

Assistance dogs for elderly with middle and late stage dementia

A study on the implementation of assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities



Ellen van Zon (s1620819)

**Masterthesis Health Psychology &
Technology
University of Twente, Enschede**

First supervisor: C.H.C. Drossaert

Second supervisor: N. Kohle

External supervisor: J. van den Hurk

Summary

Background: The Dutch population is rapidly aging and the number of elderly with dementia increases fast. There is no cure for dementia and therefore it is important to maintain a good Quality of Life for the patients for as long as possible. Research has shown, that patients with dementia benefit from social contact, social activities and physical activities. A good way to achieve these benefits is by interaction with animals, in specific dogs. Although several types of assistance dogs exist and have shown themselves to be effective, little research is done into the use of assistance dogs in the care of elderly with middle and late stage dementia, who live in healthcare facilities.

Goal: This study focussed on the facilitating or impeding factors in the implementation of assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities.

Methods: For this implementation study, semi-structured interviews were conducted with thirteen relevant stakeholders. These stakeholders were as followed: one project manager, one representative of Hulphond Nederland, three family members, one music therapist, two activity leaders, two care givers, one team leader care and two managers of care homes. The Consolidated Framework for Implementation Research was used to structure the interviews and results. The interviews were transcribed, coded, categorized and subcategorized independently by two encoders. Afterwards, results of both arrangements of results were compared and discussed until consensus was reached.

Results: Stakeholders were generally positive about the implementation of an assistance dog in the care of elderly with middle and late stage dementia who live in healthcare facilities.

They believed an assistance dog for the target group could have several advantages such as a form of intimacy, empathy, an improvement in interaction and Quality of Life. Impeding factors such as patients with medical conditions who could suffer from the presence of a dog, the shedding of hair and the dog smell were mentioned but stakeholders also came up with a possible solution. The Labradoodle or Poodle would be suited breeds because of the hypoallergenic fur that does not cause allergic reactions and does not shed. Stakeholders envisioned the use of an assistance dog as an activity that could take place once a month, supervised by an external supervisor who knows the dog. The task of the dog can vary: from passive activities like cuddling and patients talking to the dog, to play fetch or going for a walk. Most stakeholders preferred a professionally trained dog due to safety risks.

Organizations such as healthcare facilities and an organization that trains assistance dogs would be needed to facilitate the implementation. Private initiatives who visit with their pets on voluntary basis could be a possible threat which could impede implementation.

Conclusion: Stakeholders were overall positive about the implementation of an assistance dog in the care of elderly with middle and late stage dementia who live in healthcare facilities.

Because of the positive results, a pilot study is recommended to test the implementation and effectiveness in practice.

Samenvatting

Achtergrond: De Nederlandse bevolking vergrijst snel en het aantal ouderen met dementie neemt toe. Dementie is nog niet te genezen en daarom is het belangrijk om de kwaliteit van leven van de patiënten zo goed mogelijk te houden voor zo lang mogelijk. Onderzoek heeft aangetoond dat patiënten met dementie baat hebben bij sociaal contact, sociale activiteiten en fysieke activiteiten. Een goede manier om dit te bereiken is door interactie met dieren, specifiek honden. Er bestaan al verschillende soorten hulphonden die effectief bleken, maar er is nog maar weinig onderzoek gedaan naar het gebruik van een hulphond in de zorg voor ouderen met midden en laat stadium van dementie die in een zorginstelling wonen.

Doel: Dit onderzoek is gericht op het in kaart brengen van de faciliterende en belemmerende factoren in de implementatie van hulphonden in de zorg voor ouderen met midden en laat stadium van dementie die in een zorginstelling wonen.

Methode: In deze implementatie studie, dertien relevante aandeelhouders werden geselecteerd en geïnterviewd op basis van een semi- gestructureerd interview schema. Deelnemende stakeholders waren: een project manager, een vertegenwoordiger van Hulphond Nederland, drie familieleden, een muziektherapeut, twee activiteitenbegeleiders, twee verzorgers, een teamleider zorg en twee managers van verzorgingshuizen. Om de interviews en de resultaten te structureren, is er gebruik gemaakt van de *Consolidated Framework for Implementation Research*. De interviews werden door twee codeerders onafhankelijk getranscribeerd en vervolgens gecodeerd, gecategoriseerd en gesubcategoriseerd. Vervolgens werd de resultaten van beide codeerders vergeleken en gediscussieerd tot consensus bereikt was.

Resultaten: De aandeelhouders waren over het algemeen positief over de implementatie. De aandeelhouders geloofden dat een hulphond verschillende voordelen kan hebben zoals een vorm van intimiteit, empathie, een verbetering in interactie en kwaliteit van leven. Belemmerende factoren voor de implementatie waren bijvoorbeeld de verslechtering van een medische aandoening door de aanwezigheid van een hond, het verharen van de hond en de geur. De aandeelhouders kwamen echter ook met een mogelijke oplossing. De labradoodle of een poedel zouden geschikte rassen zijn, omdat zij een hypoallergene vacht hebben waar mensen geen allergische reactie van krijgen en deze honden niet verharen. Aandeelhouders wilden de hulphond een keer per maand extern ingehuurd zou worden als activiteit en er een begeleider voor de hulphond mee zou komen. De taak van de hulphond kan variëren: passieve activiteiten zoals knuffelen en patiënten die tegen de hond kunnen praten, maar ook apporteren en wandelen met de hulphond vallen onder de mogelijkheden. Het merendeel van de aandeelhouders gaf de voorkeur voor een professioneel getrainde hond vanwege veiligheidsrisico's. Organisaties die de implementatie zouden kunnen faciliteren waren volgens aandeelhouders zorginstellingen en een organisatie die hulphond opleidt. Privé initiatieven waarbij een individu op bezoek gaat bij een zorginstelling met een hond, werd genoemd als mogelijke belemmering voor de implementatie.

Conclusie: Aandeelhouders waren over het algemeen positief over de implementatie van een hulphond in de zorg voor ouderen met midden en laat stadium van dementie die in een zorginstelling wonen. Vanwege de positieve resultaten van de huidige studie wordt aangeraden om een effect studie te doen om de implementatie en effectiviteit in de praktijk te onderzoeken.

Content

Introduction.....	4
Methods.....	10
Results.....	13
Discussion.....	19
References.....	24
Appendix 1:-Interview schedule (Dutch version).....	27
Appendix 2: Dutch version of the results structured according to the CFIR-model.....	29

Introduction

Dementia

The Dutch population is rapidly aging. In 2015, there were approximately three million people aged 65 and older (elderly), in the Netherlands. This number will increase over the next years. The prediction is that in 2040, 26 percent of the Dutch population will be 65 and older (CBS, 2016). An explanation for this growing number is the increase in life expectancy. The current life expectancy for men is 79,9 years and for women 83,3 years (CBS, 2016). This development will have far-reaching consequences.

Because of the increasing ageing population, the prevalence of health problems such as diabetes, coronary heart diseases, arthritis, kidney failure, cancer, stroke and high blood pressure will increase (WU et al., 2015; CBS, 2016). Another common health problem in elderly is dementia. In 2015, over 260.000 people were diagnosed with a form of dementia in the Netherlands, this is about nine percent of the total population of elderly. In that year, 22.000 new cases of dementia were diagnosed. The prediction is that this number will keep growing to a half million people in 2040, almost most double of the current number (NIVEL, 2017; Ouderenfonds, 2016; Alzheimer Nederland, 2014). This makes dementia a fast growing problem.

The World Health Organisation, (WHO, 2016), describes dementia as followed. *‘Dementia is a syndrome in which there is deterioration in memory, thinking, behaviour and the ability to perform everyday activities.’* It is a collective term for a number of conditions, of whom the most commonly known is Alzheimer’s disease, it counts for 60-70 percent of the cases. Other common known types are frontotemporal dementia, vascular dementia and dementia with Lewy bodies. Different forms of dementia are hard to distinct and so, often mixed forms of dementia are diagnosed (International Psychogeriatric Association, 2002).

Dementia is a degenerative condition. WHO describes the process of the condition in three distinctive stages (WHO, 2016). These are the early stage, middle stage and late stage, with each different symptoms. First, in the early stage, symptoms are often overlooked, by the environment but also by the patient self, because the onset has a gradual start. Common symptoms are forgetting things, being lost in well known places for the patient and losing track of time (WHO, 2016). Second, in the middle stage, the symptoms become more clear and will have more effect on the daily life and Quality of Life (QoL) of the patient. Common symptoms in this stage are forgetting names of people and events and having more difficulty with communication in general (repeating questions). But also being lost in their own home, behaviour changes such as increased stress, irritability, anxiety and depression, wandering and less able to take care of themselves (WHO, 2016). Third and last, the late stage, where the QoL patient has decreased severely. The symptoms are clearly noticeable. Common symptoms in this stage are mobility problems, further behaviour changes that for instance can result in aggression, unawareness of place and time, difficulty in recognizing family and friends and increasing help in self-care (WHO, 2016). Often, in this stage, patients with dementia will be placed in a healthcare facility. Dementia can also lead to death. In 2015, 12,5 thousand people died due to the consequences of dementia. This can happen when for example swallowing and breathing is laborious (CBS, 2015).

Next to the primary symptoms, dementia and aging in general can have other consequences. Feelings of loneliness are well-known in the elderly. More specific, social

loneliness and isolation. This is a wide spread problem among elderly. In the Netherlands, of the population of 50 years and older, more than forty percent experiences loneliness. In the age group 75 to 85 year old, almost fifty percent and 85 years and older almost 60 percent feels lonely (RIVM, 2015). This can result in anxiety, not leaving the house and depression. This has a big impact on the life of this group, both physical and psychological. It may result in a lower QoL and feelings of having a happy and productive life. Research has shown that depression increases the risk of dementia in later life (Ford, Flicker, Singh, Hirani, & Almeida, 2013).

Health care

The government has reduced the budget for health care. This has consequences for the way care can be provided and problems arise. In the near future, the number of caregivers compared to the number of people who need care will not be sufficient enough to be able to keep providing good quality care. In particular the increasing ageing population and their growing need for care are faced with this problem (Schikhof, Mulder & Choenni, 2010). Patients are expected to be able to take care of themselves or with some help from homecare and informal care like relatives. Consequently, elderly including patients with dementia, are encouraged to live independently for as long as possible. Because of the degenerative nature of dementia the amount of care needed will increase over time and with that the burden on informal care or homecare. A resolution for this problem is needed. No actual cure is possible, but when dementia is diagnosed, often medication such as Acetylcholinesterase inhibitors are given to improve the cognition of the patient (Popp & Arlt, 2011). But this does not always give the desired effect and so, nonpharmacologic treatments are gaining more attention.

Research has shown that patients with dementia react to different kinds of stimuli: social contact, contact in general but also (multi) sensory stimulation (RIVM, 2015 ; Heyn, 2003 ; Burns, Byrne, Ballard, & Holms, 2002 ; Spector et al., 2003). According to Heyn (2003), by stimulating physical activity (exercising), cognitive activity (by storytelling and imagery strategies) and sensory inputs (touch, sound, arousal), functioning of people with dementia can improve in different ways. For instance, it can improve in resting heart rate, overall mood (psychological well being) and the willingness to participate in physical activity (which has shown to be beneficial in slowing the process of the condition down). The study of Spector et al. (2003) also show promising results for cognitive stimulation. The use of physical activities in groups (social contact) combined with multi sensory stimulation and gathering information (asking questions such as 'who looks the youngest?') made the participants focus on the present. This resulted in an improved psychological well being and QoL. Another important aspect for maintaining a good QoL, is the general health of a person. Therefore exercise is important but especially for patients with dementia, because it can slow down the process of the condition and lowers the risk of developing dementia (Larson et al., 2006; Lauren, Verreault, Lindsay, MacPherson, & Rockwood, 2001; Heyn, 2003). The studie of Larson et al. (2006) shows significant difference between elderly who exercised three times or more per week and elderly who excersised less than that. The excersises they did where for instance walking or swimming, and had a duration of 15 minutes per set. By exercising three or more times a week, the overall general health was better and the risk of developing dementia was significant lower .

Overall, different studies show that contact with others and (multi) sensory stimulation are beneficial for the psychological well being and QoL of patients with dementia. Doing (social) activities and focus on the present instead of the past seem to be important in the improvement of the QoL of these patients and should be taken into account in the treatment of the effects of dementia.

Animals and health care

One type of treatment to improve the QoL of patients with dementia could be the use of animals in health care. Research has shown that having a pet can have a big contribution to social contact, social activities and physical exercise. The interaction between humans and domestic animals, anthrozoology, is a phenomenon that exists for ages. Katcher (1983) describes four elements of the strengths of human-animal bonds: safety, intimacy, kinship and constancy. Other studies (Friedmann, 1990, Grandgeorge & Hausberger, 2011) describe benefits such as improved fitness because of having a reason to exercise, decrease of anxiety and depression because of the physical contact and companionship animal can provide.

The studies of McNicholas and Collis (2000) and Wells (2004) add the facilitation of social interactions with other people by having an animal, which is beneficial for reducing or preventing feelings of social isolation. But also simply stroking a dog can decrease physiological arousal, such as lowered blood pressure and heart rate (Sachs- Ericsson, Hansen, & Fitzgerald, 2002). A great strength of the interaction between humans and animals is that the interaction is not dependent on the cognitive functioning of a person, an animal ‘does not judge’ (Marx et al., 2010).

These qualities can be beneficial in health care and the implementation of animals has increased over the years. For example, horses are used in the revalidation after a severe accident or operation, but also in a therapeutic way for psychological problems, to overcome anxiety or built self esteem. Also care farms, which are farms where people with different kinds of conditions can come for care and daytime activities, have rapidly increased over the last years. In this case, people with dementia can come to take care of the animals and in addition have social contact with other people with the same problems. Research has shown that, because of these activities and the feeling of social participation, the QoL of people with dementia has increased (De Boer et al., 2017; RIVM, 2015).

Another well known implementation of animals into health care are the assistance dogs. They help patients who are in need of care physically, but also mentally. There are different ways that assistance dogs already have proven themselves useful and effective. An example is the service dog, which helps a person who is physical impaired with activities in daily life, such as opening doors, turning of lights and grocery shopping. The main goal is to achieve an optimal level of independency for the person the dog helps (Rintala, Matamoros, & Seitz, 2008; Hulphond Nederland, 2016). Another example are “hearingdogs” and “guide dogs” for the blind, which alert a person to events (sounds, obstacles) and increase safety and interaction of the person with their surroundings (Hart, Zasloff, & Benfatto, 1996; Rintala, Matamoros, & Seitz, 2008). A different kind of assistance dog are dogs who can signal symptoms before the person might notice it him or herself. These kinds of dogs are used for people with epilepsy to signal an upcoming seizure so the person can get in a save position or take medication. But also for people with post traumatic stress disorder (PTSD) to signal

stress levels and so help to recognize and cope with situations that trigger the reliving of traumatic events (Kirton, Winter, Wirrel, & Snead, 2008; The United States Army Medical Department, 2012; Hulphond Nederland, 2016). All these types of assistance dogs have one thing in common: to improve the QoL and independency of the people they help.

In Scotland, Dementia Dog Project is doing a pilot for three types of “dementia dogs”, which are called: an “assistance dog”, an “intervention dog” and a “facility dog” (Dementiadog, 2015). The “assistance dog” and “intervention dogs” are meant to help patients with first stage dementia and who are living with a full time care giver. The dogs support in daily living routines such as waking up, eating, getting exercise and going to the toilet. Also they provide reminders for taking medication and drink fluids. They provide companionship and acting as an icebreaker in social situations, the dog can be a topic for the start of a conversation. And last the dogs help providing a regular walking exercise program. The study is currently in the pilot stage, but shows promising results. Next to providing help in the previous mentioned tasks, the dementia assistance dog also seems to result in improved communication and decreases stress for both the patient and the caregiver. The “facility dog” described by Dementia Dog Project (Dementiadog, 2015) is meant to provide help and care for patients in residential facilities and nursing homes. The pilot for the use and effect of these dogs has started, but there are no final results known yet.

Next to benefits of assistance dogs, there are also several challenges and possible disadvantages an assistance dog can have. In the middle and late stage of dementia, patients often live in healthcare facilities. The staff members of these facilities might have to take care of the assistance dog, which could be experienced as another burden. Other problems can be that some patients or staff members are afraid of dogs or allergic. Even when this would only be one person in a healthcare facility, it would be a problem because every resident or staff member should have a good environment to live or work in. These problems can form a challenge in the use of assistance dogs in this setting.

However, research has shown that animals and in particular assistance dogs can be of great value for different kinds of people and patient groups. But although research has been done into the use of assistance dogs and it has shown it can be beneficial for people with dementia, it has not been implemented in healthcare yet and little research has been done. To make this possible, this study focuses on the implementation assistance dogs in the care of elderly with middle or late stage dementia who live health care facilities, could be implemented.

Theoretical Framework

For this implementation study, the Consolidated Framework for Implementation Research (CFIR) is used (Damschroder et al., 2009). Different theories about implementation are brought together in one structured framework. The CFIR model (figure 1) provides insight into which factors facilitate or hinder the implementation of an intervention.

Figure 1. Consolidated Framework for Implementation Research Model (Damschroder et al, 2009)

Implementation				
<i>The Intervention</i>	<i>Inner Setting</i>	<i>Outer Setting</i>	<i>Individuals Involved</i>	<i>Process by which Implementation is accomplished</i>
-Characteristics -Advantages -Disadvantages -Design quality	-Implementation climate -Communication and network -Employees	-Collaborations -Competitive behaviour -Patients needs and resources -External policies	-Attitudes -Self- efficacy	-Planning -Engaging -Executing -Reflecting and evaluating

Damschroder et al. (2009) describe five different domains that influence the implementation processes, which are 1) the intervention, 2) inner setting, 3) outer setting, 4) the individuals involved and 5) the process by which implementation is accomplished. The first domain is 'intervention'. It describes the different characteristics of the intervention, for instance the advantages or disadvantages it could have and design quality. The second domain is 'inner setting'. The inner setting represents the organization and its characteristics: the implementation climate, the communication and network of the organization, but also the people who work for the organization. The third domain is 'outer setting' which represents other organisations, which can cause competitive behavior or collaborations. But also the patients needs and resources and the external policies which can influence if and how the implementation can take place. The fourth domain is 'the individuals involved'. This domain represents the individuals who are involved in the implementation of the intervention. Their different attitudes, beliefs and self-efficacy to make choices play an important role in the implementation process. The fifth and last domain is the domain that brings all the other domains together, 'the process by which implementation is accomplished' (Damschroder et al., 2009). This domain gives a clear insight in how the information that has been gained from the other domains can be used to make the implementation a success, by following a clear step by step plan: planning, engaging, executing, reflecting and evaluating. The CFIR model covers every aspect needed to get inside into the facilitating or impeding factors for the implementation of an intervention in a clear and structured way.

Because this implementation study focusses on a new type of care for patients with dementia, it is important to get a clear and structured overview of what would facilitate or impede the implementation. Therefore, the CFIR model is very suitable for the study.

Research goal and questions

This study focused on the implementation of assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities. Therefore, the following questions were formulated.

- Which factors based on the CFIR model would facilitate or impede the implementation of assistance dogs in the care of elderly with middle and late stage dementia in healthcare facilities?

Method

Design

For this implementation study, a qualitative research was done to collect the data needed for answering the research question. Through semi-structured, face to face interviews, information was collected about the subject, using assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities. By interviewing different stakeholders, information about different perspectives on the subject was collected. This gave insight in what possible barriers the implementation of these dogs could have and what would be needed to make implementation effective. Based on the five domains of the CFIR model (Damschroder et al, 2009), an interview schedule was made.

Procedure and participants

To get different insights on each domain of the CFIR model, different types of participants, or stakeholders, were selected. In this study, important stakeholders can be found in the professional setting who play a role in caring of the patients with dementia, such as health care facilities. Participants from four different healthcare facilities were recruited. One of those healthcare facilities already had an activity where small pets such as rabbits, guinea pigs and also dogs from a local care farm came and visit for a cuddle session once a month or two months. One other allowed staff members to bring their own dog on occasion. The other two facilities used robot animals when needed. Next to healthcare facilities there was another organization which was important for this study: one who professionally train assistance dogs. Therefore a representative of Hulphond Nederland was recruited. Next to the professional setting, the private setting also played a vital role, such as family members. Due to the health problem and the subject of the study, patients with middle and late stage dementia would be difficult to get accurate information from and were not interviewed. Therefore, family members who knew the patients well were interviewed instead.

Through an information email or phone conversation, the goal of the study is explained and participants were recruited. In total, 13 stakeholders were recruited and participated in this implementation study. Table 1 gives an overview of these stakeholders.

Tabel 1. *Stakeholders who participated in the Implementation Study*

Respondent	Type of Stakeholder	Experience
1	Project manager/ expert use of animals in care for dementia patients	2,5 years
2	Representative Hulphond Nederland	2,5 years
3	Family member	2 years
4	Family member	2 years
5	Family member	2 years
6	Music therapist	3 years
7	Activity leader	10 years
8	Activity leader/ care giver	22 years
9	Care giver	16 years
10	Care giver	½ year
11	Team leader care	2 years
12	Manager care home	30 years
13	Manager care home	5 years

Before the start of the interview, the participants got instructions and information about the goal of the research. After that, they signed an informed consent, giving permission to use the information they gave about the subject. In addition, participants got the possibility to leave their e-mail address behind to receive information about the results after the research has finished. Through a semi-structured interview, the participant had the possibility to share their knowledge, experience, opinion and attitude towards the subject and talk freely. The interviews were recorded so the researcher could make an accurate transcript and maintain a higher validity.

Interview

Through semi-structured, face to face interviews, information was collected about the attitude towards the subject, using assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities. This gave insight in the barriers the implementation of assistance dogs could have and what is needed to make the implementation effective. Based on the five domains of the CFIR model (Damschroder et al, 2009), an interview schedule was made. All participants were interviewed based on the same schedule. Table 2 gives an overview of the five domains of the CFIR and examples of questions that were used during the interview. The complete interview schedule (Dutch version) can be found in appendix one. At the end of the interview, participants were asked to give the overall idea of the implementation of assistance dogs in health care facilities a grade. This grade would show positive (10) or negative (0) participants thought about the implementation in general.

Table 2. *The Five Domains of the CFIR and Example Questions used in the Interview.*

CFIR Domain	Example question
Intervention	What could be the possible added value/ disadvantages of an assistance dog for elderly with middle and late stage dementia in a healthcare facility?
Inner setting	What could your direct colleagues think about the possible use of assistance dogs for elderly with dementia?
Outer setting	Which other organisations could play a rol in making such an assistance dog possible?
Individuals involved	How would elderly with dementia in a healthcare facilitiy experience the presence of an assistance dog?
Process by which implementation is accomplished	When would the use of an assistance dog for elderly with middle and late stage dementia in a healthcare facility be a succes?

Analysis

Based on the interviews, transcripts were made. These transcripts were used for the deductive coding of the given information. Therefore, the CFIR model from Damschroder et al. (2009) was used to code relevant fragments in the five domains: the intervention, inner setting, outer setting, the individuals involved and the process by which implementation is accomplished. After that, the answers were used for inductive coding, to create categories and subcategories that represend what the participants found important.

This procedure of coding was done by two encoders independently: the researcher and an indepent party who had no part in the study. After doing so, both outcomes of structuring were compaired, discussed until consensus was reached.

Results

To structure the given information and analyse this properly, the results were divided and categorized into tables. The Dutch version of the five tables can be found in appendix two.

Domain 1 the intervention: perceived advantages and disadvantages of the implementation

Table 3 gives an overview of perceived advantages and disadvantages of the implementation. Over all, the respondents were positive about the implementation of assistance dogs in the care of elderly with dementia in healthcare facilities. Also respondents who do not like animals personally were positive about the possible implementation. The respondents were asked what would be possible advantages and disadvantages of the possible use of assistance dogs in this setting. An advantage that the implementation of an assistance dog in a health care facility could have was for instance more support. An assistance dog could provide intimacy by cuddling and give comfort to decrease the feeling of loneliness. But also the dog's attention would be unconditional: it reacts without judgement. A second advantage that was mentioned was stimulation. The presence of and interaction with the dog could trigger something within the patient and the patient with dementia would be able to do things again that they didn't do anymore. This trigger could also result in bringing back memories, when a patient for instance used to have animals earlier in life. A third advantage could be an improvement in Quality of Life and increase in feelings of wellbeing. Fourth, respondents mentioned possible medical advantages. The presence of and the interaction with an assistance dog could decrease health problems. It could calm people down and could make them feel better about themselves. This could result in better eating and drinking behaviour and possibly a decrease in medication. Also physical exercise like walking or playing with the dog could prevent incontinent problems. The fifth and final advantage mentioned was an advantage for the nursing staff: relief in workload. The assistance dog would be able to give attention to the patients with dementia, when the nursing staff doesn't have time.

Disadvantages mentioned by the respondents where hygiene, medical problems of the patients and preference. The shedding of hair and the smell of the dog where most mentioned. But also possible medical such as allergies and infections which could be increased by the presence of a dog. Also, not everybody loves dogs and can some people be afraid of them. Although most some stakeholders mentioned the presence of an assistance dog could give relief in workload, other respondents thought that a dog would increase the workload. Two respondents also mentioned the care of the dog as a disadvantage, due to the workload and pressure care givers can experience.

Table 3. *Domain 1 the Intervention: Perceived Advantages and Disadvantages of the Implementation*

	Category	Subcategory	Respondents (n=13)	Citations Respondents
Ad- vantages	Support	More Intimacy	7	RP 11 'People with dementia often want a form of intimacy , they want to cuddle'
		Gives comfort	5	RP 6 'Family know that somebody is not alone, although it doesn't talk back, it is a real friendship'
		Unconditionally	3	RP 9 'I think a dog really can contribute in a social and emotional way, it's nice when someone or something reacts without judgement'
		Empathy of the assistance dog	3	RP 8 'Dogs respond to emotions, they will come to you'
	Stimulation	Increases physical or mental functioning	6	RP 5 ' I have noticed that it triggers something in the people and that they can do things again that they didn't do anymore'
		Brings back memories	5	RP 10 'She did not recognize us anymore, but she could recognize a dog. She grew up on a farm and was used to animals, so maybe it triggers something'
		Making contact	4	RP 3 'A woman in a wheelchair would bend forward as soon as she saw the dog. I noticed that the people really make contact with the dog'
	Quality of life	Improvement in feelings of wellbeing	3	RP 7 'It is important that someone gets the feeling that their life is worth living. When an animal or a person can contribute to that, it is amazing'
	Improve- ment of health	Decreases physical health problems	3	RP 11 'A dog can calm someone down and relax them, which can make them feel better. This can lead to a better eating and drinking habit and a possible decrease in medication. And the physical exercise can prevent incontinence problems'
	Decrease in workload	Brings relief	2	RP 9 'Because of the big workload, nurses are not allways able to give the residents the attention they would like and need. A dog could give this attention instead and so lower the workload a bit'
Dis- advan- tages	Hygiene		7	RP 7 'The smell, the shedding'
	Preference of the patient		4	RP 2 'Not everybody likes dogs, maybe unexpected behavior'
	Medical conditions		3	RP 11 'It can be a disadvantage for people with allergies, respiratory infections or asthma for instance'.
	Care of the dog		2	RP 9 (when the dog would livel in a nursing home) 'If the dog gets sick, who will take him to the vet?'

Domain 2 Innersetting: Opinions of colleagues and other parties towards the implementation

Table 4 gives an overview of opinions of the participant's colleagues and other significant parties from within the organizations involved about the implementation of assistance dogs in healthcare facilities. Most of the respondents (n=9) thought their colleagues would be positive and open for the intervention. While some mentioned the presence of an assistance dog as an advantage on the workload, others expected on the contrary: it could be experienced as an extra task next to their already full schedule. Another barrier mentioned was the difficulty to execute the implementation due to the size of the organization. Respondents thought it would be hard to reach all the parties involved to implement an assistance dog in the organization. Two respondents also mentioned some preconditions that would be important in the implementation. The effect of the use of an assistance dog in the care of elderly with middle and late stage dementia who live in healthcare facilities has to be proven, to convince some parties, such as the client board, to actually start using the assistance dog in the setting.

Table 4. *Domain 2 Inner Setting: Opinions of Colleagues and other Parties towards the Implementation*

	Category	Subcategory	Respondents (n=9)	Citations Respondents
Positive	Positive attitude towards the implementation	Open for the intervention	6	RP 11 'Very positive, every one I told it to was enthousiastic. It something different for a change'
		Easing of workload	3	RP 9 'I think a lot of colleagues will say the dog will ease their workload'
Negative	Barriers	Increase in workload	4	RP 1 'Because of the workload, caretakers could think they don't have time to take care of the dog'
		Hard to execute	2	RP 8 'It's a big health organisation and it is hard to reach all the parties involved and make it happen'
Pre-condition	Evidence based	Substantiate with research	2	RP 2 'If you can substantiate it with research, other parties involved could be convinced quicker'

Domain 3 Outer Setting: Facilitators and Barriers for the Implementation

Table 5 gives an overview of the possible facilitators and barriers for the implementation mentioned by the respondents. One facilitator could be financial support, such as grants from health insurances and 'Dignity and Pride' (Waardigheid en Trots), an initiative of the Dutch government to increase the quality of care in healthcare facilities by for instance financial support. A second facilitator could be collaborations between organizations such as healthcare facilities and an organization that would train the assistance dogs suitable for the intervention. A third and last facilitator mentioned was dementia expert: some one with professional knowledge about dementia and could be play a role in the development of the training of the assistance dogs. A barrier could lie in private initiatives: individuals who visit healthcare facilities with their animal. Two stakeholders expressed their concern about these initiatives, because they believed it could be harmful for the patients but also for the dog, because the animal has to be able to cope with task given.

Table 5 *Domain 3 Outer Setting: External facilitators and Barriers for the Implementation*

	Category	Subcategory	Respondents (n=5)	Citations
Facilitators	Financial support	Grants	3	RP 11 ‘Health care insurance, for possible grants. But it shouldn’t depend on that’
	Collaboration	Healthcare facility	2	RP 11 ‘You could start very quickly if you have an assistance dog and a collaboration with a health care facility’
		Assistance dogs organisation	3	RP 7 ‘There should be an attendant specially for the assistance dog, when he would come to a health care facility’
	Expertise	Dementia specialist	1	RP 2 ‘if we could find someone who is specialised in Dementia, we could combine this knowledge with the animal
Barriers	Competition	Private initiatives	2	RP 2 ‘people who say they got their dog under control, but that doesn’t make him suited for these kinds of activities’

Domain 4 Individuals involved: Individuals or organizations involved in the facilitation or impediment of the implementation

Table 6 gives an overview of the individuals or organizations mentioned by respondents, that could be involved in the facilitation of the implementation. Respondents mentioned three different organizations and individuals who are part of these organizations. First mentioned was a healthcare facility. In this organization some key individuals can be found for the facilitation of the implementation: the elderly with dementia, the care givers and volunteers, the managers and the client board. Each of these individuals play an important role in the facilitation. Respondents found it most important that the residents would benefit from the presence of an assistance dog and most believed they could. But also an important asset mentioned was that care givers should not experience any extra work with the presence of an assistance dog. Next to the practical execution, the use of the assistance dog needs to be approved by managers but also the client board. Another organization mentioned was an organization that could professionally train assistance dogs suited for the patients with dementia living in healthcare facilities. Individuals from this organization that would be needed for the facilitation of the implementation were assistance dog trainers and external supervisors. Some respondents found it important that an external supervisor would guide the assistance dog during the visit. They mentioned that a supervisor would know how the dog could act but also could ensure that the care givers would not have any extra work due to the assistance dog’s presence. Third and last, respondents mentioned a different type of organisation: private initiatives, where individuals would visit a healthcare facility with their animal. Two respondents mentioned private initiatives in this domain as a possible option to reach the same goal as when specially trained dogs would be used. It would be a way to keep it easy accessible and without costs.

Table 6 *Domain 4 Individuals involved: Individuals or Organizations involved in the Facilitation or Impediment of the Implementation*

Organization	Individuals	Respondents (n=11)	Citations respondents
Healthcare facilitiy	Residents	9	RP 1 ‘The clients with dementia who can not express themselves very well and do not want any contact with a dog must not be bothered with it’
	Care givers/ Volunteers	6	RP 7 ‘As long as they do not have any extra work with it’
	Managers	3	RP 5 ‘They encourage any project with animals’ RP 8 ‘I do not think he is not very enthusiastic about it, as far as I know’
	Client board	2	RP 8 ‘They want what is best for the residents. If it has positive effects and you can support it with research, they will not be negative about it’
Assistance dogs organization	External supervisors	4	RP 11 ‘The supervisor knows how to act and knows how a dog can react in a situation’
	Assistance dog trainers	1	RP 2 ‘ You can not give therapy without knowing what you are doing. You can ruin the whole system of behavior of a person’
Other initiatives	Private initiative	2	RP 1 ‘During are guest dog project we thought ‘if the nursing homes trusts the local resident and his dog and find it save enough, we can do it without a scoling program’

Domain 5 Process by which implementation in accomplished

In table 7 the results are shown of the process by which implementation is accomplished. Respondents (n=9) mentioned different conditions for the implementation to be a success. First, respondents thought it would be best if the dog would be hired externally. Therefore the staff members wouldn’t have an extra task of taking care of the dog. Six respondents said that the type of dog was an important aspect: a dog that has a fur that doesn’t shed and is hypoallergenic, such as a Labradoodle or Poodle. These dogs would be well suited for the target group because it wouldn’t cause an allergic reaction Another condition mentioned was more research: to prove or refute the effect of the use of assistance dogs in the care of elderly with middle and late stage dementia in healthcare facilities, an effect study could provide answers. In general, respondents found it important that the elderly with middle and late stage dementia in healthcare facilities would gain something from the presence of an assistance dog.

Table 7. *Domain 5 Process by which Implementation is accomplished*

	Category	Subcategory	Respondents (n=9)	Citations Respondents
Conditions	Assistance dog	Hire a dog external	7	RP 7 'I would rather hire a dog external so that we do not have to deal with everything else that would be needed for the dog '
		Species	6	RP 11 'The dog needs to have the fur that for instance a Labradoodle has, they don't shed hairs. Because people who are allergic to dogs will not get a reaction'
		Professionally trained	3	RP 12 'The dog has to be able to cope with people who touch or grab them. An assistance dog is trained to deal with these situations'
	More research	Effect study	2	RP 2 'It will be a success if there would be an effect study. Whatever the outcome may be, but as long as it has been properly researched, it is a success'

Grades given by respondents for the implementation

Respondents were asked to give an overall grade to the idea of the implementation of an assistance dog in the care of elderly with middle and late stage dementia who live in healthcare facilities. A ten would be very positive and a zero would be very negative. Respondents gave an average of 8.5: respondents were positive about the possible implementation of assistance dogs in the care for elderly with middle or late stage dementia who live in healthcare facilities.

Discussion

This study focused on the implementation of assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities. To have a clear overview of factors needed for this implementation, the *Consolidated Framework for Implementation Research* (Damschroder et al., 2009) was used. The following research question was set and aimed to be answered. Which factors based on the CFIR model would facilitate or impede the implementation of assistance dogs in the care of elderly with middle and late stage dementia who live in health care facilities? To answer this question, thirteen relevant stakeholders were interviewed. Overall, the stakeholders were positive about the possible use of assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities.

The intervention

Stakeholders mentioned several advantages and disadvantages the implementation of assistance dogs for elderly with dementia in healthcare facilities. Advantages would be that the assistance dog could improve the Quality of Life in different ways. The dog could bring more support, provide intimacy by cuddling and give comfort to decrease feelings of loneliness. The dog could also give stimulation, which could bring back memories or could make patients do things again that didn't do anymore, for instance talking or walking. It could provide attention when the care givers aren't able to give it in that moment. But the presence of an assistance dog could also have medical advantages: it could calm people down, which could result in better eating and drinking behaviour and possibly a decrease in medication. The physical exercise like walking that patients could do with the dog could prevent incontinent problems. Disadvantages that were mentioned were hygiene, preference and the consequences it could have for patients with allergies or infections.

The advantages were quite consistent with the found literature about the effects the presence of an animal could have. Studies done by Katcher (1983), Wells (2004), McNicholas and Collis (200) all mentioned the advantages the presence of an animal could have on the psychological wellbeing of the patient. It could give feelings of safety, intimacy and reduce or even prevent feelings of isolation. Although physical advantages were mentioned by stakeholders, the actual effects it could have on the process of dementia weren't thought of. Different studies describe how physical exercise could slow down the process (Larson et al., 2006; Lauren, Verreault, Lindsay, MacPherson, & Rokewood, 2001; Heyn, 2003), which could be an even bigger advantage than what stakeholders describe. Possible explanations could be that stakeholders would already be happy with little positive changes in the wellbeing of the patients, or a lack of knowledge about the condition and the aspects that effect the process. Remarkably enough, no literature was found on the possible disadvantages the presence of an assistance dog could have.

Overall, the advantages on the Quality of Life and physical health of the patients are consistent with other studies. When an assistance dog for elderly with middle and late stage dementia would be implemented in healthcare facilities, changes are real these advantages would actually happen. These results are an important element on why the implementation of an assistance dog could be a success and would contribute in the wellbeing of the patients with middle and late stage dementia.

Inner setting

Results have shown that most stakeholders believed their colleagues would be open for the implementation of assistance dog in healthcare facilities. Although some thought that the presence of an assistance dog could be experienced as an ease for the workload, others expected on the contrary. It could be experienced as an extra task next to their already full schedule. But respondents thought their colleagues all would be positive about the assistance dog for the patients as intended. A difficulty could actually lie in the execution of the implementation due to the size of an organization. It could be hard to reach all parties involved to make the implementation a reality. Also, before it could be implemented, respondents thought it might need convincing of some involved parties like the client board. The effect of the use of an assistance dog for the patients with dementia would need to be evidence based.

While no literature was found on this subject, the results are important to take into account. Although stakeholders believed their colleagues would be positive about the implementation, the actual execution could face some problems. Therefore, it would be very important that the parties involved in the implementation would be reached and convinced. This study could provide evidence that the use of assistance dog for patients with middle and late stage dementia could provide improvements in the wellbeing of the target group. A solution to reach all parties involved could be an information meeting on the subject. This could be for different organizations at the same time but also for only one organization. To conclude, making organizations aware of the existence of the subject seemed to be essential.

Outer setting

Respondents mentioned different types of factors that could facilitate or impede the implementation. Collaborations between organizations such as healthcare facilities, an organization that would train the assistance dog and an dementia expert would be essential for the execution. But especially financial support such as grants from health insurances and 'Dignity and Pride' (Waardigheid en Trots) was mentioned as an important factor to make the implementation a reality. Because of the cutbacks in healthcare, healthcare facilities could be less likely to implement an assistance due to costs. A factor that could be taking advantage of this financial issue were private initiatives. Although the advantage would be that these initiatives would visit with their animal on voluntary basis and wouldn't cost anything, this could be harmful for the animal involved. But also the risk of patients getting bitten by this animal because it's scared is much higher.

Literature shows different ways to find solutions on the cutbacks in healthcare, such as the use of cameras to check on the patients with dementia (Schikhof, Mulder & Choenni, 2010). Although this provides a solution in a practical way to see how patients are doing, it doesn't provide in another part of Quality of Life, psychological wellbeing. As results have shown, an assistance dog could be a solution for this and therefore, it would be important to find a way to cover the costs of the implementation of an assistance dog. Financial support by grants, but also by training volunteers to be the external supervisors of the assistance dogs. By doing so, the only costs the healthcare facilities would have would be the costs to cover the dog, not the external supervisor.

Individuals involved

As previously mentioned, collaborations would be essential to execute the implementation of the assistance dogs in healthcare facilities. Respondents mentioned two different organizations and individuals who are part of these organizations. First the healthcare facilities where some key individuals can be found such as the elderly with dementia, the care givers and volunteers, the managers and the client board. Second, an organization that could professionally train the assistance dogs suited for the patients. This organization would provide an assistance dog but also an external supervisor who would guide the dog in the healthcare facilities. A group of individuals that could be an impeding factor for the execution of the implementation, were private initiatives. As mentioned before, an advantage would be that these individual would come voluntarily and would be free of charge, but it could be harmful for the wellbeing of their pet and the patients.

Remarkably enough, the Dementia Dog Project in Scotland actually collaborated with these private initiatives. They provided special training for these volunteers and their pets (Dementiadog, 2015). Another organization this project had a collaboration with is Alzheimer Scotland. None of the stakeholders mentioned the Dutch version of this organization, Alzheimer Nederland. This is a non-profit organization which is focussed on raising awareness for Alzheimer's disease and other types of dementia and better care for these patients. This organization also raises money for research on dementia and the treatment of it. A possible explanation could be that the participating stakeholders did not see a possible link with that organization. This could be because they haven't been in contact with Alzheimer Nederland themselves or they didn't know about the existence of the organization.

The use of volunteers to guide the assistance dogs in the healthcare facilities could be a good solution. Still for the wellbeing of the dogs, it would be essential that the dogs that would be used are specially selected and can cope with the situation they will be put into. Next to the collaborations between healthcare facilities and an organization that trains assistance dogs, other collaborations could also be beneficial for the implementation, such as Alzheimer Nederland.

Process by with implementation is accomplished

Stakeholders mentioned conditions for the implementation to be a success. It would be best if the dog would be professionally trained due to safety risks and the wellbeing of the dog. Stakeholders also preferred to hire a dog externally so the staff members wouldn't have an extra task of taking care of the dog. A Labradoodle or Poodle could be a suited breed for the task: these dogs have a hypoallergenic for that doesn't shed and doesn't cause allergic reactions. Next to practical factors, stakeholders found it important that more research would be done. By proving the effects an assistance dog could have for patients with middle and late stage dementia, the implementation could be made as effective as possible. Also to convince some parties of the effects, it would be necessary to make the intervention evidence based. Little was mentioned about the actual procedure to implement the assistance dog in an healthcare facility. Stakeholders mentioned the actual implementation in the healthcare facility would be a short procedure: if after a short trial patients, staff members and the client board are positive, it could be implemented in the provided care.

However, to find out the best way on which implementation is accomplished, it would be important to do a pilot study, to test the actual effects in practice.

Strengths and limitations

The study had different strengths and limitations. First, the use of the CFIR model. This theoretical framework provided a clear and structured overview of the facilitating and impeding factors for the implementation of assistance dogs in healthcare facilities. The model covered every aspect needed in the implementation and was easy to apply.

Although the model was well structured, the actual application in the study wasn't always consistently done. In the interview schedule, the questions on domain 5 should have been formulated differently to get more accurate information. This resulted in no clear information on the process by which implementation would be accomplished. Also, the same interview schedule was used for every stakeholder, but not every stakeholder had the same organizational knowledge. Family members found it hard to answer or imagine what a health care facility or staff members would think of the implementation of an assistance dog in their organization. This resulted in less answers in especially the domains 'inner setting' and the 'outer setting' of the CFIR-model. Another limitation in this study was the absence of a stakeholder that was mentioned by other stakeholders as relevant: assistance dog trainers. This stakeholder was not interviewed and could be important in the realization of the assistance dog in practice. This could have resulted in missing data. Although this could have resulted in missing data on these domains, during analysis of the given answers, it did not seem to have any consequences on the answering of the research questions.

The different types of stakeholders that were interviewed form a strength in this study. Stakeholders from four different healthcare facilities who were interviewed, which each had a different view on animal use. One facility was already doing a program where animals from a local care farm visited as an activity, one other allowed staff members to bring their own dog on occasion. The other two healthcare facilities used robot animals when needed. The stakeholders themselves also had different personal opinions about dogs. These views give a diversity in the background of the stakeholders and the possible answers and limited the bias as much as possible on this subject.

Recommendations

This study has shown overall positive results for the implementation of assistance dogs in the care of elderly with middle and late stage dementia who live in healthcare facilities. Only, these results were based on the opinions of relevant stakeholders and had not been tested in practice. Therefore it would be recommended to test the implementation of an assistance dog in practice by doing a pilot. Also, assistance dog trainers were not interviewed in this study and should be implemented in further research. This also counts for the patients themselves: the current study was too abstract to get clear answers of the patients. During a pilot it would be important to involve the patients and get their opinion on the assistance dog when it is actually present. The stakeholders from different healthcare facilities were asked at the end of the interview if they might be interested in participating in a follow up study, such as a pilot. All four healthcare facilities were open for this and could be approached. Because of the

overall positive results of this study an pilot is recommended, to test the implementation in practice.

General conclusion

This study focused on the facilitating and impeding factors in the implementation of assistance dogs in the care of elderly with middle or late stage dementia who live in healthcare facilities. Thirteen relevant stakeholders were interviewed and results have shown they were generally positive about the possible implementation. Therefore it would be recommended to test the actual implementation of an assistance dog for elderly with middle and late stage dementia who live in healthcare facilities in practice. By doing a pilot in different types of healthcare facilities and involve other stakeholders such as the patients themselves and trainers of assistance dogs, more essential information will be collected. This would give a clear view on whether or how the actual implementation would be a success and could improve the psychological wellbeing of the elderly with middle and late stage dementia who live in healthcare facilities.

References

- Alzheimer-Nederland (2014). *Prevalence and Incidence of Dementia*. Retrieved on November 10th 2016 from <https://www.alzheimer-nederland.nl/nieuws/neemt-het-aantal-mensen-met-dementie-toe-af>
- Boer, de. B., Hamers, J. P. H., Zwakhalen, S. M. G., Tan, F. E. S., Beerens, H. C., Verbeek, H. (2017). Green care farms as innovative nursing homes, promoting activities and social interaction for people with dementia. *JAMDA* 18 (2017), 40-46.
- Burns, A., Byrne, J., Ballard, C., Holms, C. (2002). Sensory stimulation in dementia: An effective option for managing behavioural problems. *BMJ*, Vol. 325, 1312-1313.
- Centraal Bureau voor de Statistiek (2015) *Mortality Dementia*. Retrieved on November 29th from <https://www.cbs.nl/nl-nl/nieuws/2015/38/sterfte-aan-dementie-gestegen-tot-12-5-duizend>
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science* 2009, 4:50. doi:10.1186/1748-5908-4-50.
- Dementiadog (2015). *Dementia assistance dogs*. Retrieved on December 3rd 2016 from <http://www.dementiadog.org/dementia-dog-%E2%94%82-our-dogs.html>.
- Folstein, M.F., Folstein, S.E., McHugh, P. R. (1975). Mini-mental state: a practical method for grading the cognitive state of patients for the clinician. *Journal of psychiatric research*, 12 (3), 189-198.
- Ford, A. H., Flicker, L., Singh, U., Hirani, V., Almeida, O. P. (2013) Homocysteine, depression and cognitive function in older adults. *Journal of Affective Disorders* 151(2013), 646-651.
- Friedmann, E. (1990). The value of pets for health and recovery. *Proceedings of the Waltham Symposium*, 20, 9–17.
- Hart, L. A., Zasloff, R. L., Benfatto A. M. (1996). The socializing role of hearing dogs. *Applied Animal Behavior Science* 47, 7-15.
- Heyn, P. (2003). The effect of a multisensory exercise program on engagement, behavior, and selected physiological indexes in persons with dementia. *American Journal of Alzheimer's Disease and Other Dementias*, Vol 18, no.4, 248-251.

- Hughes, C.P., Berg, L., Danziger, W. L., Coben, L. A., Martin, R. L. (1982). A new clinical scale for the staging of dementia. *The British Journal of Psychiatry* 1982, 140 (6) 566-572. doi: 10.1192/bjp. 140.6.566.
- Hulphond Nederland (2016). *Types of assistance dogs*. Retrieved on December 3rd 2016 from <https://hulphond.nl/hulphonden/> .
- International Psychogeriatric Association (2002). Behavioral and Psychological Symptoms of Dementia: Educational Pack.
- Katcher, A. H. (1983). Health and the living environment. In A. H. Katcher & A. M. Beck (Eds.), *New perspectives on our lives with companion animals*. Philadelphia: University of Pennsylvania Press.
- KNGF Geleidehonden (2014). *Dementia assistance dogs*. Retrieved on December 3rd 2016 from <https://www.geleidehond.nl/nieuws/2014/dementiehonden-ingezet-bij-therapie-voor-jonge-mensen-met-dementie/>.
- Larson, E.B., Wang, L., Bowen, J.D., McCormick, W.C., Teri, L., Crane, P., Kukull, W. (2006). Exercise is associated with reduced risk for incident dementia among persons 65 years of age and older. *Annals of Internal Medicine* 2006,144,73-8.
- Lauren, D., Verreault, R., Lindsay, J., MacPherson, K., Rockwood, K. (2001). Physical activity and risk of cognitive impairment and dementia in elderly persons. *Archives of Neurology* 2001, 58, 498-504.
- Logsdon, R.G., Gibbons, L.E., McCurry, S.M., Teri, L. (1999). Quality of Life in Alzheimer's Disease: a patient and caregiver reports. *Journal of Mental Health and Aging, Vol.5, No. 1., 1999*, 21-32.
- May, C., Finch, T. (2009). Implementing, embedding, and integration practices: an outline of Normalization Process Theory. *Sociology, Vol 43(3): 535-554*.
- McNicholas, J., & Collis, G. M. (2000). Dogs as a catalyst for social interactions: Robustness of the effect. *British Journal of Psychology, 91*, 61–70.
- Mordoch, E., Osterreicher, A., Gus, L., Roger, K., Thompson, G. (2013). Use of social commitment robots in the care of elderly people with dementia: A literature review. *Maturitas* 74 (2013) 14–20.
- Nationaal Ouderenfonds (2016). *Facts and numbers about Dementia*. Retrieved on November 29th 2016 from <https://www.ouderenfonds.nl/onze-organisatie/feiten-en-cijfers/>
- Nationaal Ouderenfonds (2015). *EhcoBUTLER*. Retrieved on December 2nd 2016 from <https://www.ouderenfonds.nl/actueel/ouderenfonds-ontwikkelt-ehcobutler-voor-ouderen-met-lichte-dementie-2/>

- Nivel (2017). Prevalence and incidence numbers code P70 Senile dementia/Alzheimer's disease. Retrieved on 3-2-2017 from <http://www.nivel.nl/nl/NZR/incidenties-en-prevalenties> .
- Popp, J., Arlt, S. (2011). Pharmacological treatment of dementia and milde cognitive impairment due to Alzheimer's disease. *Current opinion in psychiatry*, 24(6), 556-561.
- RIVM (2015). *The additional value of care farms in the care of people with dementia*. Retrieved on December 2nd 2016 from http://www.rivm.nl/Documenten_en_publicaties/Algemeen_Actueel/Nieuwsberichten/2015/Zorgboerderij_waardevolle_dagbesteding_voor_mensen_met_dementie#inhoud.
- Rintala, D. H., Matamoros, R., Seitz, L. L. (2008). Effects of assistance dogs on persons with mobility or hearing impairments: a pilot study. *Journal Rehabilitation Research & Development*, Vol 45, No 4, 489-504.
- Sachs-Ericsson, N., Hansen, N. K., Fitzgerald, S. (2002). Benefits of assistance dogs: a review. *Rehabilitation Psychology* 2002, Vol. 47, No.3, 251-277.
- Schikhof, Y., Mulder, I., Choenni, S. (2010) Who will watch (over) me? Humane monitoring in dementia care. *Int. J. Human-Computer Studies* 68(2010)410–422.
- Spector, A., Thorgrimsen, L., Woods, B., Royan, L., Davies, S., Butterworth, M., Orrel, M. (2003). Efficacy of an evidence-based cognitive stimulation therapy programme for people with dementia. *British Journal of Psychiatry* (2003), 183, 248-254.
- The United States Army Medical Department (2012). Canine- assisted therapy in military medicine. *The United States Army Medical Department Journal*, April-June 2012.
- Wells, D. L. (2004). The facilitation of social interactions by domestic dogs. *Anthrozoös*, 17, 340–352.
- World Health Organisation (2016). *Factsheet about Dementia*. Retrieved on November 28th 2016 from <http://www.who.int/mediacentre/factsheets/fs362/en/>
- Wu, Y., Fratiglioni, L., Matthews, F. E., Lobo, A., Breteler, M. B. B., Skoog, I., Brayne, C. (2015). Dementia in Western Europe: epidemiological evidence and implications for policy making. *Lancet Neurol* 2016, 15, 116-124.

Appendix 1: Interview schedule (Dutch version)

Interview schema

Interview:

Interviewer stelt zichzelf voor, vertelt over haar opleiding en hoe zij op het onderzoek is gekomen. Vervolgens geeft de interviewer algemene informatie over het onderzoek: het mogelijk inzetten van hulphonden bij dementerenden in zorginstellingen en dat de interviewer benieuwd is naar de visie van de participant op dit onderwerp. De interviewer stelt open vragen, waar de participant vrij zijn of haar mening over mag geven. De interviewer vraagt waar nodig door, om zo de participant verder te laten nadenken over het onderwerp. De interviewer is objectief en zal geen oordeel laten blijken of de participant sturen in zijn of haar mening. Het interview zal ongeveer 20-30 minuten duren.

‘Mijn naam is Ellen van Zon, ik ben 27 en ik studeer Health Psychology and Technology aan de Universiteit van Twente. Deze master richt zich onder andere op het verbeteren van de kwaliteit van leven van mensen en dit kan op allerlei manieren. Voor mijn afstuderen heb ik gekozen om me te focussen op dieren in de zorg. Hierdoor ben ik op het uiteindelijke onderzoek gekomen: het mogelijk inzetten van hulphonden bij dementerenden in zorginstellingen. Ik ben voor dit onderzoek benieuwd naar uw mening hierover. Het interview zal de volgende onderwerpen bevatten. We beginnen met een korte introductie, wie u bent en wat u doet. Vervolgens zal ik u een aantal vragen stellen over hulphonden in het algemeen en gaan we wat specifieker in op het gebruik van hulphonden in de zorg en of dit volgens u wel of niet geschikt zou kunnen zijn voor dementerenden in verzorgingstehuizen. Er zijn geen goede of foute antwoorden mogelijk, alles wat u zegt is goed en belangrijk.’

Algemeen:

Man/vrouw:

Leeftijd:

Opleiding:

Functie:

Hoeveel jaar ervaring/in functie:

Background variables:

1. Wat weet u over hulphonden?
2. Heeft u zelf ervaring met hulphonden?
3. Wat vindt u over het algemeen over het gebruik van hulphonden?

Intervention

Ik ga u nu een paar vragen stellen die zich richten op de interventie: het inzetten van hulphonden bij dementerenden in verzorgingstehuizen. Zoals eerder genoemd, er zijn geen goede of foute antwoorden mogelijk.

4. Wat zou een hulphond voor een dementie patiënt kunnen betekenen?
5. Wat zou de mogelijke meerwaarde van een hulphond voor iemand met dementie in een verzorgingstehuis kunnen zijn?
6. Wat zouden volgens u mogelijke nadelen kunnen zijn aan het inzetten van hulphonden bij dementerenden?

Innersetting

De volgende vragen gaan over de organisatie waar u voor werkt en wat de mensen binnen deze organisatie denken over de mogelijke inzet van hulphonden bij dementerenden.

7. Hoe zouden uw directe collega's tegenover het mogelijk inzetten van hulphonden bij dementerenden staan?

8. Hoe zou het management team tegenover het mogelijk inzetten van hulphonden bij de organisatie staan?
9. Zou het inzetten van hulphonden iets zijn voor de organisatie waarbinnen u werkt?
10. Wat zou de cliëntenraad van het inzetten van hulphonden vinden?

Outersetting

De vorige vragen gingen over hoe de mensen binnen uw organisatie over het mogelijk inzetten van hulphonden bij dementerenden denken. Misschien zijn er ook factoren of partijen buiten de organisatie die invloed hebben op het wel of niet inzetten van hulphonden bij dementerenden, bijvoorbeeld zorgverzekeraars, concurrerende partijen, de gemeente.

11. Kunt u mogelijke factoren buiten uw organisatie bedenken, die van invloed zijn op het inzetten van hulphonden?
12. Welke organisaties zouden bij het mogelijk maken van deze hulphonden een rol kunnen spelen?
13. Zijn er volgens u ook mogelijke concurrerende organisaties?

Individuals involved

Mogelijk zijn er ook specifieke personen die van invloed zijn op het wel of niet inzetten van hulphonden bij dementerenden.

14. Welke mensen zouden er volgens u voor nodig zijn om een hulphond voor dementerenden mogelijk te maken?
15. Zijn er volgens u mensen die hinder zouden kunnen ondervinden aan de inzet van hulphonden?

Process by which implementation is accomplished

Bij iedere innovatie is het belangrijk hoe dit geïntroduceerd wordt naar de partijen die er mee te maken hebben, of anders gezegd, hoe de vernieuwing het beste kan worden geïmplementeerd.

16. Hoe zou het traject om hulphonden binnen uw organisatie te kunnen inzetten er uit moeten zien?
17. Wanneer zou volgens u de inzet van hulphonden een succes kunnen zijn, aan welke (rand) voorwaarden zou er moeten worden voldaan?
18. Kunt u factoren bedenken waarbij het inzetten van een hulphond in een verzorgingstehuis niet passend zou zijn?

Afsluiting

We zijn aan het einde gekomen van het interview.

19. Wat zou u nog willen vertellen, wat belangrijk zou kunnen zijn voor dit onderzoek?

De interviewer bedankt de participant en geeft contactgegevens, zodat de participant de mogelijkheid heeft om later nog informatie te sturen wat hij of zij vergeten is om te vertellen.

Appendix 2: Dutch version of the results structured according to the CFIR-model.

Tabel 3. *Domein 1 the Intervention: verwachte Voordelen en Nadelen van de Implementatie*

	Categorie	Subcategorie	Respondenten (n=13)	Citaten respondenten
Voordelen	Steun	Meer intimiteit	7	RP 11 'Mensen met dementie hebben heel vaak behoefte aan intimiteit, aan knuffelen.'
		Troost bij eenzaamheid	5	RP 6 'Ook voor de kinderen een gevoel van 'hij is niet alleen', er is wel iemand, hij zegt dan wel niks, maar het is wel vriendschap.'
		Onvoorwaardelijk	3	RP 9 'Ik denk dat vanuit het sociale en emotionele aspect een hond echt kan bijdragen, het is fijn dat er op ze gereageerd wordt, zonder oordeel.'
		Empathie van de hulphond	3	RP 8 'Honden spelen ook best wel in op emoties, dat ze bijvoorbeeld bij je gaan liggen als je even geen zin hebt om iets te doen.'
	Stimulatie	Bevordering van Alertheid	6	RP 5 'Ik heb wel gemerkt dat er iets naar boven komt bij mensen en dat ze weer dingen kunnen, blijken te kunnen, die ze normaal niet meer deden'.
		Roept herinneringen op	5	RP 10 'Ons herkende ze niet meer, maar een hond wel. Ze komt zelf van een boerderij en is gewend aan dieren, misschien dat ze daar toch op een of andere manier wat in ziet'.
		Contact maken	4	RP 3 'Een mevrouw in een rolstoel die boog echt helemaal naar voren als dat hondje kwam, je merkt ook dat die mensen dan contact hadden met die hond, niet dat ze er zomaar aan voorbij liepen'
	Kwaliteit van leven	Verbetering in gevoel van welzijn	3	RP 7 'Het gaat er om dat iemand uiteindelijk het gevoel heeft of krijgt dat het leven zoals je het nu voert op dat moment de moeite waard is. Het moment dat een dier of mens daar een bijdrage aan kan leveren is dat eigenlijk fantastisch'
	Medische verbetering	Vermindering van gezondheidsproblemen	3	RP 11 'Het kan rust en ontspanning bieden en als ze zich daardoor beter voelen kan dit leiden tot beter eetgedrag, mogelijke vermindering in medicatie. En als mensen meer bewegen dan voorkom je incontinentieproblemen'.
	Werkdruk	Verlichting	2	RP 9 'RP 9 'Door de enorme werkdruk hebben verplegers lang niet altijd de mogelijkheid om de bewoners aandacht te geven en ik merk dat de bewoners dat missen. De hond kan deze aandacht dan bieden en voor een stukje verlichting van onze werkdruk zorgen'
Nadelen		Hygiëne	7	RP 7 'Het ruiken, het verharren, het hygienische punt'.
		Medisch	3	RP 11 'Mensen met infecties aan de luchtwegen of astma of noem maar op, ja dan is het wel een nadeel'.
		Voorkeur	4	RP 2 'Mensen kunnen het misschien niet prettig vinden, niet fijn of onverwacht. Niet iedereen houdt van honden'

Verzorging	2	RP 9 (wanneer hond intern zit) ‘Stel, de hond is ziek, wie gaat er mee naar de dierenarts?’
------------	---	---

Tabel 4. *Domein 2: Meningen van Collega's en andere Partijen ten op zichte van de Implementatie*

	Categorie	Subcategorie	Respondenten (n=9)	Citaten respondenten
Positief	Positieve houding ten opzichte van de implementatie	Staan open voor de interventie	6	RP 11 'Heel positief, iedereen tegen wie ik het gezegd heb, die zijn allemaal enthousiast(...) je hebt ook eens een keer wat anders in huis dan de standaard dingen dus, het leeft meer'
		Arbeidsvreugde/verlichting werkdruk	3	RP 5 'Maar ik denk dat er ook heel veel collega's kunnen zijn die zullen zeggen 'ja maar wacht eens even, die hond zorgt ook voor een stukje verlichting van onze werkdruk'
Negatief	Negatief	Werkdruk	4	RP 1 '(...)gewoon de werkdruk, dat ze denken van ja hier hebben we niet de tijd voor om daar ook nog voor te zorgen'
		Barrières	2	Ja volgens mij zijn ze daar niet zo heel enthousiast over. Wat ik zoal gepeild had. In principe staat het wel beschreven dat het mag, dat je wel huisdieren mag, maar praktisch gezien denk ik dat dat dan weer.
Voor-waarde	Evidence based	Bewijzen door middel van onderzoek	2	RP 2 'Kijk en als je het vult met onderzoek, dan kun je misschien ook partijen om je heen er sneller van overtuigen'

Tabel 5. *Domein 3 Outer Setting: Externe Facilitatoren en Barrières*

	Categorie	Subcategorie	Respondenten (n=5)	Citaten respondenten
Facilitatoren	Financiering	Subsidies	3	RP 11 ‘Zorgverzekeraars, dat je daar een stuk vergoeding krijgt. Maar in principe moet het daar niet van afhangen’
	Samenwerkingen	Zorginstelling	2	RP 11 ‘In principe kun je al heel snel starten als je het hebt over de hulphond en als je het hebt over een zorginstelling, die kunnen samen gaan werken
		Hulphond organisatie	2	RP 7 ‘Als er dan een hulphond zou komen, dat er ook een begeleider mee komt, die zich daar dan mee bezig houdt’
	Expertise	Dementie specialist	1	RP 2 ‘misschien zou je daar ook weer een specialist voor moeten zoeken, die daar bijvoorbeeld ook in geschoold is. Dus ten aanzien, ook een stuk dementie kennis heeft, of Alzheimer en daar zeg maar de combinatie met dieren in kan maken. Ja dat zou natuurlijk het meest ideale zijn. Ja daar zou je een specialist voor kunnen aantrekken’
Barrières	Concurrentie	Particuliere initiatieven	1	RP 2 ‘mensen die veel met honden hebben (...) en al gauw op pad gaan van ‘nou ik heb mijn hond heel goed onder appel staan’. Maar dat maakt ze nog niet geschikt om dit soort activiteiten te doen’

Tabel 6. *Domein 4 Individuals Involved: Individuen of Organisaties die de Implementatie kunnen belemmeren of faciliteren*

Categorie	Subcategorie	Respondenten (n=11)	Citaten respondenten
Zorginstelling	Bewoners	9	RP 1 'De mensen met dementie die zich niet goed kunnen uiten en geen zin hebben in contact met een hond, dat die daar niet mee overvallen'
	Verzorgenden/ vrijwilligers	6	RP 7 'Zolang ze er maar geen extra zorg mee hebben'
	Managers	3	RP 5 'Ander project waar ze ook met dieren bezig zijn, dat juichen ze alleen maar toe' RP 8 'Volgens mij zijn ze daar niet zo heel enthousiast over. Wat ik zoal gepeild had. In principe staat het beschreven dat het mag, maar praktisch gezien wordt het als lastig gezien'
	Cliëntenraad	2	RP 8 'De kijken vanuit de bewoners, als het positieve effecten zou hebben en het met onderzoeken onderbouwd is denk ik dat ze daar niet negatief tegenover staan'
Hulphonden organisatie	Externe begeleiders	4	RP 11 'Deze begeleiding weet hoe te handelen en hoe een hond reageert in een situatie'
	Hondentrainers	1	RP 2 'Therapie bedrijven kun je niet zomaar, je kunt niet zomaar aan de slag met gedragsperikelen, dat is een heel systeem dat je overhoop helpt'
Andere initiatieven	Particuliere initiatieven	2	RP 1 'Tijdens een gasthonden project hebben wij gezegd 'nou als jullie het zelf zien zitten dat er een wijkbewoner, als het allemaal veilig genoeg is, dat we dan ook zonder scholingsprogramma wel aandurven om het dan gewoon te doen'

Tabel 7. *Domein 5: Proces by wich Implementation in accomplished*

	Category	Subcategory	Respondents (n=9)	Citations Respondents
Condities	Hulphond	Extern inhuren	7	RP 7 'Liever extern inhuren en opnemen in de activiteitscyclus zodat je niet belast wordt met allerlei zaken die erbij horen'
		Soort hond	6	RP 11 'De hond moet wel een vacht hebben zoals een labradoodle of koningspoedel die niet verhaart, want daar krijgen mensen geen allergische reactie op'
		Professioneel opgeleide honden	3	RP 12 'De hond moet er wel tegen kunnen dat mensen zomaar aan hem kunnen gaan plukken. Een hulphond wordt daar in opgeleid en weet daar mee om te gaan'
	Meer onderzoek	Effect studie	2	RP 2 'Het zou al een succes zijn als er een effect studie gedaan zou worden. Wat de uitkomst ook mag zijn, zolang het maar grondig onderzocht is, is het een succes'