



# Evaluation of the Exercise Physiology in Aged Care project



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Look for this icon throughout the report to hear what staff and family members said about the EP in Aged Care project during the evaluation.

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## Background

As people age, they decline functionally and cognitively. This decline, especially for those who enter residential aged care, appears to be an accepted norm, but it shouldn't be. There should not be an assumption that people coming into aged care will deteriorate or that it is a waste of time doing anything to prevent further deterioration. While we may not be able to improve residents' functional and cognitive state, we can put measures in place that aim to contribute to maintenance of function and improvement of quality of life for residents. This report describes the evaluation of the Exercise Physiology (EP) in Aged Care project run at a residential aged care facility, in South Australia.

Two thirds of adults living with dementia experience significant functional limitations, particularly older individuals living in aged care homes. Providing ways for these residents to maintain functional capacity as dementia progresses is important and a key recommendation of the Clinical Practice Guidelines and Principles of Care for People with Dementia (1).

As a relatively new profession, EPs are developing ways to work effectively with the specific needs of older people, including those living in residential aged care.

An EP-led activity program delivered by five students from University of South Australia in residential aged care suggested increased functional capacity and improved cognitive function in residents; and thus, provided the catalyst to evaluate a 12-week EP in Aged Care program.

### Exercise Physiologists

Exercise Physiologists (EPs) specialise in clinical exercise programs for persons at high-risk of developing, or with existing, chronic and complex medical conditions and injuries. These programs include prescribing exercise for specific conditions, health and physical activity education, advice and support, and lifestyle modification with a strong focus on achieving behaviour change (2).

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## Summary and key findings

The goal of the project was to conduct an evaluation of the implementation of the EP in Aged Care program that was funded by the Aged Care Service Improvement and Healthy Ageing Grant Program, through the Department of Social Services, in 2014. Additional funding by the NHMRC Cognitive Decline Partnership Centre (CDPC) allowed for a rigorous research evaluation to occur whilst implementation of the program was being undertaken.

The evaluation tested the impact of exercise prescription in an aged care environment; and explored family and staff members' (the partners in care) perceptions of the program.

Hear what the staff and family members have to say

## Key Findings

### Residents

Residents demonstrated maintenance of function during the active EP program. This was demonstrated by a decrease in the time it took to complete a mobility task and an increase in the distance covered in the 2-minute walk test. No difference was found in cognitive function.

### Family Members

Family members were very satisfied with the exercise program provided. They perceived an improvement in physical function (strength, mobility and flexibility), cognitive awareness, socialisation and communication in their family member following the active training period.

### Care Staff

Care staff were also very satisfied with the program and reported that the improved mobility and flexibility helped them (the care worker) perform their duties of care. They perceived an improvement in physical function (strength, mobility and flexibility) and cognitive awareness, socialisation and communication during the active training period.

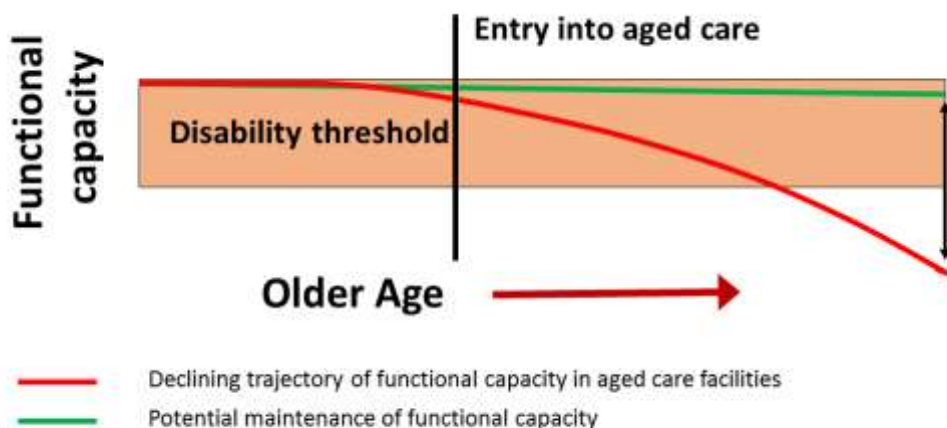


Image courtesy of Helping Hand Aged Care

## Importance of working with vulnerable populations

The importance of this evaluation should be emphasised. In research, we often work with the ‘worried well,’ people who are concerned about their health and wellbeing, but who generally have strategies in place to achieve their optimal health and wellbeing. Exercise programs targeting this group of people tend to show improvement. This evaluation is unique in that we were working with a vulnerable population, people who could be considered too frail and were expected to decline until death once they entered the aged care environment.

### Potential maintenance of functional capacity through exercise physiology



Hypothesised trajectory of decline expected upon entry to residential aged care versus possible maintenance of function due to participation in ongoing physical activity (adapted from Kalache & Kickbusch 1997, in Kalache 2013) (3).



The challenge with this population, and perhaps more specifically for the people who care for them, is to break the stereotype of what we think exercise, and its impact, might look like for this vulnerable group. Instead, we need to focus on the possibility that maintenance of current function is a positive outcome. The ability to maintain function, rather than deteriorate, contributes to a better quality of life for the resident.



Image courtesy of Helping Hand Aged Care

## The aged care context

The aged care environment is a particularly challenging environment in which to initiate change and affect culture, largely relating to the tight financial constraints under which the industry operates. As a result, staff often find it hard to do new things or adapt their approaches to new ways. They often feel really busy and focus primarily on care that has been prescribed routinely. The community has an expectation from aged care that relates to 'looking after' an older person rather than maximising their independence and improving function. This expectation plays out into the care planning for an older individual in care. More than ever before, older people in aged care are increasingly frailer and being admitted into care either in crisis or at a low level of function. Therefore, functional decline is an accepted pathway for that person, which likely impacts on the preparedness or motivation to actively consider or engage in strategies to mitigate decline.

## Features of EP in Aged Care Project

The EP in Aged Care Project and evaluation was carried out across four aged care homes in metropolitan South Australia. The program included group-based and individual exercise sessions. A total of 36 sessions could be attended over a 12-week period. A record of attendance was kept in an attempt to report 'dose' of exercise.

The sessions focused on challenging balance, awareness of position and movement of the body, strength and multi-tasking.



Image courtesy of Helping Hand Aged Care

Portable exercise equipment was used and included bike pedals; weights dumbbells and ankle weights; balls; exercise resistance bands; and balance training equipment.



The program was led by EPs and made accessible to residents by having sessions in the gym, communal areas or an individual's own room. It was also made available to residents regardless of their cognitive or functional status, with exercises tailored and/or modified to suit the capabilities of each individual. Where possible, this occurred in collaboration with the individual resident.

Attempts were made to encourage partners in care to support ongoing activity after the initial 12-week program to maintain the benefits observed.



Image courtesy of Helping Hand Aged Care



Image courtesy of Helping Hand Aged Care



## Movement with benefits

A circuit-style program was developed by EPs and lifestyle staff, for more independent residents in lower care units. This program included posters that showed how to do the exercises (as per image below).

The lifestyle staff and volunteers supervised the EP-developed program and were trained on how to cue exercises, as well as safety considerations.



## Evaluation methods

Residents completed a set of functional assessments to measure objective changes in physical function during the program.

Family members, significant others, care workers and other staff (partners in care) completed surveys and interviews to provide information about their satisfaction and perceptions of the exercise program; providing a deeper context of the impact of the program.

## Findings from the physical function and cognitive assessments

### Assessments used to measure function and cognitive outcomes

- Five repetition sit to stand (5Rep STS)
- Timed up and go (TUG)
- Two-minute walk
- Hand-grip
- Four-metre walk
- Addenbrooke Cognitive Exam (ACEIII) (4)
- Quality of Life in Alzheimer's Disease survey
- Wearing of GENEActiv accelerometer

Measurements were collected 4-times during the project

The assessments indicated that physical function was maintained during the 12-week EP program for the sit-to-stand and hand-grip strength tests; and the timed up and go mobility test, as shown in Figure 1 below.

No differences were found in habitual activity, cognitive function and quality of life measures.

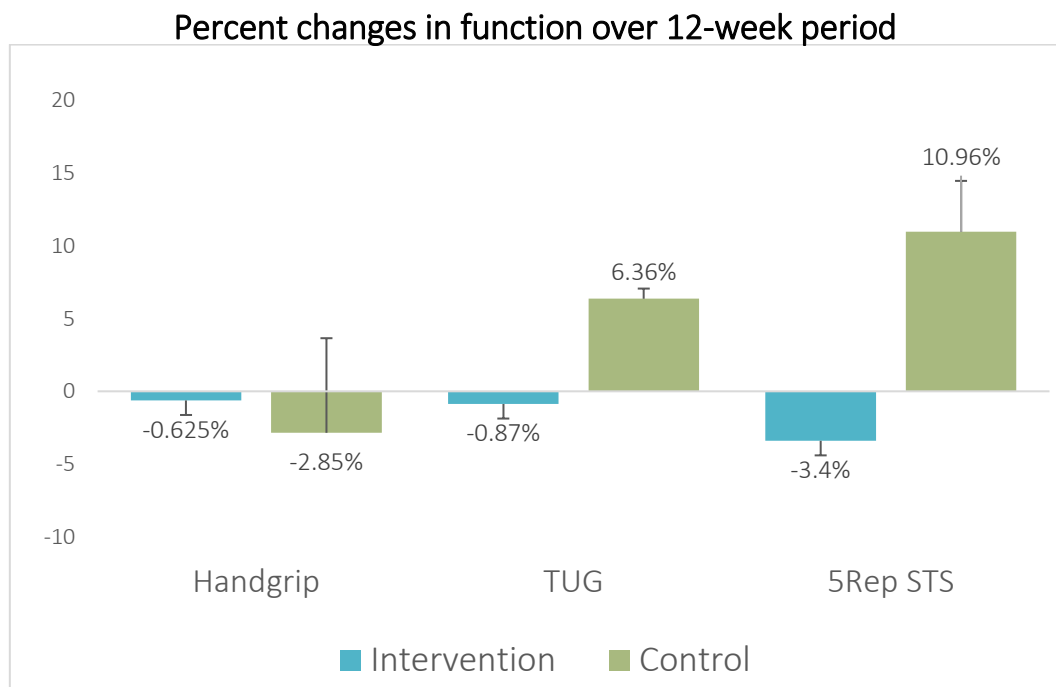


Figure 1. Percentage change and error bars for the TUG and 5Rep STS for participants in the control group reflect an increase in the time it took to complete the activity over the course of the 12-week program, meaning there was a deterioration in these activities. The negative change in the hand-grip activity reflects the loss of strength over the same period.

For the participants in the intervention group, there was minimal change for the hand-grip and TUG, indicative of maintenance; and for the 5Rep STS activity, there was an improvement over the 12-week program.



Sit-to-stand exercise

Image courtesy of Helping Hand Aged Care

The 2-minute walk and timed up and go were significantly associated with the number of individual sessions attended by a participant; analysis indicated that **eight sessions over a twelve-week period were necessary to have a significant positive impact on function.** Attendance at more sessions over the 12 weeks was associated with more time spent in light activity behaviour.



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## Role of family and staff

Partners in care play an important role in the ongoing care of residents.

Family members act as advocates for the residents (5), ensuring their family member has access to activities, and providing encouragement for their family member to participate in the activities available at the facility.

The staff's role in delivering care is underpinned by residents' cognitive and functional capacity (6), for example, residents who can assist staff in activities of daily living can make the role of care staff easier; and any maintenance or improvement has the potential to improve staff engagement with residents (6).

Including the family members' and care staff's views and perceptions of the EP project was important to understanding the impact of the project, and for garnering ongoing support for this type of program.



Family members engage in exercises when visiting loved ones

Image courtesy of Helping Hand Aged Care



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## Perceptions about the EP in Aged Care project

### Barriers identified

**Residents not able**  
**Insufficient staff**  
**Staff don't support**  
**Time**  
**equipment**  
**Residents not interested**  
**Not enough training**

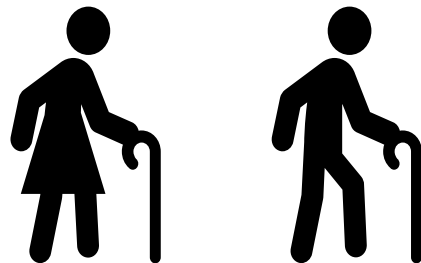
Hear what the staff have to say



#### Perceptions of likely benefit before the exercise program began

The general perception of family members and care staff before the exercise program began was that residents who had no cognitive condition and who were ambulatory, were most

likely to benefit from participation in the 12-week exercise program. As cognitive and functional decline increased, it was expected that residents were less likely to benefit from participation.



#### Perceptions following the 12-week exercise program

There was an increased perception of the degree of benefit for those less mobile, and for residents with moderate and severe cognitive decline. Perceptions of improvement versus deterioration were identified for communication, social involvement, cognitive awareness, behaviour, physical strength, mobility and flexibility, and activities of daily living from the perspective of family members and care staff.

The perceived barriers to the program and concerns about any negative impact it might have on the care workers reduced over the 12-week active program.

## Findings from interviews with staff and family members



Care staff reported that barriers to their own involvement in delivering additional activity had decreased over the course of the program; and despite some care staff reporting that time was a barrier, other care staff spoke about including activities in the daily routine while waiting for other things to happen.

Hear what the staff have to say



“It needs qualified people to run it, and I don’t have the time.”

“Sometimes, we’ll get a balloon or a ball, we might only throw it around for 20 minutes...but we get the music pumping...”

Quotes from before intervention   
Quotes from after intervention 



Residents engaging in group exercises

Image courtesy of Helping Hand Aged Care

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Family members perceived that deterioration in physical function in their family member had halted; and that they seemed to have more strength through ongoing activities. There were also observed improvements in social engagement, communication and contentedness of the residents.

Hear what the staff and family members have to say



“I was hoping it would benefit but wasn’t sure.”

“Mum reported that she did all the exercises...she seemed really proud of that.”

There were changes to the perceptions of the benefits the EP program would have prior to and after the program.

“I didn’t have high expectations, but I was definitely open minded.”

“The program gave {resident} confidence to do things...more strength in {resident’s} arms and shoulders.”

Family and staff members also reported on the acceptability of the program

“The honest truth, I didn’t think it would be able to do anything – especially for people with advanced dementia.”

“It did – should be in every care facility.”  
“It needs to start as soon as the individual comes in.”

While positive impact in terms of functional or cognitive improvement was not reported by every interviewee, there were **no negative perceptions** of the program, or of the EPs’ role within the program.

While the EP-prescribed program works when actively in place, there were concerns around how the positives and opportunities for physical activity, in general, could be sustained.



Image courtesy of Helping Hand Aged Care

Hear what the staff have to say



“When they were doing it, they were in groups and they had little giggles and laughter, and they haven’t got that no more” [...now that the program has finished].



Image courtesy of Helping Hand Aged Care



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## Person-centred approach

Taking a person-centred approach and employing the likes and previous activities of residents as a means of engaging them was identified in the interviews with family members as a key theme in the ongoing care of residents. Incorporating these aspects in the EP-prescribed and delivered exercise program was reported by care staff as a source of great enjoyment for residents and has been demonstrated as an effective means of engaging residents in exercise.



Image courtesy of Helping Hand Aged Care

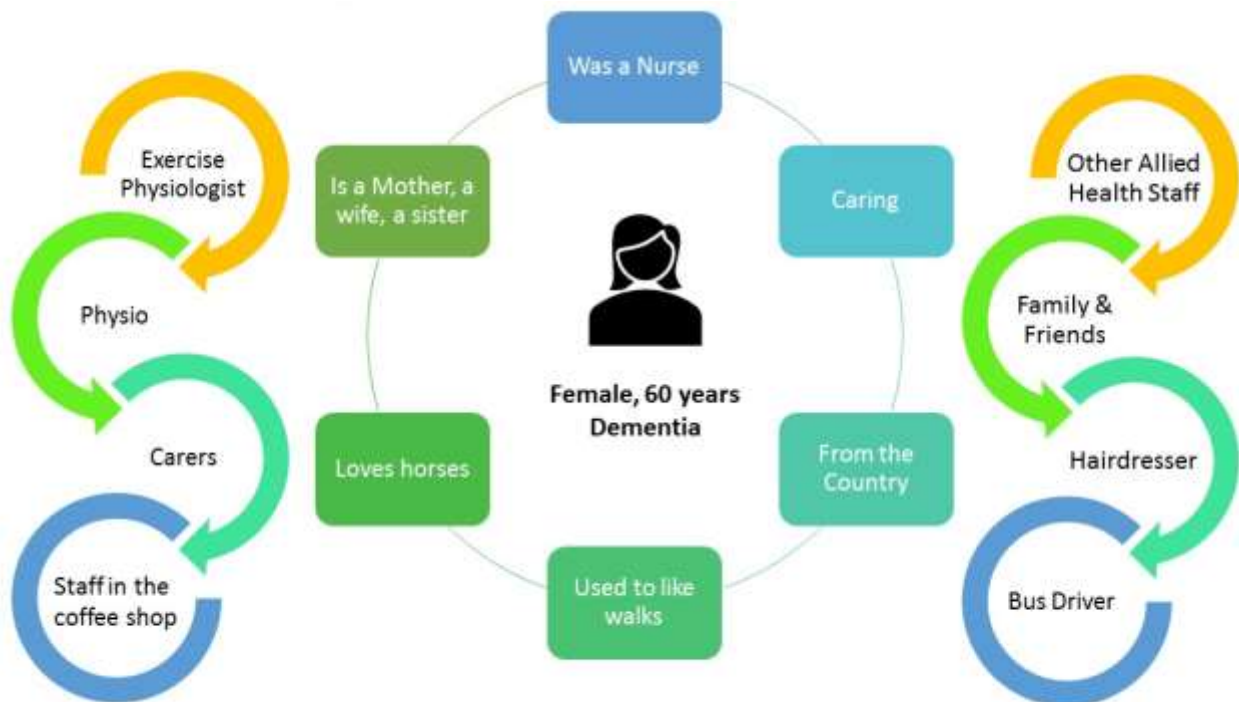
“You need to go into their world – you can’t expect them to come back into ours...”



Image courtesy of Helping Hand Aged Care

As well as being important for the EP to have information about the residents wants and likes, it is also important for other members of their world to have this information. As shown in the diagram on the next page, this could be other allied health staff (e.g. physiotherapists), the hair dresser in the facility, or staff in the coffee shop.

## Person-centred approach – wider approach



### Wellness page

A wellness page was developed in collaboration with an EP, the resident, family members and care staff. The purpose of the wellness page is to provide some information about the resident, their favourite activities, things they used to enjoy doing, and tips on how to encourage the resident to remain active. Also included are the resident's favourite three exercises, with an image of each, and directions on how to help the resident do each exercise.

The intention is that this page be placed in the resident's room, so that anyone coming into that room has the opportunity to read the wellness page and engage with the resident around the information provided and the exercise.

# Betty's\* Wellness page-

*\*Not Resident's real name*



## WHAT IS IMPORTANT TO BETTY?

1. Her family.
2. Singing with other residents and having a chat.
3. Betty enjoys the company of others and creating a community feel.

## WHAT DO PEOPLE LIKE & APPRECIATE ABOUT BETTY?

1. Her positive and friendly nature.
2. Her ability to always look on the bright side.
3. Always up for a joke and a laugh.

## WHAT TYPES OF ACTIVITY DID BETTY DO?

1. Enjoyed cooking.
2. Reading.
3. Quizzes and Crosswords.

## HOW TO HELP BETTY STAY HEALTHY AND ACTIVE

1. Remind Betty on Thursday and Friday mornings she can complete group exercises.
2. Where possible, try to encourage Betty to complete activities that require her to move and use her body parts such as hanging the washing or cleaning the dishes.
3. Betty enjoys participating in activities alongside of her friends while having fun!
4. Encourage Betty to help other residents be active by being the leader in group ball throwing.

## BETTY'S FAVOURITE EXERCISES

1. Ball Throwing.
2. Sit to Stands (using the chair when needed).
3. Balance.

**LOOK ON THE BACK OF THIS PAGE TO SEE BETTY EXERCISING & HOW TO HELP HER ACHIEVE HER GOALS!**

If there are any changes to this individual's mobility and/or health status and this sheet needs updating OR if you have any feedback, concerns or comments about this sheet, please contact the Exercise Physiology Team.



# Betty's favourite 3 in action-

1

ARM  
PEDALS



- Place the arm pedals in front of me on a trolley or tray table.
- Have me standing up tall with my arms on the pedals.
- Ask me to pedal my arms around - you may need to assist me with the initial movement.
- Let me do this for 5-10 minutes. If I am feeling tired, let me rest, encourage me to pedal the opposite way, or let me sit down to complete the remainder of the pedalling.

2

SIT TO  
STANDS



- Make sure I am sitting on a chair with my arms across my chest.
- Ask me to 'sit down and stand up from the chair 10 times'.
- I sometimes do need to use my arms on the chair to help me stand up. If this is the case, encourage me to only lightly use my arms.
- I like doing this exercise with someone standing next to me - it makes me feel safe!

3

BALANCE



- Ask me to stand tall and hold onto the hand rail.
- Stand by my side to 'spot' me, so I have more confidence.
- Ask me to place my feet close together and to close my eyes – still keeping my hand on the rail.
- If I am comfortable and look like I'm doing well, encourage me to lift my hand off the rail... keeping my eyes closed. I find this a bit scary, so please give me a few goes!!

If there are any changes to this individual's mobility and/or health status and this sheet needs updating OR if you have any feedback, concerns or comments about this sheet, please contact the Exercise Physiology Team.



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## Concluding statement

This evaluation has provided evidence for the effectiveness of a 12-week, Exercise Physiologist-led exercise program for people living with dementia in a residential aged care facility. Some evidence identified benefits across levels of physical and cognitive status, and there have been several examples provided in this report of general maintenance of, or improvement in, physical and cognitive factors. However, to continue any benefit seen as a result of participation, ongoing strategies that are accessible and inclusive for residents, regardless of their cognitive and functional status, should be implemented. This includes engaging partners in care, such as family members and care staff, to encourage incidental physical activity.

The program has had a ripple effect for partners in care, with appreciation that older adults living with dementia are not just on a trajectory of decline.



Image courtesy of Helping Hand Aged Care

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## Glossary

**Exercise Physiologist (EP)**- specialises in clinical exercise programs for people at high-risk of developing, or with existing, chronic and complex medical conditions and injuries

**Ambulatory**- a person who is capable of walking

**Partners in care**- are the family members, significant others, care workers and other staff members who provide care and support for residents in aged care

**Mobiclines**- a mobile chair that reclines and has a footrest, for people who can weight-bear

**Princess chair**- a mobile chair that reclines and has a footrest, for people who are non-weight bearing

**Five repetition sit to stand (5Rep STS)** - test used to measure lower limb muscle strength, where the resident begins in a seated position, stands up tall, and then returns to the seated position; repeated five times

**Timed up and go (TUG)**- test used to assess agility and dynamic balance, involves recording the number of seconds required to stand up from a seated position and walk 8 feet (2.44m), turn, and return to a seated position

**Two-minute walk**- the resident walks as far as he/she can in a two-minute period to measure endurance, aerobic capacity, and functional mobility

**Modified version of hand-grip**- measures upper body strength. The resident is seated, squeezing the hand-grip dynamometer as they lower their arm to the side, repeated three times

**Four-metre walk**- test that measures gait speed, where the resident begins in a standing position, with the time recorded for the resident to walk four metres

**Addenbrooke Cognitive Exam (ACEIII)**- a brief neuropsychological assessment of cognitive function

**Quality of Life in Alzheimer's Disease survey**- used to measure wellbeing and quality of life of residents



**GENEActiv accelerometer**- a wrist-worn device used to measure habitual activity behaviour, by assessing the spectrum of activity intensity from sleep and sedentary behaviour, through to vigorous intensity

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The University of South Australia's Human Research Ethics Committee granted ethical approval for access to the data collected at one of the aged care facilities and for the conducting of qualitative interviews with staff or family members of residents. This facility also approved the evaluation, through an internal ethics process.

