. RNs need more education to understand how interRAI-LTCF works (e.g. what causes the triggers), and how interRAI-LTCF can benefit the ageing population and research. RNs also want to be better informed of changes made by interRAI NZ.

A new finding was the need to ensure GPs in ARCFs to understand what information is needed for completing interRAI-LTCF assessments (e.g. medication list matching the diagnosis list), as this would save RNs' time, and improve quality and safety of resident care. Basic interRAI-LTCF training for managers, HCAs and other support personnel was thought beneficial by the RNs.

RNs suggested improving interRAI support services, e.g. development of an automated password retrieval system, as the most common reason for contacting the interRAI Helpdesk was to reset forgotten passwords. RNs also requested access to correct minor errors themselves.

6.2   Limitations and Strengths

As previously discussed, limited time and resources, and the search for in-depth information, resulted in a relatively small sample size, which is a limitation to the

current study. Twelve interviews were conducted, excluding the three pilot interviews. It was noted that each RN was able to add some new information in each interview, which suggests that more findings and improvement ideas may have emerged if more interviews were conducted; saturation was not reached in this sense. However, participants also expressed many similar experiences and views, and repetition in responses started to occur. Saturation in that regard was likely reached. Notably, the answers from RNs in the pilot interviews were similar to those of RNs in the main study.

Another limitation is that not all providers were involved in the study. Seven provider companies participated in this study, therefore findings cannot be implied across the whole Auckland ARC sector. For example, interoperability between interRAI-LTCF and other assessment systems may have already been implemented in some facilities not participating in the study.

Participants worked in rest homes, private hospitals and dementia units. There were no participants from psychogeriatric units. The main reason for not including these facilities in the study was privacy. There are few psychogeriatric units in Auckland, so identification of participants or companies would have been a risk. Not including psychogeriatric units in the study could be seen as a limitation, but also presents an opportunity for further study. Because the RNs in dementia units did not perceive interRAI-LTCF as being useful, it would be interesting to explore the feelings of RNs working in psychogeriatric units for similarity.

The study was based in Auckland. There are likely differences in interRAI-LTCF training arrangements between Auckland and other areas of NZ. In rural areas RNs may need to travel greater distances to get to the training venues, but parking may not be as difficult as in Auckland.

RNs' experiences with, and attitudes and feelings towards interRAI-LTCF were investigated in this study. It was acknowledged that the behaviour intent, or what the participant verbalised, could be different from the actual behaviour. In this study the actual behaviour was not confirmed, for example by checking how many interRAI assessments were in fact completed. This is also recognised as a limitation of the study.

The financial side of implementation of the interRAI-LTCF tool was not investigated in this study, as it has been previously covered in other research on management's experiences with interRAI-LTCF.

The strength of this study was in gaining an abundance of information from participants, who were purposively selected because they were experts in using interRAI-LTCF. The UTAUT method directed the development of the interview questions, which guided successful coverage of many aspects of user experiences. Qualitative processes provided insightful new information. All participants' thoughts and suggestions were included.

6.3 Recommendations

6.3.1 Recommendations for Theory

The UTAUT proved a useful method in providing structure to the interview. It was suitable in investigating a user's acceptance of new technology. The researcher recommends use of the UTAUT method in further similar studies, as it is a flexible model that can be adjusted to suit the research environment. Including self-efficacy as the fifth construct appears advantageous and is therefore recommended.

6.3.2 Recommendations for Practice

Most recommendations are made for interRAI collaboration and interRAI NZ, including IT development. Some recommendations are also made for ARCFs.

6.3.2.1 *Streamline practices and eliminate multiple data entry systems*

It is recommended that all ARCFs look at streamlining their practices and reducing multiple data entry. This will ensure RNs have more time to complete interRAI-LTCF assessments, and also spend with the residents. This study suggests that it would be advantageous to increase communication between RNs, managers, and interRAI personnel when developing systems for use in a facility.

6.3.2.2 *Create an automated care plan system*

An automated system could create a care plan from an assessment. This would save RNs' time, and still allow making changes as needed. It would further save RN's time if interRAI-LTCF was paired with other software, such as the medication management software.

6.3.2.3 Provide a computer skills test and training

In order to ensure RNs maximise their training benefits and pass their interRAI-LTCF training, a computer skills test before training is recommended. Basic computer training should be arranged for those RNs who are not yet confident with their IT skills.

6.3.2.4 Create an automated password retrieval system

For the IT department, a strong suggestion is development of an automated password retrieval system. The most common reason for RNs to contact the interRAI Helpdesk was a forgotten password. A password retrieval system accessible 24-7 would be appreciated by those RN's working outside office hours.

6.3.2.5 Improve AIS

A strong finding was the RNs' reluctance to complete annual AIS tests. The tests were found overly complicated and not relevant to practice. It appears there could be some errors in the marking system. Testing caused stress to some RNs, and there is a need to improve RNs' experiences in this regard. Developing testing into a formative learning experience may alleviate some RNs' negative feelings towards it, whilst still providing a competency assessment.

6.3.2.6 Improve communication

Better communication from interRAI NZ is needed, especially about any updates in the IT system and processes. Update training sessions would inform RNs of system changes and ensure they understand how interRAI-LTCF works and why it is important to gather information.

6.3.2.7   Consider including Māori

Currently specific cultural aspects of Māori are not recognised in interRAI-LTCF. According to interRAI assessment guidelines, cultural needs are included in different sections of MDS (Morris et al. 2013), however the feedback from RNs is that this may need reviewing in the NZ bicultural context.

6.3.2.8   Review need for interRAI-LTCF assessment in dementia units and end-of-life care.

Strong feedback from the RNs working in dementia units was that interRAI-LTCF assessment results did not appear to correspond with the actual condition of the assessed person, e.g. decline was evident in practice but interRAI-LTCF triggers suggested improvement. RNs in both dementia units and in the end-of-life care preferred to spend more time attending residents' physical and emotional needs than completing interRAI-LTCF assessments. Using InterRAI-Palliative Care may be more appropriate than interRAI-LTCF for some residents in ARCF. According to interRAI NZ, the implementation project is already in process for use by competent Home Care assessors in NZ (interRAI NZ, 2017). This could be considered for ARCF residents also.

6.3.2.9   Simplify printouts

In most facilities interRAI-LTCF assessment results and MDS comments are printed and stored in the residents' files. The printed documents of interRAI-LTCF assessments are challenging for health care staff (RNs and HCAs) to read. The interRAI organisation could simplify these and reduce the number of pages that need to be printed. This would also be environmentally beneficial.

6.3.2.10   Implications for other countries

New Zealand is the first country to make interRAI-LTCF mandatory in all ARCFs. There have been issues related to this, as discussed in this study. Providing sufficient computers, training all staff, ensuring streamlined processes, and avoiding duplicate data entry is recommended for successful implementation of the interRAI-LTCF in other countries.

6.3.3   Recommendations for Further Research

Some questions arose from this study, and further study is recommended to explore these.

6.3.3.1   Why do RNs fail interRAI-LTCF training?

It is not yet known why so many RNs (7%) fail to complete interRAI-LTCF training and become qualified users (interRAI NZ, 2015). Further research is needed about the causes for RNs failing the course. While the reason could be a lack of computer skills, there could also be other contributing factors.

6.3.3.2   Is interRAI-LTCF useful in dementia, end-of-life care and psychogeriatric care?

The feedback from RNs in dementia units, and those looking after residents in the end-of-life, suggested interRAI-LTCF might not be appropriate in these areas. Psychogeriatric units were not part of the study, but they could have similar concerns. It would be useful to explore RNs' experiences with interRAI-LTCF in these environments.

6.3.3.3 Explore the effect of UTAUT variables in similar studies

This study explored RNs' experiences, feelings and attitudes with interRAI-LTCF. Future studies on the same topic could include UTAUT's modifying constructs combined with different variables, for example experience, age, and gender. Quantitative methodology would produce more data for this purpose.

6.3.3.4 Comparison studies

One research recommendation is repeating a similar study after responsive development has taken place in some areas, such as training, system development, and time management. At this time RNs' experiences, feelings and attitudes may have changed depending on how much the systems in their facilities have improved.

6.4 Concluding Statement

The ageing population is rapidly increasing in NZ and the number of people with long-term conditions and dementia is expected to increase (MOH, 2016). It is also expected that increasing numbers of older people will need care in ARCFs. Comprehensive assessments of older people aged over 65 years are important in order to ensure quality care and cost effectiveness. The New Zealand Health Strategy supports the use of interRAI-LTCF as it is designed to maintain and improve health, and to prevent decline for as long as possible (MOH, 2016).

This study was the first to investigate RNs' experiences, feelings and attitudes about interRAI-LTCF in New Zealand. The study found that overall RNs have a positive attitude toward the assessment tool and are willing to use computers.

A hindrance to using the tool is a lack of time, which is strongly linked with having to duplicate data entry. Also, more RNs need to be trained to use interRAI-LTCF to ensure the workload is divided more fairly.

This study found that RNs who complete the assessments have insightful knowledge on how to develop interRAI-LTCF and streamline systems in the facility. The findings of this study can assist the interRAI collaboration, interRAI NZ governance body, and ARCFs in NZ to improve the tool and the processes around interRAI-LTCF. Other countries considering mandatory implementation of interRAI-LTCF can also learn from this study.

6.5   Final Words

The following poem, written by an interRAI-qualified RN before this study began, interestingly sums up the findings of this study:

My interRAI Love Affair

There is a cloud up in the sky
It's called Momentum [4] – interRAI
InterRAI is like the sun
It can warm you – just have fun!

InterRAI, oh my, oh my,
I struggled from word GO!
It's so very different
From what we RNs know

I tried so hard to understand
Poor trainer nearly cried
I'd like to say I felt that too
But held on to my pride

InterRAI is compulsory
Carry on determinedly
Surely after quite a while
You will succeed and smile

Assessment four, I get it now
We both are saying Wow!
But assessment five, first done before
New problems threw me on to the floor!

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[4] The Ministry of Health holds a contract with Momentum Healthware as the vendor of the interRAI software in New Zealand.

For audit and for everyone
Just one assessment tool
My RNs are quite happy now
No double-do like a fool!

The face page is admission tool
Our care plans fed by triggers
Doing things twice is just so cruel
Just interRAI; it figures!

The AIS – another thing
We all are terrified
Support colleagues we all bring
Just look at how we tried!

We still keep on with interRAI
Because by now we love it
And after all that work we've done
We just can rise above it!

(Catherine Headon, 2016)

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Appendices

Appendix 1

Registered Nurses Experiences With interRAI-LTCF

PARTICIPANT INFORMATION SHEET

Title of the study
The working title of this study is "Registered Nurses experiences with interRAI-LTCF".

Description of the study and its procedures
The study is conducted by using a descriptive and explorative qualitative approach. Fifteen participants will be interviewed in order to gain in-depth information about Registered Nurses' experiences, feelings and attitudes towards interRAI-LTCF. Study participant can be any Registered Nurse, who works in a residential aged care facility in New Zealand, and has completed interRAI-LTCF training and the required minimum five resident assessments for the qualification. Participants need to be willing to talk about their interRAI experience, and have time to take part in the study. Participant should not be anyone previously known to the researcher in order to avoid bias. Interview will be audio recorded in order to ensure accurate capturing of information. The researcher will transcribe the audio recordings at a later stage. Apart from the supervisor of the project no one else will have access to the recordings.

Full identification of the researcher
My name is Minna Vuorinen. I am a Registered Nurse and a student at Massey University. This research project is conducted as a partial fulfilment of the Master in Philosophy qualification.

Your participation is voluntary
Your participation is voluntary. If you agree to participate, you will have the right to withdraw from the study at any time without any consequence. You may ask any questions about the study at any time of the participation. You have a right to decline to answer any particular question if you wish.

Confidentiality
Your personal information will be confidential. Your name or place of work will not be used at any part of the study. Only the researcher and the supervisor from Massey University can access any collected data.

Benefits and risks associated with participation of study
Your views are important in order to gain an understanding of the current situation of Registered Nurses' views on interRAI-LTCF. Depending on the results it may be beneficial in planning systems further. Every part of the research has been carefully planned in order to keep your anonymity intact.

Ethics committee approval
This project has been evaluated by peer review and judged to be low risk. Consequently it has not been reviewed by one of the University's Human Ethics Committees. The researcher named in this document is responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher, please contact Dr Brian Finch, Director (Research Ethics), email humanethics@massey.ac.nz.

Massey University
If you have any questions or concerns related to the research, please contact Minna Vuorinen, mob: 021-2580233.

Supervisor of this study is:
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Appendix 2

Registered Nurses' Experiences With InterRAI-LTCF

PARTICIPANT CONSENT FORM - INDIVIDUAL

I have read the Participant 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 the interview being sound recorded.

I agree to participate in this study under the conditions set out in the Information Sheet, including the right to withdraw at any time.

Signature: Date:

Full Name (Printed):

Appendix 3

BASELINE CHECK - INFO ABOUT THE PARTICIPANT

YES   Are you a Registered Nurse?

YES   Are you qualified to use interRAI?

YES   Have you completed an AIS test?

YES/NO   Have you done a follow up annual AIS competency test?

NO   Have you worked in the same facility as the researcher?

Which age group do you belong to:

<30   30 - 50   >50

M ❑ F ❑

Size of the facility? Beds: _____

Hosp / RH / Dementia

Size of the company? :

Company owns more than two facilities around NZ ?   ❑

Company owns 1-2 facilities   ❑

How many staff complete interRAI assessments in your facility?

Date:

Appendix 4

FINAL INTERVIEW QUESTIONS

1a *Experiences*: Tell me about the interRAI **training** you received. *Venue, trainers, group, time*

1a2 Is it easy to get trained for interRAI in your facility?

1b *Feelings*: How did you feel about the training? *Was it easy or hard for you? Enough?*

1c *Attitudes*: Would you say you have mostly positive or negative thoughts about the training process?

2a *Experiences*: Tell me about the **interRAI use** in your job. *How often do you use it? Is it easy to use? How long does it take you to complete an assessment? Are you up-to-date with your assessments in your facility?*

2a2 Is interRAI integrated in your existing work or is it something extra that you need to do?

2b *Feelings*: How do you feel about completing an assessment? *Is it easy or hard for you?*

2c *Attitudes*: Would you say you have mostly positive or negative thoughts about completing interRAI assessments?

3a *Experiences*: Tell me about your experience with the **AIS assessment?**

3b *Feelings*: How did you feel about completing AIS? *Was it easy or hard?*

3c *Attitudes*: Would you say you have mostly positive or negative thoughts about completing the AIS test?

4a *Experiences*: How does your **manager support** you in using interRAI?

4a2 How does your **company** support you?

4b *Feelings*: How do you feel about the support that you receive from your manager and/or company*? Is it enough? If not, what could they do better?*

4c *Attitudes*: Would you say you have mostly positive or negative thoughts about the support you receive from your manager and the company?

5a *Experiences*: Tell me about **the support systems** available to you.

Can you contact a person to help you when needed?

Do you have enough computers?

Do you have access to IT support?

Do you have other resources available (People/technical/books?)

5b *Feelings*: How do you feel about the support systems available to you? (Is that enough?)

5c *Attitudes*: Would you say you have mostly positive or negative thoughts about the support systems available?

6a *Experiences*: How would you describe your **computer skills**?

6b *Feelings*: How do you feel about your computer skills?

How do you feel about your knowledge about using interRAI?

6c *Attitudes*: Would you say you have mostly positive or negative thoughts towards the use of computer?

7a *Experiences*: How do you believe your **residents benefit** from interRAI?

Do you think learning and using interRAI has been **useful to you personally**?

7b *Feelings*: In what ways is it **worthwhile** to use interRAI?

7c *Attitudes*: Would you say you have mostly positive or negative thoughts about how interRAI affects your performance at work?

8 **Final question:**

In your opinion, what would make it easier to learn and use interRAI?

In your opinion how could interRAI be improved?

What would make your interRAI experience better?

Appendix 5

ETHICS NOTIFICATION

This project was evaluated by peer review and judged to be low risk on the 11th July 2016. Consequently it was not reviewed by one of the University's Human Ethics Committees. Ethics Notification Number: 4000015940.

Title: Registered Nurses experiences with, and feelings and attitudes towards interRAI-LTCF in New Zealand, 2017

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please log on to http://rims.massey.ac.nz and register the changes in order that they be assessed as safe to proceed.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

"This project has been evaluated by peer review and judged to be low risk. Consequently it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.
If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director (Research Ethics), email humanethics@massey.ac.nz. "

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish require evidence of committee approval with an approval number), you will have to complete the application form again answering yes to the publication question to provide more information to go before one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

If you wish to print an official copy of this letter, please login to the RIMS system, and under the Reporting section, View Reports you will find a link to run the LR Report.

Yours sincerely

Dr Brian Finch
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Appendix 6

AFTER THE PILOT INTERVIEW QUESTIONNAIRE

How long did the interview take?

Baseline Questions

Info & Consent

Interview

Total: _____ minutes

QUESTIONS

1.   Were the questions understandable?

2.   Language /Wording

3.   Repetition

4.   Any uncomfortable questions?

5.   Any questions very hard to answer?

6.   Order of the questions logical?

7.   Other?

RESEARCHER

1.   Tips for the interviewer?

VENUE

1.   Any issues/ things to consider