THESIS STUDY PROPROSAL

Research Aims:

To investigate the benefits of the companion robot, Paro, for people with dementia and their caregivers.

The specific objectives are:
- To investigate whether interacting with companion robots can reduce cognitive, functional, depressive, and behavioural problems in people with dementia.
- To investigate whether companion robots can reduce caregiver stress.
- To investigate whether interacting with companion robots can affect stress hormones and blood pressure in people with dementia and their caregivers.
- To investigate whether companion robots can reduce the need for medication in people with dementia.

Background

Dementia involves a progressive age-related decline in cognitive function, with varying levels of behavioural disturbance. The burden on caregivers can be very high and more research is required to investigate therapeutic interventions for both patients and carers. Paro is a Japanese robot, modelled on a Canadian baby harp seal. Paro has four senses; sight, sound, balance, and touch meaning that Paro responds to contact, as well as to other stimuli in its environment by moving or imitating the noises of a baby harp seal. Paro operates by using the three elements; its internal states, sensory information from its sensors and its own diurnal rhythm to carry out various activities during its interaction with people. Paro is designed to have the positive effects of a pet without the demands. Previous research shows that Paro can reduce loneliness and encourage social connections for elderly individuals in care facilities. Other research also suggests that interactions with Paro reduces blood pressure and improves cognition in elderly individuals, however prior studies have involved relatively few participants. Therefore, the current study aims to recruit a larger number of participants and examine the effects of Paro for a dementia-specific population.

Hypotheses

It is hypothesised that dementia patients' interactions with Paro will reduce cognitive, functional, depressive and behavioural problems in people with dementia, especially behavioural symptoms such as agitation.

It is also hypothesised that caregiver stress will be reduced after having Paro at home.

Participants

Participants will be recruited across Selwyn dementia daycare units in Auckland, New Zealand. The centres accommodate people with dementia between 9am and 3pm, we propose to recruit 30 individuals with dementia and their caregivers.

Study Design

A randomized controlled trial will be conducted, the participants will be randomised to either interact with the robot or to a control usual activities group. Each intervention group participant will be given the robot to take home with them for six weeks and will also interact with the robots in small groups at daycare. Dementia behaviours, cognition, depression, and caregiver burden will be assessed with validated questionnaires at baseline, after 6 weeks with the robot (or without) and a further 6 weeks later. Observers will rate behaviours in both control and intervention groups.

Procedure

Participants will be randomly assigned to the control group or to the Paro group using a random list generator. On an average day at the centre there will be about 4 people in the control group and 4 in the intervention group. We will have one Paro session per weekday for six weeks and the sessions will be incorporated into the activities schedule. We will have about four residents to one Paro robot, which has been found to be the optimum group size. Residents in the control group will do alternative activities during this time in a separate part of the centre. Observations will be conducted over the course of the trial to assess residents' behaviours in each group during the sessions.

In addition, participants in the Paro group will be given a Paro at home. This will allow caregivers to use Paro when required to reduce behaviours seen in dementia, such as aggression, wandering, and repetition, which can occur in the evening. We will have 9 additional Paros available for this purpose. It is envisioned that not all participants will want Paro at home, as not all people with dementia are responsive to Paro. Caregivers and staff at the centre will be trained in how to use Paro.

Measures will be obtained at baseline, post-intervention and at 6 weeks follow-up, these include assessments of cognition, behaviour, depression, caregiver burden and quality of life.

Timeline

At baseline, and at 6 weeks all measures will be administered to participants. We will re-administer the questionnaires at a 6-week follow-up point to see whether the effects of Paro are sustained over time.

Timeline of intervention