


# Effects of animal-assisted therapy in older adults with cognitive impairment: A systematic review



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## ABSTRACT

Interventions in older people with cognitive impairment are difficult to carry out because they do not follow orders, they present aggressive behaviour or they are unpredictable. For this reason, the objective of this review was to describe the effect of Animal-assisted therapy (AAT) in this population, reporting the results published in the literature on physical, psychosocial and cognitive function. After a review of 160 articles, 5 were selected according to selection criteria, demonstrating that AAT is an effective therapy in people with mild to moderate cognitive impairment, where the dog is the most used co-therapist, however, research is still incipient.

**Keywords:** Pet therapy, Animal assisted interventions, Elderly, Dementia, Rehabilitation.

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## INTRODUCTION

Cognition in general terms is understood as the intellectual functioning that allows the person to interact with the environment. When there is an alteration in the cognitive function of a person we are in the presence of "*cognitive deterioration*", which is characterized by the decrease in learning, memory, language, attention, social cognition and other capacities (US Preventive Services Task Force et al., 2020). Although cognitive decline is common as we age, it progresses insidiously over the years or decades, subject to great inter-individual variability. When this cognitive impairment progresses to a state of objective impairment, but is not yet fully expressed, it is usually diagnosed as mild cognitive impairment (Jack et al., 2011), however, when it becomes severe enough to interfere with activities of daily living of the person (such as eating, dressing, toileting or moving), then it is considered and diagnosed as "*Dementia*", also known as major neurocognitive disorder (McKhann et al, 2011; Montine et al 2021).

It is estimated that around 35 million people in the world have some type of dementia, a figure that doubles every 20 years, projected at 135 million by the year 2050 (Batsch et al., 2012). According to figures from the OECD2 (OECD, 2014), the prevalence of dementia is expected to increase by around 50% in high-income countries by 2030, and almost 80% in low- and middle-income countries. According to the World Health Organization there are 3 types or degrees of dementia: early, intermediate and late stage (WHO, 2021) and all have different degrees of complexity and as it progresses they lose skills such as finding the right words in a conversation, managing finances or traveling alone to new places, not remembering their own address, to which is added the presence of aggressive behaviours, in addition to the null presence of social skills, motivation and interest, which makes the therapist/patient relationship difficult (Menna et al., 2016; Peluso et al., 2018 & WHO, 2021). Faced with this difficulty to which treating professionals are exposed, the interest of this research arises, due to the fact that in recent years Animal-assisted therapy (AAT) has gained popularity within the framework of therapy programs in residences of the elderly, making it easier for a person with cognitive impairment or dementia to have a better willingness to intervene.

Animal-assisted therapy (AAT) according to the International Association of Human-Animal interaction Organizations (IAHAIO, 2013), "*is the intentional way of incorporating an animal as an integral part of the treatment process, with the direct objective of promoting improvement in the physical, psychosocial and/or cognitive functions of the people treated*", where a qualified professional regularly reviews and implements the necessary adaptations to achieve the goals of the intervened person (American Veterinary Medicine Association, 2016). It differs from animal-assisted activities (AAA) because the latter only have an informal recreational or motivational purpose, in which an animal is introduced by a person for recreation, education and/or to improve the quality of life of the animal. user (AVMA, 2016 & DeMello, 2021). The origins of the AAT go back to the year 1669 in which John Locke defended the benefits of this intervention on the socializing function in the human being, where from that moment the first theories about the influence of pets on people with mental illness ((Parish-Plass, 2014)), being one of the first documented therapeutic programs with animals in 1792 York (United Kingdom), where people with mental illnesses were encouraged to walk through the gardens and interact with numerous animals household and care (Burch, 2006).

Among the benefits attributed to AAT are those associated with improvements in psychological behaviour, with positive effects for the reduction of stress and blood pressure, as well as greater joy and will to live, improving quality of life (Baek et al ., 2020; Tavera & Sena, 2016; Vásquez et al., 2011). However, the presence of an animal during an intervention is considered a broader multisensory stimulus, which by its very nature contains elements of movement, sound, smell, texture, heat, and a physical tactile sensation that automatically arouse all of an individual's senses. person (Parish-Plass, 2014), it is for this reason that the

objective of this systematic review is to describe the effects of AAT on the physical, psychosocial and/or cognitive functions of older people diagnosed with cognitive impairment where an animal participates as a cotherapist in order to recognize their therapeutic potential during an intervention.

## MATERIAL AND METHODS

### Search sources

This systematic review was conducted during the months of May to July 2021, adopting the PRISMA 2020 guidelines for transparent reporting of results (Page et al., 2021). This review does not have a registration protocol number. The databases used were EBSCOhost (MEDLINE complete, Rehabilitation & Sports Medicine, Health Source: Nursing/Academic Edition); Rehabilitation Reference Center (MEDLINE, CINAHL, SPORT Discus); Epistemonikos (MEDLINE; Cochrane) and PEDro (Physiotherapy Evidence Database). The search terms described through the PICO system that are shown in Table 1 were used. As for the Boolean operators used, they were AND, to join both ideas, for example: "*animal assisted therapy AND dementia*" and OR to join animal "*assisted therapy OR pet therapy OR animal therapy or animal intervention OR animal assisted activity*" also "*dementia or Alzheimer's or cognitive impairment*". As an example, the search strategy used for the EBSCO Database is shown: (animal assisted therapy OR pet therapy OR animal therapy or animal intervention OR animal assisted activity) AND (dementia or Alzheimer's or cognitive impairment) AND (older adults or elderly or seniors or geriatrics).

Table 1. Search terms used in the review.

<b>Patient</b>	Older adult, dementia, Alzheimer's or cognitive impairment.
<b>Intervention</b>	Animal-assisted therapies, horse, dog, farms animals, birds, cats, fishes therapy or animal intervention.
<b>Comparison</b>	control group or habitual intervention.
<b>Outcome</b>	Effects physical, psychological and mental.

### Study eligibility criteria

Articles in English and Spanish were used, with a maximum of 10 years old (from 2011 to 2021), we incorporated full text and free access articles. The types of studies that were added corresponded to clinical, experimental, quasi-experimental, descriptive and case studies.

The search for articles relevant to the objective of this study was carried out by 4 authors (NR, AU, BM and JP), considering the following inclusion criteria: 1) studies that used and described intervention protocols with AAT, 2) that considered the target population was people over 60 years of age with a diagnosis of cognitive impairment: Alzheimer's, types of dementia, etc., 3) all types of cotherapists were considered and 4) the study described physical, psychosocial and/or cognitive effects on its results. Those investigations in which people under 60 years of age were studied, in which the interventions were not guided by health professionals or veterinarians, in which animal-assisted activities (AAA) were carried out, were excluded. In the case of needing clarification or that an article met the eligibility criteria and was not open access, the author was contacted considering a response time of 3 weeks. While to resolve uncertainty regarding study eligibility the reviewers consulted an external collaborator (NF).

### Evaluation criteria methodological quality

To evaluate and describe the methodological quality of the articles selected for the review, the Newcastle-Ottawa scale for non-randomized studies was used (Wells et al., 2021); Single-Case Experimental Design Scale in case studies (Tate et al., 2008) and the PEDro scale in experimental studies (Maher et al., 2013).

## RESULTS

The search retrieved 160 original articles, whose selection procedure is described in Figure 1. 154 articles were excluded because they were not relevant to the purpose of the study, as they contained information unrelated to the search topic and were not included within the groups study to older people with cognitive impairment. 1 article was also excluded per language because it was written in French, 22 articles had a publication date greater than 10 years, 3 articles because they did not include a population older than 60 years and over, 9 articles were not available in full text of the articles. which it was possible to retrieve 1 upon request to the author (Majić et al., 2013).

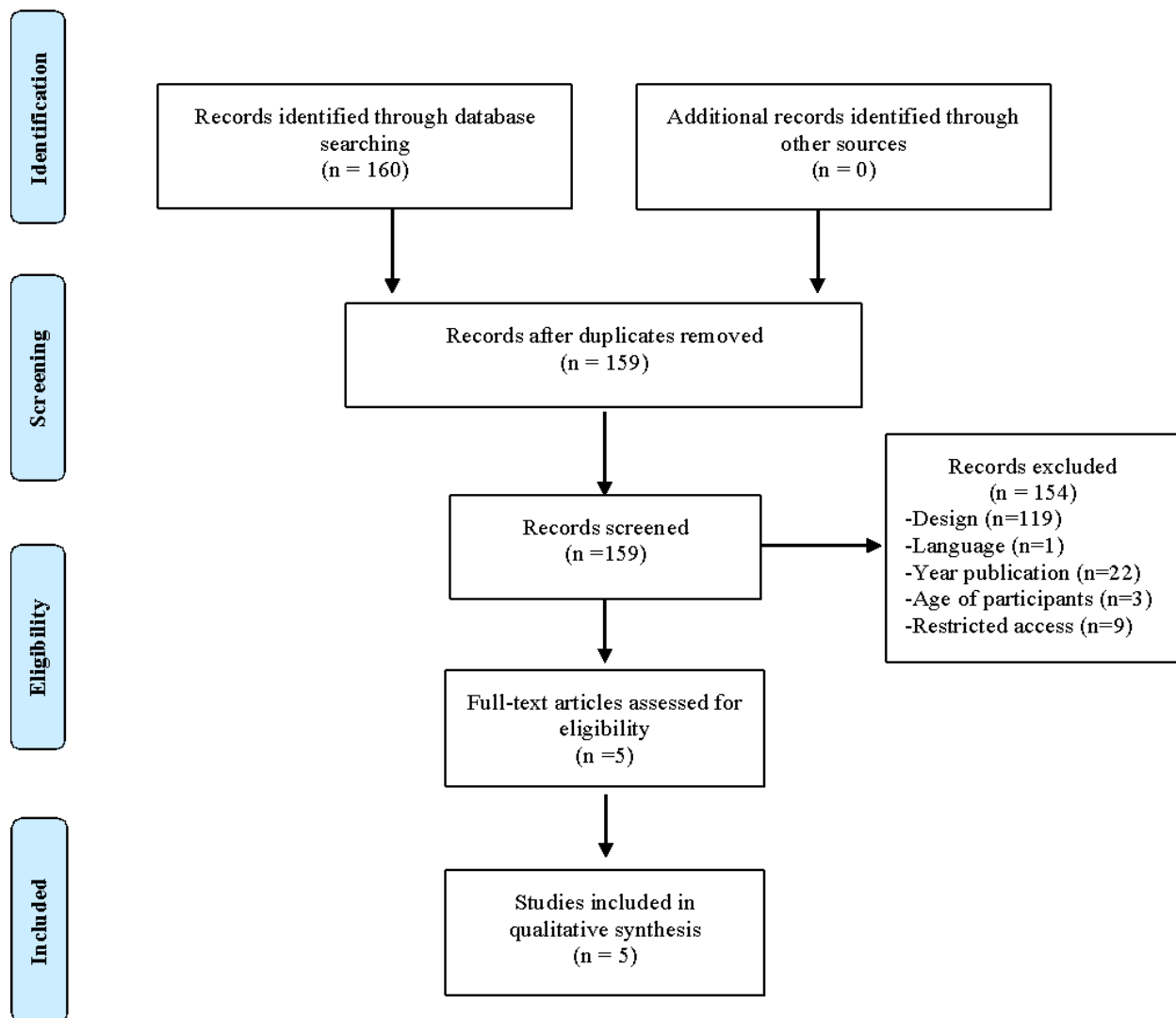


Figure 1. PRISMA Flow Diagram of Literature Search and Selection Process.

The results will be described below based on 3 main themes: 1. Characteristics of the study and population, 2. Characteristics of the AAT and 3. Effect of the AAT on physical, psychosocial and cognitive function.

### **Characteristics of the study and population**

Regarding the characteristics of the studies, they are detailed in Table 2, of which 2 were experimental design studies, 1 was a pilot study design and 2 were case studies, with a sample size that ranged between 21 and 65 participants. To test the effectiveness of the therapy, 4 studies used a control group that received no intervention, in addition, some articles incorporated complementary therapies to AAT as usual treatment (Mena et al., 2016) and reality orientation therapy (Majić et al., 2013). Regarding the diagnosis of cognitive impairment in older participants, 2 studies included people with dementia, 1 incorporated Alzheimer's disease, vascular dementia, secondary dementia, mood disorder, psychotic disorders, one included people with cognitive impairment and the last article considered exclusively people with Alzheimer's disease, all this is detailed in Table 2. Finally, regarding the place of intervention where the research was carried out, one study was carried out in a hospital, one in an Alzheimer's centre and 3 were in nursing homes.

### **Characteristics of the AAT**

Regarding the characteristics of the AAT, they are detailed in Table 2. It is noted that the type of co-therapist chosen in all the studies was the dog, the intervention time ranged from 6 to 12 weeks with a minimum duration of 45 minutes and a maximum than 90 minutes, 4 of the studies had a frequency of 1 therapeutic session per week and only 1 article had 2 therapeutic sessions per week. Regarding the type of therapy, all the articles had interaction with the dog, one sought to promote structured play, memory stimulation and language comprehension (Mena et al., 2016), two sought verbal interaction with the dog (Baek et al., 2020; Moretti et al., 2011), one sought to generate a bond by having the patient give the cotherapist a name and take pictures (Baek et al., 2020), one left free interaction in the last 15 minutes of the session (Majić et al., 2013), one sought to promote communication (Rodrigo-Clavero et al., 2020), while all studies sought physical contact with the animal.

### **Effect of TAA on physical, psychosocial and cognitive function**

Regarding the effects found in the articles, they are detailed in Table 3. Only in 2 of the reviewed articles (Baek et al., 2020; Rodrigo-Clavero et al., 2020) they evaluated physical functions in the participants using evaluation scales pre and post-intervention such as the Tinetti scale and an evaluation of activities of daily living. Psychosocial function was assessed in 4 of 5 articles, mood was assessed with the Mood Assessment Scale for Dementia (EEEAD), depression with the Geriatric Depression Scale (GDE), and the Cornell Scale for Depression in Dementia. (CSDD), behaviour with assessment of behavioural and memory problems (PMC) and agitation with Cohen-Mansfield Agitation Inventory (CMAI). In 4 articles, cognitive functions were evaluated in terms of temporal-spatial orientation, memory, tension and concentration capacity, language and constructive practice with the Mini Mental State Examination (MMSE), and finally the Global Deterioration Scale (GDS).

In only one article Baek et al., (2020) was evaluated as a different effect to physical, psychosocial and cognitive improvements, mood and degree of depression of older people through the face rating scale (ECR).

### **Methodological quality assessment**

Finally, regarding the evaluation of methodological quality, applied to the studies included in this review, it was possible to carry out the PEDRO Scale in 4 of 5 studies, as they were experimental studies, in which scores of 7 to 9 points were obtained. , being the article by Moretti et al. (2011) the one with the best methodological quality, obtaining a score of 9/11 points, while the articles by Rodrigo-Clavero et al. (2020), Mena et al. (2016) and Baek et al. (2020) obtained 7/11 points. On the other hand, the article by Majić et al. (2013) was evaluated with the SCED scale because it corresponds to a case study design, obtaining a score of 6/11 points.

Table 2. Characteristics of the study and the Animal-assisted therapy (AAT).

Characteristics of the study and population						Characteristics of the TAA	
Author and year	Study design & population size	Age -years (average±SD)	Comparison groups	Diagnosis	Place of intervention	Co-therapist type	Time, frequency and type of therapy
Baek, et al. (2020)	Experimental study n = 28 (women 6 and men 22)	Group 1: 82.3 ± 1.8 years and Group 2: 82.1 ± 1.2 years	Group 1: AAT group Group 2: control group	Dementia	Hospital	Dog	8 weeks, 2 times a week, one hour. In the introductory stage, they introduced the dogs by encouraging participants to hug and name them, became familiar with the therapy dogs, trimmed their fur, trained them, and discussed feelings with co-therapists. At the end, activities were carried out that consisted of taking photographs, remembering anecdotes, giving homemade snacks for the therapy dogs, making photo albums, delivering mock diplomas.
Mena et al. (2016)	Pilot study n = 50 (37 women and 13 men)	75 ± 6 years	Group 1: AAT + TOR group. Group 2: TOR. Group 3: Control group.	Alzheimer's	Alzheimer's Centre	Dog	6 months, once a week, 45 min a day. Structured play / interaction with the dog, fetch, hide the ball, take care of the dog. Memory stimulation by telling a story about your own pets; play structured activities with the dog. Language comprehension (story: giving commands to the dog and waiting for the execution of the command).
Majić et al. (2013)	Case study, n = 65 (38 women and 16 men)	81.7 ± 9.37 years	Group 1: Usual therapy Group 2: Usual therapy + TAA (intervention)	Severe dementia	Nursing home	Dog	10 weeks, once a week, 45 min of therapy. Verbal interaction between the therapeutic handler and the dog, the patient talked to the dog and then moved on to physical interaction, such as petting the dog. The last 15 minutes of the session were mostly left to spontaneous dynamic processes between the therapy dog and the patients, which allowed for an atmosphere of free interaction between both.
Moretti et al. (2011)	Case study n = 21 (20 women and 1 man)	84.7 ± 9.9 years	Group 1: interaction with the animal Group 2: they were allowed only to see the animals enter the asylum, without interaction	Alzheimer's disease, vascular dementia, secondary dementia, mood disorder, psychotic disorders	Nursing home	Dog	6 weeks, 90 minutes, once a week. Contact of the dogs with all participants, to hold, pet, walk, talk and play with animals.
Rodrigo-Clavero et al. (2020)	Experimental study n = 46 (35 women and 11 men)	85.0 ± 2.02 years	Group 1: physiotherapy program + social stimulation with the participation of the dog Group 2: same physiotherapy program without the animal	Cognitive impairment	2 nursing homes in an urban area	Dog	12 weeks, once a week 60 minutes. The sessions were carried out in small groups of six patients, seeking to promote physical contact with the animal (petting, brushing, throwing balls, food or drink, etc.) with the intention of promoting communication.

Note. AAT: Animal Assisted Therapy, TOR: Reality Orientation Therapy, TH: Treatment as Usual, SD: Standard Deviation.

Table 3. Effect of Animal-assisted therapy (AAT) on physical, psychosocial and cognitive function.

Author & year	Pre-post intervention evaluations	Physical function	Psychosocial function	Cognitive function	Other effects
Baek, et al. (2020)	- Physical function: 10 AVD -Psychosocial function: depression in dementia (CSDD) and memory and behaviour problems (6 PMC items) - Cognitive function: MMSE-K, Korean version of Mini Mental Status Exam. - Other effects: mood and degree of depression (ECR).	Group 1 improved its results in ADL, it was small for group 1 ( $\omega p2 = 0.04$ ) there was no significant difference ( $p = .529$ ), and the effect was large for group and time interaction ( $\omega p2 = 0.65$ )	Group 1 improved its results on the CSDD scale, it was medium for the group ( $\omega p2 = 0.09$ ). There were no significant differences from the control group ( $p = .165$ ), and the effect was large for the interaction of group and time ( $\omega p2 = 0.27$ ) Group 1 improved their results in PMC, the effect was small for the group ( $\omega p2 = 0.03$ ), there was no significant difference between the groups ( $p = .587$ ), and the effect was large for group and time interaction ( $\omega p2 = 0.45$ )	Group 1 improved their results in MMSE-, K, the effect was small for the group ( $\omega p2 = 0.03$ ), there were no significant differences ( $p = .587$ ), the effect was large for the interaction of group and time ( $\omega p2 = 0.36$ )	Group 1 improved their ECR results, the effect was medium for the group ( $\omega p2 = 0.07$ ), there were no significant differences between the groups ( $p = .194$ ) and the effect was large for group and time interaction ( $\omega p2 = 0.36$ )
Mena et al. (2016)	-Psychosocial function: geriatric depression (GDE). -Cognitive function: temporal-spatial orientation, memory, capacity for tension and concentration, language and constructive practice (MMSE).	--	Group 1 decreases two points in the EDG considering a significant improvement ( $p \text{ value } .001$ ), while group 2 showed a slight improvement and group 3 did not show a significant improvement.	Both group 1 and 2 showed a significant improvement ( $p \text{ value } < .001$ ), especially group 1, which increased 1.3 points in the MMSE, while group 3 decreased its score.	--
Majić et al. (2013)	-Cognitive function: temporal-spatial orientation, memory, capacity for tension and concentration, language and constructive praxis (MMSE: only used to categorize the population) -Psychosocial function: depression (EEEEAD) and agitation and cognitive impairment (CMAI).	---	Total EEEAD scores were significantly higher in group 2 than in group 1. The effect on both was significant for symptoms of agitation (CMAI)( $p < .05$ ) and depression $p < .001$ (EEEEAD)	---	---
Moretti et al. (2011)	-Cognitive function: temporospatial orientation, memory, capacity for tension and concentration, language and constructive practice (MMSE) and global impairment scale. (GDS). -Other effects: self-management questionnaire that evaluates the patient's satisfaction with the intervention.	---	---	In group 1 it improved an average of 4.5 ( $p = .06$ ) points in MMSE, in group 2 it increased by two points, but the differences were not statistically significant ( $p = .0941$ ). A clear improvement in GDS was observed in both groups. In group 1, the mean GDS score decreased from 5.9 to 2.7 ( $p = .013$ ); However, the comparison between groups showed a trend of improvement ( $p = .070$ ).	A positive effect on self-perceived quality of life was observed in 5 subjects belonging to group 1 and in 2 participants from group 2. In the satisfaction questionnaire, 9 out of 10 people indicated that the animals had a calming effect and one of the subjects said he had memories of the past.
Rodrigo-Clavero et al. (2020)	-Cognitive function: temporospatial orientation, memory, tension and concentration capacity, language and constructive practice (MMSE) and global impairment scale (GDS) -Physical function: balance and gait (Tinetti Scale). -Psychosocial function: communication (Holden scale)	There was a significant improvement ( $p = .026$ ) on the Tinetti gait subdimension in individuals with mild-moderate cognitive impairment, but not in those with severe cognitive.	In patients with mild-moderate cognitive impairment, group 1 showed a significant change after the intervention ( $p = .009$ ), but group 2 did not show this change ( $p = .098$ ).	When stratifying by GDS, we observed similar results in all participants.	---

Note. MMSE: Mini Mental State Examination, ECR: Face Rating Scale, EDG: Geriatric Depression Scale, GDS: Global Deterioration Scale, CMAI: Cohen-Mansfield Agitation Inventory, EEEAD: Dementia Mood Assessment Scale. PMC: memory and behaviour problems. CSDD: Cornell Scale for Depression in Dementia.

## DISCUSSION

The results in the literature indicate that AAT has positive effects in the short and medium term according to the scarce scientific evidence found, which did not exceed 6 months of treatment. The animal chosen in all the investigations to carry out the therapy was the dog, showing favourable results in terms of physical, psychosocial and/or cognitive function parameters, preliminarily demonstrating that it is an effective therapy when complemented with other interventions in people with cognitive impairment. It should be noted that AAT can be performed in centres where older people with a diagnosis of dementia are usually institutionalized, that is, hospitals, Alzheimer's centres and nursing homes. Below, the findings of this review will be discussed based on the 3 categories of analysis mentioned above:

### ***Characteristics of the studies and population***

In most of the studies, the participants were female, with the exception of the study by Baek, et al. (2020), this is a striking fact, because all the studies had a random selection in the institutions at the time of starting the therapies, demonstrating that there is a predisposition of geriatric diseases that lead to institutionalization in the female sex. . Regarding the characteristics of age and diagnosis, there was no wide difference between the article with the lowest mean age (75 years) and the one with the highest mean age (85 years), which is why the presence of a homogeneous population in this study is considered. studies with very old ages, the same was true for types of cognitive impairment diagnosis, such as vascular dementia, secondary dementia and Alzheimer's.

### ***Characteristics of the TAA***

The geriatric intervention was focused on the area of physical, psychosocial and/or cognitive function, focusing on the interaction between the older adult with some type of cognitive impairment, the therapist and the cotherapist. All studies chose the dog as a co-therapist because its behaviour is docile and can be trained to live with people with behavioural problems, unlike a bird or farm animal that does not obey instructions and its reaction to strong stimuli is unknown or unpredictable.

Each session lasted between 45 and 90 minutes, where the older adults had to hold, pet, walk, talk, brush, throw balls, eat or drink and play with the animal under the supervision of canine educators, all this as a complement to various treatments prescribed in this population. Most of the authors decided to carry out a session per week and although the intervention times were varied, all had positive results, so it is inferred that the AAT has short and medium term results, however, it is not possible to show long-term effects. long-term or maintenance over time, since the study with the longest intervention time was 6 months (Mena et al. 2016). Finally, the studies sought, through the interaction between the animal and the intervened person, to work on social stimulation, emotional stability, activation, improve activities of daily living and cognitive function, with the aim of reducing problematic behaviour, as well as promoting communication and relationships between the participants to generate a relaxed environment that will help to work in the therapeutic session.

### ***Effect of AAT on physical, psychosocial and cognitive function***

#### ***Effects on physical function***

The AAT has positive effects on the physical functions of the human being, however, only two studies focused on this area of intervention, both carried out evaluations and/or scales to sift physical results on the patients, however, more research is required to confirm these results.



The study by Baek, et al. (2020) showed that there was an improvement in motor dysfunction, balance, gait pattern, walking speed and that physical activity increased in the elderly when feeding, combing, hugging and walking dogs. This is supported by Rodrigo-Clavero et al. (2020) who agrees with these positive effects, also indicating that physical contact with the animal promotes communication and relationships between the participants, demonstrating a significant improvement in walking and activities of daily living.

#### *Effects on psychosocial function*

Psychosocial function was one of the aspects that obtained more variety and quantity of results. According to Majic et al. (2013) AAT is a promising option to treat symptoms of agitation, aggression and depression in nursing homes with dementia, in this regard the study by Baek, et al. (2020) supports these results by demonstrating the existence of a decrease in behavioural problems, aggression and irritability in older adults with dementia. Both authors also report that AAT can be considered an effective treatment to improve emotional state, as well as being able to improve mood and depressive symptoms in elderly subjects.

For their part, Moretti et al. (2011) indicates that AAT helps psychological and emotional stimulation, which is known to solve important psychosomatic problems. While Rodrigo-Clavero et al. (2020) mentions that AAT has been considered a significant activity that provides stimulation and social interaction and improves the mood of the participants. In addition, the authors agree that it can help create a more relaxed, trusting environment that favours communication and motivation, which improves the participants' ability to concentrate during the session. Lastly, Baek, et al. (2020) adds to the above, which causes relief from social isolation, boredom and reduces anxiety.

#### *Effects on cognitive function*

The AAT improved the MMSE items, however, the fields that presented an improvement on this scale (temporal-spatial orientation, memory, capacity for tension and concentration, language and constructive praxis) are not detailed, because none of the articles expressed these results in detail. The studies by Moretti et al. (2011) and Rodrigo-Clavero et al. (2020) found that global deterioration decreased their scores, showing a tendency to improve. However, in 4 of the 5 studies, improvement in the cognitive function of older people with cognitive impairment was indicated as a finding, regardless of diagnosis, and only the study by Tomislav Majić et al. (2013) did not mention any type of result in this regard, possibly when studying older people with severe dementia.

#### *Other effects*

The study by Moretti et al. (2011) was the only one to include a user satisfaction survey which yielded results of improvements in self-perceived quality of life, in addition to documenting that it was possible for the participants to bring back memories of the past, in addition 9 out of 10 people indicated that the animals had a calming effect that improved their quality of life.

It should be noted that, although there are favourable changes in the intervention with AAT in the short and medium term in all the dimensions described above in older people with mild and moderate dementia, it is necessary to emphasize that severe dementia did not have a significant change in the short term. term, as reported by the study by Majić et al. (2013) who compared the effectiveness by severity of cognitive impairment.

Finally, when this bibliographical review is compared with other similar ones on the subject of AAT, the systematic review carried out by Peluso et al. (2018), who evaluated AAT and animal-assisted activity (AAA), incorporating research with assisted therapies with dogs, cats, and stuffed animals. After comparing their

results with this review, we conclude that the effects of AAT were similar, as they showed a significant benefit on psychosocial aspects, such as depression and anxiety, however, they did not document changes on agitation. Regarding physical functions, motor activity increased significantly during and/or after AAT improving quality of life in patients with dementia. Finally, in the systematic review by Bernabei et al. (2013) mentions that robotic therapy is a valid alternative, that it has effects similar to those of AAT, it is also useful when there is no team of pets or they are not trained or trained, also when there are allergies or fears towards animals.

Regarding the limitations and recommendations of this research, it can be mentioned that there is limited bibliographic evidence of therapeutic interventions that relate AAT, dementia and the elderly. It should be noted that all studies chose dogs as co-therapists, so it is not possible to know an effect in other animals. With respect to the place where the interventions were carried out, it is not known what results a non-institutionalized older person could have. In addition, the studies did not specify in which area of the MMSE scale the patients showed improvements, the same occurs for other evaluations, so it is suggested to express the results in a more transparent and detailed way in order to know the real effect of the AAT. It is recommended that future research incorporate other co-therapists, as several participants were left out of the studies due to fear of and allergies to dogs. In addition, it would be important to study the factor of time and frequency of the AAT because the studies only report short-term effects, where the follow-up and intervention time should be increased, including motor evaluations, which allow a more clearly delivered recommendation in functional physical aspect.

## CONCLUSION

The AAT has been able to demonstrate that it is a beneficial therapy for working with older adults with dementia, describing in the literature positive effects at an emotional level, such as improvement in social skills, verbal interaction, motivation, quality of life and emotional state. of spirit. Regarding the physical benefits, improvements in gait, activities of daily living are reported due to the interaction that is generated with the animal when giving food, taking it for a walk, throwing a ball, etc. In the psychosocial, benefits are reported for the reduction of depressive symptoms, improving behaviour by reducing agitation, while in the cognitive sphere there is evidence of progress in communication and a better score on the MMSE.

Although the studies included different types and levels of cognitive impairment, producing positive effects in the short and medium term after applying physical, psychosocial and cognitive evaluations, these effects seem to be exclusive for the severity of mild and moderate dementia. It is still a challenge to know the long-term effectiveness of AAT since no article lasted more than 6 months, it being important to improve the quantity and quality of research, since TAA can contribute as a valid complementary therapy in older people with cognitive impairment, where the effects on the physical and functional dimension require further investigation.

## AUTHOR CONTRIBUTIONS

N.R.V.; A.U.E.; B.M.M. and J.P.G. manuscript writing, collected the data, preparation and research design; N.B.F. critically reviewed the work, result interpretation and manuscript writing and M.J.G.G. manuscript writing and critically reviewed the work.

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## DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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