

Effects of dog-assisted intervention on behavioural and psychological symptoms of dementia

Lena Nordgren and Gabriella Engström present the results from a study that used dogs as an alternative or a complement to pharmacological treatments

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Date of submission

August 19 2013

Date of acceptance

January 14 2014

Peer review

This article has been subject to double-blind review and has been checked using antiplagiarism software

Author guidelines

nop.rcnpublishing.com

Abstract

Aim To evaluate the effect of a dog-assisted intervention on the behavioural and psychological symptoms of residents with dementia during a six-month period.

Method The study was conducted in eight nursing homes in Sweden. A total of 33 residents with dementia, 20 in the intervention group and 13 in the control group, were recruited. The Cohen-Mansfield Agitation Inventory (CMAI) and the Multi-Dimensional Dementia Assessment Scale (MDDAS) were used to assess the effects of a dog-assisted intervention on participants' behavioural and psychological symptoms. The intervention comprised ten sessions, lasting between 45 and 60 minutes, once or twice a week. Descriptive statistics were used to analyse background data, comparisons between groups at baseline were performed using the Mann-Whitney U test, and the Wilcoxon rank sum test was used to test differences in groups over time.

Results In the intervention group changes from baseline to follow up immediately after the intervention were not significant, possibly because of the small sample size. Some positive tendencies were observed:

the CMAI mean score for physical non-aggressive behaviours decreased from 18.5 at baseline to 15.3 at follow up immediately after the intervention; lower scores indicate fewer symptoms. Mean and median MDDAS scores for behavioural symptoms decreased from 15.3 and 13.5 respectively at baseline to 13.1 and 12.0 respectively at follow up immediately after the intervention; lower scores indicate fewer symptoms. The CMAI mean score for verbal agitation increased significantly ($P=0.035$) from 17.2 at baseline to 20.6 at follow up six months after the intervention.

Conclusion Dog-assisted intervention may provide an alternative or a complement to pharmacological treatments to reduce behavioural symptoms in people with dementia, but its value and place in care require further evaluation.

Keywords

Animal-assisted intervention, behavioural and psychological symptoms, dementia, dog-assisted intervention, long-term care, non-pharmacological methods

APPROXIMATELY 36 million people worldwide have dementia, and this number is expected to double every 20 years (World Health Organization 2012). By 2030, the number of people with dementia will have risen to 66 million, and by 2050 it will be as high as 115 million (Thies and Bleiler 2011). Dementia often manifests as behavioural and psychological symptoms (BPSD), such as verbal and physical aggression (Finkel *et al* 1996, Petrovic *et al* 2007, Liperoti *et al* 2008). Up to 80% of people with dementia exhibit agitation or aggressive

behaviour during the course of their illness (Cipriani *et al* 2011). These symptoms are usually treated with drugs such as antidepressants, mood stabilisers, anxiolytics, hypnotics, antipsychotics or cholinesterase inhibitors (Enmarker *et al* 2011). However, these medications often have limited effects on agitation and aggression, harmful side effects and even increase mortality (Ballard *et al* 2009). Because of these risks, there is growing interest in developing non-pharmacological interventions for people with dementia

(Herrmann and Gauthier 2008, Ballard *et al* 2009, Cohen-Mansfield *et al* 2009, Kverno *et al* 2009, Vasse *et al* 2012).

In dementia care, non-pharmacological interventions are often used as alternatives or complements to medication. According to the clinical guideline for dementia (National Collaborating Centre for Mental Health (NCCMH) 2007), non-pharmacological interventions should be considered for people with all types and severities of dementia with comorbid agitation.

An effective non-pharmacological intervention can be as simple as redirecting and refocusing people with dementia, for example, when a caregiver uses distraction to redirect an agitated patient's attention to another activity, increasing their social interaction or initiating enjoyable activities, by, for example, ensuring that tasks are simple enough for the patient to complete. In addition, tasks can be broken down into smaller steps (Sadowsky and Galvin 2012). Animal-assisted intervention (AAI) is one promising example of non-pharmacological intervention (Richeson 2003, NCCMH 2007, Hulme *et al* 2010, Nordgren and Engström 2012), which is used in several countries worldwide (Palley *et al* 2010).

There are several definitions of AAI (Williams and Jenkins 2008), which reflect a diversity of approaches. Dogs are the most commonly used animal (Williams and Jenkins 2008, Palley *et al* 2010). Dog-assisted activity (DAA) and dog-assisted intervention (DAI) are well suited to residents with dementia in nursing homes (Marx *et al* 2010). DAA can be promoted as a group activity for all residents, whereas DAI is an individually goal-oriented structured intervention involving a resident who needs to maintain a specific ability or function of daily living, for instance, brushing his or her hair (Richeson 2003).

DAI is characterised by an interaction between a resident and a trained animal. It is important that the animal is handled by an individual who is trained in this form of therapy. To qualify as DAI, the resident must have a clearly defined goal, such as training to achieve a specific ability (Fine 2002, Filan and Llewellyn-Jones 2006). Training is always individually tailored to the resident and various abilities can be taught, such as memory, communication and language, and the ability to

solve problems. When DAI is used in dementia care, the human-animal bond is used to reduce symptoms and increase social engagement and communication.

At present there are no national standards or recognised, validated or accredited professional qualifications for animal-assisted therapists or practitioners in the UK (Society for Companion Animal Studies 2013). Sweden is the only country in the world with a national standard for therapy dogs in home care for older people, dementia care and rehabilitation for adults after acquired brain injury (Ingeborg Höök, founder of the Swedish Therapy Dog School, 2014, personal communication). The standard was developed by the Swedish Standards Institute and the Swedish Therapy Dog School. As far as the authors are aware, Sweden is also the only country with accredited therapy dogs. The therapy dog teams in Sweden are paid, permanent staff, not unpaid volunteers.

Bernabei *et al* (2013) found promising results in seven of ten studies investigating the effects of AAI on BPSD. DAI can decrease agitated behaviour and increase social interaction in people with dementia (Richeson 2003, Filan and Llewellyn-Jones 2006, Beetz *et al* 2012).

In addition, the mere presence of a dog in a nursing home can reduce aggression and agitation in people with dementia (Filan and Llewellyn-Jones 2006). DAA can reduce shouting and screaming and can reduce heart rate (Williams and Jenkins 2008). There are also indications that DAI can improve quality of life (Sellers 2006, Nordgren and Engström 2014). It is a challenge to find non-pharmacological interventions that can be used for the management of BPSD since such interventions need to be easy to implement, effective, sustainable over time and feasible.

The authors (LN, GE) previously published a case study to illustrate the value of AAI in dementia (Nordgren and Engström 2012). At baseline Mrs Johnson was an 84-year-old widow, diagnosed with vascular dementia, who was known to enjoy animals. Mrs Johnson was trained with AAI once a week for eight weeks only. Every AAI session included outdoor walking and grooming the dog. To evaluate the effects of AAI, the Mini-Mental State Examination (MMSE), Cohen-Mansfield Agitation Inventory (CMAI), Multi-Dimensional Dementia Assessment Scale (MDDAS), activities of daily living (ADL) taxonomy and the Quality of Life in Late-stage Dementia scale were used.

Data were collected three times: at baseline one week before AAI; when AAI was completed after eight weeks; and three months later. However, because Mrs Johnson was ill at six-month follow

Sweden is the only country in the world with a national standard for therapy dogs in home care for older people and dementia care

up, it was not possible to make correct assessments about her at that time. Mrs Johnson's cognitive function and ADL improved. At baseline, she had been restless, repeated sentences and questions several times a day, was unable to co-operate with staff and needed assistance when walking indoors and outdoors.

At the three-month follow up no restlessness was observed, she had stopped repeating questions, she co-operated every day with the nursing home staff, and she was able to move around without help.

Aim

The aim of this study was to evaluate the effect of a DAI on behavioural and psychological symptoms of residents with dementia during a six-month period.

Method

Data were collected from eight nursing homes in the Eskilstuna municipality. At the time of the study, AAI was already in use in four of these nursing homes. The breeds of dog used were: one boxer; one golden retriever; and two flat-coated retrievers. All dogs and their handlers were trained and certified for their assignment through the Swedish Therapy Dog School in accordance with the requirements of the Swedish Standards Institute (2013). The founder of the school, Ingeborg Höök, has published two books in English on the subject (www.vardhundskolan.se/litteratur).

There was a risk that other approaches to person-centred care could affect the results of the study. To control for this, a control group was included in the study. Four control nursing homes were chosen based on their similarities with the four nursing homes that were using AAI in terms of number of residents, number of employees and the culture of each home. Except for AAI, all eight nursing homes in the study held similar activities for residents, such as validation therapy, massage, singing and reminiscence.

During the study, residents in the control nursing homes had no contact with any intervention dogs, although they might have had contact with other pets belonging to visitors to the homes. The inclusion period lasted from March to November 2011. During this period participants were consecutively included. Hence, observations of the first residents started in March 2011 and observations of the last residents included in the study were completed in August 2012. A quasi-experimental, pre-test/post-test research design with repeated measures was used.

In all eight nursing homes, a consecutive purposeful sampling method was used to identify

Box 1 Indications for dog-assisted intervention

- Increased anxiety.
- Lack of participation in activities.
- Communication problems leading to loss of or reduced ability to engage in social interaction.
- Reduced physical abilities or unwillingness to train.
- Low mood.
- Behavioural and/or psychological symptoms.

potential participants. Criteria for participation, in either the DAI group or the control group, were a diagnosis of any type of dementia and being a resident at the nursing home for at least four weeks before the start of the study. Additional criteria for participation in the DAI group were: fulfilling one or more indications for DAI (Box 1), not being allergic to dogs, not having expressed anxiety towards dogs earlier in life or becoming aggressive or getting upset when meeting a dog.

Nursing staff identified 20 residents who fulfilled the inclusion criteria for the intervention group and 13 residents who fulfilled the inclusion criteria for the control group.

Residents' needs for DAI were discussed at an interprofessional meeting between staff nurses, registered nurses and branch managers of the participating nursing homes. An occupational therapist, who had been trained at the dog therapy school, was consulted to prescribe a protocol for the intervention in accordance with the indications for DAI (Box 1).

A good candidate for DAI could be a resident who had started to wander or seemed to be upset and angry with staff or fellow residents.

Intervention protocols were individually tailored based on residents' needs and nursing staff's and occupational therapist's personal knowledge of residents. Intervention protocols included activities such as walking or playing with the dog, petting the dog, feeding it treats, talking to it, brushing it, reminiscing about previous pets, or talking to the dog handler.

Each protocol included ten DAI sessions. The total time for the intervention (session one to session ten) varied between participants because each protocol was individually tailored based on each participant's present state and condition. After referral by physicians, occupational therapists or physiotherapists, the therapy dog teams work with patients. This is called 'dog on prescription'. Each protocol prescribed the intended duration of each session (45-60 minutes); frequency (once or twice a week); and ability to be trained (cognitive, physical or psychosocial).

The dog handler brought the dog to the participant's apartment and began the session by introducing the dog to the resident

Dog-assisted intervention is a prescribed, goal-directed intervention that aims to 'train' the person in one or more specific abilities. For example, memory, communication and language, ability to solve problems, increased wellbeing and self-esteem, social commitment, focus and concentration, balance and muscle strength, fine motor skills, grip ability and accuracy, and movement.

The dog handler brought the dog to the participant's apartment and began the session in accordance with the protocol by introducing the dog to the resident. The dog handler encouraged communication and affirmed the participant's emotions and feelings. The dog handler controlled the dog at all times.

All ten sessions were evaluated after each one in terms of individual tailored goals, and were documented in residents' care plans by the occupational therapist and the dog handler. An example of one goal was to make participants feel appreciated and needed to reduce their behavioural or psychological symptoms.

Background data for all participants were collected through chart review. The level of each participant's cognitive impairment was determined by the MMSE (Folstein *et al* 1975) before the start of data collection. The MMSE assessments were conducted by a registered nurse and scored according to the instructions in the manual.

Assessments of BPSD in the DAI group were performed before the DAI began (baseline); immediately (one to seven days) after completion of each DAI session; and three and six months after completion of the DAI (follow up). Assessments of BPSD in the control group were performed at study inclusion (baseline) and three and six months after inclusion (follow up). Assessments of each participant were always made by the same staff nurse. Two instruments were used for assessment of BPSD: the CMAI and the MDDAS.

The CMAI is a caregiver rating questionnaire that assesses 29 agitated behaviours. The behaviours are divided into three groups: physical aggressive behaviours (score range 11-77); physical non-aggressive behaviours (score range 10-70); and verbal agitation (score range 8-56).

The questionnaire was originally developed for research purposes in nursing homes (Cohen-Mansfield *et al* 1989) and is also used to

assess the effect of pharmacological or non-pharmacological interventions on agitated behaviours. Each item is rated on a seven-point frequency scale ranging from 'never' (score 1) to 'several times an hour' (score 7); the lowest score, therefore, indicates no agitation. The CMAI has been validated on people with dementia with a Cronbach's α coefficient of >0.70 (Finkel *et al* 1992).

The MDDAS has been used in several studies of older people and people with dementia (Sandman *et al* 1988, Lövheim 2008, Pellfolk *et al* 2010, Sjögren *et al* 2013). The MDDAS is designed to be answered by caregivers based on observations of the participant, and is rated on a three-point scale (3=daily, 1=some times a week, and 0=never). The scale includes subscales concerning behavioural symptoms (range from 0 to 75) and psychological symptoms (range from 0 to 42); higher scores indicate more symptoms. The MDDAS has shown satisfactory inter-rater and intra-rater reliability (Sandman *et al* 1988).

All data were entered into the Statistical Package for Social Sciences (Pallant 2013). Descriptive statistics were used to analyse background data. Comparisons between the control and intervention groups at baseline were made using the Mann-Whitney U test. To test differences in groups over time, the Wilcoxon rank sum test was used. All tests were two-tailed and $P<0.05$ was considered significant.

Ethical considerations The study was approved by the regional board of research ethics in Uppsala, Sweden. The ethical considerations were in line with the Mental Capacity Act 2005 in England and Wales (Department for Constitutional Affairs 2007) and the Adults with Incapacity (Scotland) Act 2000. Because the study participants had dementia, personal consultees were identified, for example, a relative, who had good knowledge of the participant's thoughts, feelings and wishes (Murray 2013).

The consultees were informed verbally and in writing about the study. They were asked to take participants' views into account when considering whether to participate in the study and to involve participants in the decision as much as possible.

The information given also included the aim of the study and explained that participation was voluntary and that participants could withdraw from the study at any time without experiencing any loss of care. In addition, it was assumed that participation in the study would be beneficial to participants and provide knowledge about treatment

and care of people with dementia. During the DAI, the dog handler carefully observed participants for any signs that indicated that they objected to participation.

Results

A total of 33 residents from eight nursing homes participated in the study. Twenty residents (eight men, 12 women) were included in the DAI group. The median duration of the intervention was 12 weeks (range 7-23 weeks).

During the study period seven participants in the intervention group died and two moved to other nursing homes. In the control group, 13 residents (three men, ten women) were included at baseline. In the control group, two participants died and three moved out of the nursing home during the study period. The mean age was 81 years (range 63-91) in the DAI group and 83 years (range 71-94) in the control group ($P=0.624$). Alzheimer's disease was the most frequent diagnosis (DAI group 10 (50%); control group 7 (54%); $P=0.758$) in both groups.

In the DAI group, 17 (85%) of the participants were assessed with moderately severe (MMSE 10-14) to severe dementia (MMSE<10), while the corresponding figures in the control group were 6 (46%). There was no significant difference in MMSE at baseline (Table 1, page 36) between the DAI group (mean 9.4, standard deviation (SD)=7.423) and the control group (mean 13.2, SD=8.305; $P=0.194$).

The mean scores for the CMAI and MDDAS subscales at baseline and at follow up are shown in Table 1 (page 36). At baseline, a significant difference in psychological symptoms on the MDDAS was observed between the DAI group and the control group ($P=0.008$). The mean score for the DAI group was 18.6 whereas the mean score for the control group was 13.8, which suggests that the DAI group had more severe psychological symptoms than the control group.

At all time points and for both DAI and control groups, follow-up scores were compared with baseline scores (Table 1, page 36). No follow-up comparisons were performed between groups, because they were heterogeneous and the sample size was small. In addition, the timing for follow up between the two groups did not match. There was a significant increase in the CMAI verbal agitation subscale score for the DAI group at six-month follow up ($P=0.035$). The CMAI mean score for verbal agitation was 17.2 at baseline and increased to 19.0 immediately after the intervention.

At three-month follow up, the mean score (17.7) was not significantly different to the baseline score,

but continued to increase to a mean score of 20.6 at six-month follow up.

Physical non-aggressive behaviours, as measured by the CMAI, decreased from 18.5 at baseline to 15.3 immediately after the intervention; however, this decrease was not statistically significant ($P=0.248$). The highest mean score on the MDDAS subscale for behavioural symptoms was observed at baseline (15.3) and decreased to 13.1 immediately after the DAI ($P=0.671$). The mean score for MDDAS psychological symptoms decreased slightly from 18.6 at baseline to 18.1 immediately after completion of the DAI ($P=0.325$).

In the control group all mean scores in the CMAI subscales were highest at baseline and lowest at six-month follow up. There were only minor changes in the MDDAS subscales and the MMSE.

Discussion

The study has limitations. A major weakness was the use of proxy reports. In the study, the proxies were staff nurses and their responses to the questions were based on their assessments and values, which were not directly accessible to the research team. In addition, the possibility that staff nurses' expectations of the intervention may have biased the study results in some way cannot be ignored. Moreover, the choice of research design was not an obvious one.

To reduce the influence of confounding covariates, a crossover design was discussed. However, considering the illness trajectory, the progressive condition and high mortality rates in dementia, it seemed highly problematic to use the patients as their own controls. Therefore, a pre-test post-test design was chosen.

Although not at a significant level, positive tendencies between baseline and immediately after intervention were observed for the CMAI physical non-aggressive behaviours subscale and for the MDDAS behavioural and psychological symptoms subscales.

The CMAI mean score for physical non-aggressive behaviours decreased from 18.5 at baseline to 15.3 at follow up immediately after the intervention; lower scores indicate fewer symptoms. This positive tendency was supported by the MDDAS mean and median scores for behavioural symptoms which decreased from 15.3 and 13.5 respectively at baseline

Participants had enjoyable memories of the therapy dogs that became obvious when they looked at photos of the dogs

Table 1 Mean and median scores and P values for the dog-assisted intervention group and the control group at baseline and follow up

Instrument (score range)	Baseline mean; median (n)	Follow up immediately after DAI mean; median (n)	P value	Follow up 3 months after DAI mean; median (n)	P value	Follow up 6 months after DAI mean; median (n)	P value
DAI							
CMAI physical aggressive behaviours (11-77)	12.8 12.0 (20)	13.0 11.0 (10)	0.336	12.9 12.0 (10)	0.174	13.7 12.5 (10)	0.058
CMAI physical non-aggressive behaviours (10-70)	18.5 15.0 (19)	15.3 15.0 (9)	0.248	17.1 14.0 (9)	0.482	16.2 15.0 (11)	0.655
CMAI verbal agitation (8-56)	17.2 14.5 (20)	19.0 13.5 (10)	0.859	17.7 11.5 (10)	0.812	20.6 19.0 (9)	0.035
MDDAS behavioural symptoms (0-75)	15.3 13.5 (20)	13.1 12.0 (10)	0.671	14.4 11.0 (9)	0.674	12.6 15.0 (11)	0.765
MDDAS psychological symptoms (0-42)	18.6 19.0 (20)	18.1 21.0 (9)	0.325	18.1 18.0 (9)	0.362	19.3 17.5 (10)	1.000
MMSE (0-30)	9.4 9.0 (20)	9.9 8.0 (10)	0.193	14.1 16 (10)	0.645	8.9 8.0 (10)	0.068
CMAI physical aggressive behaviours (11-77)	12.8 11.0 (13)	NA	NA	11.4 11.0 (8)	0.317	11.2 11.0 (8)	0.109
CMAI physical non-aggressive behaviours (10-70)	15.6 12.5 (12)	NA	NA	15.2 12.5 (8)	0.890	15.1 12.5 (7)	0.336
CMAI verbal agitation (8-56)	15.2 13.5 (12)	NA	NA	13.2 12.5 (8)	0.496	13.0 8.0 (6)	0.465
MDDAS behavioural symptoms (0-75)	10.6 9.0 (13)	NA	NA	11.6 10.5 (8)	0.865	11.9 12.0 (7)	0.596
MDDAS psychological symptoms (0-42)	13.8 14.0 (13)	NA	NA	16.1 15.0 (7)	0.865	14.3 14.0 (6)	0.750
MMSE (0-30)	13.2 15.0 (13)	NA	NA	11.9 15.0 (8)	0.122	14.1 16.0 (8)	0.774
Control							

Based on the assumption that DAI can have positive effects on behavioural and psychological symptoms in dementia, it was hypothesised there would be statistically significant changes in the intervention group but not in the control group. A result was considered statistically significant if the P value was ≤ 0.05 . DAI=dog-assisted intervention. MMSE=Mini-Mental State Examination. CMAI=Cohen-Mansfield Agitation Inventory. MDDAS=Multi-Dimensional Dementia Assessment Scale.

to 13.1 and 12.0 at follow up immediately after the intervention; lower scores indicate fewer symptoms.

It was rather surprising that the mean score for verbal agitation (CMAI subscale) increased immediately after DAI, after which it decreased close to baseline level at three-month follow up but then increased again at six-month follow up. It is difficult to explain this increase in verbal agitation.

Participants had clear and enjoyable memories of the therapy dogs that became obvious when they looked at photos of the dogs. They recognised the dogs and talked about them in positive ways. Therefore it is possible that some participants experienced loss or loneliness after the contact with the dogs stopped.

In daily practice, ethical considerations make it impossible to end contact between some residents and the dogs. Instead, the therapy dogs keep returning but as 'visiting dogs' only. Residents often became attached to the dogs and frequently the therapy dogs are their only source of joy and cheerfulness.

Verbal agitation is strongly associated with discomfort and loneliness; Cohen-Mansfield *et al* (2012) argued that verbally agitated behaviour is most often seen when agitated people with dementia are alone. Indeed, it seems as if merely the stimulus of live human engagement has the ability to decrease verbal agitation (Cohen-Mansfield *et al* 2012). That could also be the case for live animal engagement.

Furthermore, agitated behaviours are associated with a discrepancy between the needs of people with dementia and the extent to which their needs are met. It may be possible that people with dementia in this study experienced loneliness due to the absence of the regular and structured activity of the DAI.

Currently there are no data to either support or reject such an assumption, but the phenomenon needs to be further investigated.

It is also not clear how much the dog handler influenced the person with dementia. However, during the DAI sessions participants all focused on the dog and activities with the dog, not on the dog handler. The dog handlers were instructed to interfere as little as possible with the interaction between the participant and the dog, but they were allowed to make suggestions, encourage communication and affirm participants' emotions and feelings at all times.

The purpose of this was to make the person with dementia feel respected and independent. If something did not work out well, for instance if the dog failed to pick up a ball, the dog handler would take the blame. Equally when the dog succeeded, the dog handler would tell the

participant it was because of him or her. In addition, the dog handler controlled the dog at all times. The dogs were always on a leash when walking and the dog handlers told the dog what to do with subtle and gentle commands.

Implications for practice

Although the present study did not demonstrate significant effects of DAI, the influence of therapy dogs on behavioural and psychological symptoms of dementia should not be disregarded.

Symptom assessments were not made immediately after the DAI sessions. Instead, assessments were made by staff nurses who were asked to recall participants' recent symptoms. In practice, this meant that assessments were not directly associated with the DAI sessions, which probably had a significant effect on the study results. In fact, in clinical practice it is quite the reverse: there are several strong and important motives for working with therapy dogs in dementia care.

One assumption to be made from existing knowledge is that therapy dogs, in contrast to pharmacological treatments, have no side effects, can relieve depression, improve memory and increase motivation for physical activity.

In addition, contact and training with therapy dogs can improve patients' self-esteem and their ability to interact with others.

Other indications for DAI include marked agitation, anxiety and associated aggressive behaviours. The mere presence of a therapy dog can interrupt such behaviours, meaning the person can be tempted and motivated to participate in various activities with the dog. Often the person's bad mood disappears immediately and instead they are able to experience spontaneous joy and meaningfulness. Furthermore, succeeding with specific tasks, such as brushing the dog's fur or getting the dog to chase after a ball, can increase the person's self-esteem.

The dog's presence also creates the opportunity for contact with other residents or staff so that the person with dementia can develop his or her social skills and relationships.

Meaningfulness, wellbeing, self-confidence and social fellowship are all essential components of quality of life; although the DAI did not result in measurable and statistically significant effects in this study, it can contribute to dignity and respect for a

Succeeding with tasks, such as brushing the dog's fur or getting the dog to chase after a ball, can increase the person's self-esteem

person with dementia. However, non-pharmacological interventions need to be tailored to the person's preferences, skills and abilities. In addition, the effects need to be carefully monitored and the person's care plan should be adapted accordingly (NCCMH 2007).

Conclusion

To set up and conduct an interventional study in a clinical setting, such as dementia care, is challenging and fraught with obstacles. Large, randomised controlled trials over longer periods of time are preferable, but one of the major challenges is the

study population itself. Dementia is progressive and incurable so there are inherent problems with keeping participants in trials.

Based on the results of this study, no general conclusions can be drawn. It can be suggested, however, that DAI can provide an alternative or a complement to pharmacological treatments to reduce behavioural symptoms in people with dementia. There are several barriers that need to be addressed in future studies, such as sample size, control of covariate factors and the use of proxy reports. Hence, the value and place of DAI in dementia care remain to be further evaluated.

Online archive

For related information, visit our online archive and search using the keywords

Conflict of interest

None declared

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