



## Animal-Assisted Interventions: Social Work Practice for Older Adults with Dementia

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### Abstract

Many older persons experience neurocognitive impairments as they age, experiencing cognitive and behavioral symptoms which may cause serious disruptions and lead to residential placements. As there is no cure, these care facilities strive to manage symptoms and provide comfortable and supportive care. Numerous therapeutic approaches have been used to manage cognitive and behavioral disturbances in older persons with dementia with mixed success. Animal-assisted interventions (AAI) are emerging as an innovative therapeutic modality which holds benefit for minimizing distressing behaviors experienced by older persons. Human-animal contact has been shown to positively benefit the quality of life of older adults. Specific research on the use of AAI in social work practice is limited. An exhaustive review of the literature was conducted to summarize relevant research, identify the practice of AAI, and determine implications for social work practitioners who work to enhance the lives of older adults in various settings. This unique article integrates these benefits as they relate to older people with dementia and aims to provide concrete strategies for implementation of animal-assisted interventions.

**Keywords:** Animal-assisted intervention, animal-assisted activities, animal-assisted therapy, animal-assisted crisis response

### Key Practitioners Message

- Animal-assisted interventions (AAI) shows promise as a therapeutic modality for social workers
- Social workers can utilize AAI to assist in addressing cognitive, social and behavioral issues with older adults
- AAI can be beneficial to social workers at the micro and meso levels
- Integration of AAI into existing treatment plans may decrease agitation, depression, and isolation among older adults with dementia

One out of every three seniors dies with Alzheimer's disease or another dementia (Alzheimer's Association, 2017). With these numbers expected to increase, more and more seniors and families will face these neurocognitive diseases. These diseases have varying levels of cognitive decline and

behavioral disturbances. According to the DSM-5, cognitive impairments include difficulties with attention, learning, memory, language, or social interaction (APA, 2013). Behavioral disturbances may include agitation, changes in mood, psychotic symptoms, or apathy (APA, 2013). Effective man-

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*Received:* 7 August 2018 | *Accepted:* 23 April 2019 | *Published Online:* 24 April 2019



agement and treatment of these symptoms are essential to provide quality care and promote a positive quality of life.

One of the most common diseases to strike the older population is dementia (Almeida, Hicker, & Rees, 2014). Dementia can negatively affect patients' level of well-being due to symptoms such as delusions, depression, apathy, irritability, anxiety, sleep disorders, and difficulty engaging in social activities (Bunn et al., 2014). Agitation is a common occurrence in those with dementia (Kyo-men & Whitfield, 2008).

Dementia can result in poor outcomes for older adults. Older adults with dementia reportedly have higher rates of institutionalization and mortality (Almeida et al., 2014). There is also a high occurrence of dementia and other chronic health conditions (Richards & Brayne, 2010; Skoog, 2000). Older adults with dementia are more likely to have difficulty managing other health conditions (Bunn et al., 2014).

Much of the treatment for dementia focuses on the use of medication or herbal remedies and dietary supplements. Medication management presents a definite challenge with this population due to drug interactions, frailty of the older person, side effects, and inappropriate prescribing; rather than automatically reaching for the prescription pad, one should ask if there are alternative, non-pharmacological treatments (Webber, 2017; Woodhouse, 2013). One growing intervention with older adults is the use of animal-assisted interventions. The goal of this article is to review research that includes both animal-assisted interventions and neurocognitive symptoms, summarize the findings related to this specific area, identify research limitations, and offer practical, concrete suggestions for the practitioner working with older adults.

## Review of Research

The use of specially trained dogs in social work practice is a growing field. Animal-assisted interventions (AAI) is an umbrella term used to describe the various strategies for integrating animals into

practice settings. AAI encompasses animal-assisted activities (AAA), animal-assisted therapy (AAT), and animal-assisted crisis response (AACR). AAA refers to informal enrichment activities with motivational, educational or recreational benefits (Pet Partners, 2019). AAA may or may not be provided by registered, evaluated animals. AAT is a formal goal-oriented intervention directed by professionals (Pet Partners, 2019). AAT should be provided by registered, evaluated therapy animals. AACR refers to experienced, registered AAA/AAT Teams who are screened and trained to respond to intense emotional and environmental situations, such as disasters and other crises (HOPE AACR, 2019). The utilization of specially trained and registered therapy dogs in treating and managing neurocognitive symptoms should be considered. A summary of the research results of the benefits of animal-assisted intervention will be provided along with implications for social work practice with older adults.

## Cognitive Benefits of AAI

Currently, there is no cure or method of prevention for the neurocognitive decline; the primary goal of most interventions is to maintain function and improve quality of life (ASPE, 2015). Social and recreational activities are important for achieving these goals. Implementing appropriate activities for people with dementia is challenging due to cognitive and communication difficulties. One way to promote cognition is through AAT (Pope, Hunt & Elison, 2016). AAT can affect various behaviors associated with dementia. Interaction with the animal can decrease withdrawal, improve memory, and enhance communication skills (Cherniack & Cherniack, 2014).

AAI also encourages expression and cognitive stimulation through discussions and reminiscing. Buetter, Fitzsimmons, and Barba (2011) suggest beneficial goals for clients with dementia include focusing and paying attention to certain tasks. Demonstrations with dogs offer a desirable target for concentration.

Laun (2003) claims animal-assisted therapy, although a previously used intervention, is just

now being validated with research. AAT is recommended for persons with dementia to reinforce or teach cognitive and memory skills, tasks of daily living, spatial skills, sequencing, motor and social skills (Laun, 2003).

Katsinas (2000) incorporated a therapy dog into a day program for elderly patients with dementia. While the patients visited, they recalled memories about prior visits and previous pets and talked with others (Katsinas, 2000). These therapy dog visits gave patients something to look forward to and helped with focus and orientation for the next day the dogs were coming (Katsinas, 2000).

The cognitive benefits potentially lead to increased social benefits as well when people ask others if they know when the therapy dogs are coming or when they tell friends that today is the day the therapy dogs are visiting.

### **Social Benefits of AAI**

Enhancing social interaction helps to create a sense of belonging and enjoyment. One study of 56 nursing home residents with dementia found that therapy dogs improved engagement of residents (Marx et al., 2010). These same residents also demonstrated positive attitudes when interacting with these animals (Marx et al., 2010). A similar review found enhanced social interaction, pleasure, laughter, and enjoyment (Pope et al., 2016).

In another review, AAT interventions reduced agitation and improved social interaction and communication (Bernabei et al., 2012). Perkins, Bartlett, Travers, and Rand (2008) evaluated nine studies involving AAI and dementia; they found improved social behavior regardless of the severity of dementia.

Social activities that provide opportunities for mutual interactions enhance self-esteem. AAI offers physical comfort and support, an experience that may be few and far between for someone in a long-term care facility. Buettner and her colleagues (2011) believe these animals offer diversion and something to look forward to when the days are long.

Perkins and her colleagues (2008) indicated that the tactile comfort, companionship and social

engagement with the dogs were beneficial. AAI induced a positive attitude and reduced the negative perceptions of living in a residential care facility.

When used with people who have been diagnosed with dementia, AAT takes advantage of the human-animal bond to decrease behavioral and emotional problems and to increase social engagement and communication. People with dementia may experience difficulty finding the right words or forget what they wanted to say. Increased communication, both verbal and non-verbal, is an important benefit of AAT because it allows people with dementia to express their emotions and ideas and to relate to others. The ability to communicate can decrease the isolation and depression felt by those who have been diagnosed with dementia and decrease behavioral disturbances.

### **Behavioral Benefits of AAI**

Successful management of behavioral symptoms is challenging for both families and treatment providers. The utilization of AAI provides a potentially useful and cost-effective strategy that doesn't run the risk of over-medication or side effects for the older person. Much of the existing research on AAI and dementia focuses on measuring changes in agitation.

In a literature review of eighteen articles about dementia and AAI, it was determined that AAI can reduce agitation (Bernabei et al., 2013). An earlier review of the literature also found that AAI decreases agitation (Perkins et al., 2008). A specific research study investigated the effectiveness of AAT on agitation, aggression, and depression by randomly assigning nursing home residents to 10 weeks with or without AAT (Majic, Gutzmann, Heinz, Lang & Rapp, 2013). Significant decreases were found in both frequency and severity of symptoms, implying that perhaps AAT may delay the progression of dementia-related symptoms (Majic et al., 2013).

Changes in mood may likely have a direct impact on agitation and aggression; therefore it is important to review the research on AAI and mood.

A recent study including 58 nursing home residents with dementia found significant changes in depression scores (Cornell Depression Scale) for those receiving AAT (Olsen et al., 2016). In a similar study with 55 residents, researchers also discovered significantly improved depression scores for residents receiving animal-assisted therapy versus those receiving therapy with only the therapist (Travers, Perkins, Rand, Bartlett & Morton, 2013). Other researchers used the Geriatric Depression Scale and divided 50 residents into three groups: one receiving AAT with reality orientation therapy, one receiving strictly reality orientation therapy and a final smaller control group (Menna, Santaineillo, Gerardi, DiMaggio & Milan, 2016). Menna and her colleagues (2016) found statistically significant differences between groups, particularly between the AAT group and the other two groups.

One smaller study with 21 participants also utilized the Geriatric Depression Scale (GDS) and found symptoms of those in the AAI group decreased by 50% (Moretti et al., 2011). A similar study of 19 participants also utilizing the GDS failed to demonstrate significant changes; however, this study also involved some AAI occurring during physical therapy (Berry, Borgi, Terranova, Chiarotti, Alleva, & Cirulli, 2012). As physical therapy can be difficult and painful at times, perhaps participant's self-evaluations were impacted by these factors. This study, however, did identify significant visible changes in smiling of those receiving AAI. LeRoux and Kemp (2009) utilized a different depression measure (Beck Depression Inventory) with 16 residents. The residents in the AAI group had significant differences between their pre- and post-test measures on this depression scale.

One exploratory study evaluated the effect of an animal-assisted activity with dogs for ten patients affected by dementia in an adult day care center. Mosello, Ridolfi, and Mello (2011) measured cognitive, behavioral and physiological symptoms as participants were evaluated without dogs, with plush animals, and with dogs. An increase in pleasure and alertness and a decrease in sadness were observed with the animal-assist-

ed activity, and the decrease in sadness lasted for several hours (Mosello, et al., 2011). Although not significant, depressive symptoms were reduced, and participants did have significant decreases in anxiety in the AAA compared to the control conditions (Mosello, et al., 2011).

One difficult behavioral symptom of dementia may include hallucinations. Caregivers of those with dementia often identify these symptoms when residents are talking to someone who is not present or complaining about something that is not a reality (Cohen-Mansfield & Golander, 2012). Of the AAI dementia research reviewed, none appeared to utilize any measures of psychotic symptoms, such as hallucinations or paranoia. Consequently, a review of mental health research and AAI may offer suggestions for future research. Very few psychiatric studies were located that evaluated positive symptoms of schizophrenia, such as hallucinations and paranoia. Two of the three research studies reviewed utilized the Positive & Negative Syndrome Scale (PANSS). The PANSS measures positive symptoms, such as hallucinations and paranoia, negative symptoms, such as withdrawal and lack of spontaneity, and general psychopathology, such as anxiety and disorientation (Kay, Opler, Fiszbein & Ramirez, 2000). In one study, twice weekly AAT was provided to fourteen individuals with schizophrenia in addition to regular treatment (Calvo et al., 2016). Both this treatment group and the control group (eight individuals who did not receive AAT) showed significant improvement in positive symptoms and general psychopathology, but only the AAT group showed significant improvement in the negative symptoms (Calvo et al., 2016). A similar study provided twelve patients with AAT and compared a control group of nine who did not receive AAT (Villalta-Gil et al., 2009). Both of these groups demonstrated significant improvement in positive and general symptoms, but again only the group with the dog demonstrated significant changes in negative symptoms (Villalta-Gil et al., 2009). In the final study, twelve individuals participated in an AAA group with a dog and 15 in a control group without a dog (Chu, Liu, Sun, & Lin, 2009). This study utilized a modified measure to assess

positive, negative and emotional symptoms; they found significant improvements in positive and emotional symptoms but not negative symptoms (Chu et al., 2009).

Many individuals suffering from neurocognitive diseases experience apathy, a lack of interest. Two studies from Japan have demonstrated the benefits of AAA and AAT on this symptom. In the first study, eight elderly nursing home residents (all women) were involved in AAA for two years, and interview results revealed AAA "awakened their interest in themselves, their fellow residents, and their surroundings" (Kawamura, Niiyama, Niiyama, 2009, p. 45). Similarly, Motomura, Yagi, and Ohyama (2004) provided AAT to eight nursing home residents with dementia, and all showed significant improvement in the apathy scale.

Williams and Jenkins (2008) found anecdotal evidence that dog visits in dementia care settings result in relaxation, reduction in apathy, agitation, and aggression. Similarly, the presence of a residential dog in an Alzheimer's special care unit reportedly decreased the occurrence of behavioral disturbance of residents during the daytime (McCabe, Baun, Speich, & Agrawal, 2002). The above research results provide an abundance of relevant support for the gerontological social worker who is attempting to care for and treat the elderly client.

## Summary

It is clear from the existing AAI research that dogs provide many cognitive, social and behavioral benefits to older adults with neurocognitive impairments, such as dementia. Previous research has determined cognitive benefits, such as enhanced memory, focus, attention, and orientation. AAI offers unique strategies to enhance the cognitive skills of those with dementia; including recalling the dog's name, remembering how to give them a command, focusing attention on their tricks, or orienting themselves to the calendar with the dog picture on it, so they realize the therapy dogs are visiting. Social benefits are also well supported in the literature. Increased interactions, engagement, pleasure and laughter can create a

better quality of life for those living in a residential care facility. Sharing stories of pets or reminiscing with others can create a feeling of belonging. Finally, behavioral benefits are well documented as well. Decreased agitation, aggression, depression, anxiety, hallucinations and apathy can occur with AAI. AAI can enhance the quality of life by managing cognitive, social and behavioral symptoms faced by older adults. It can create a safer and enjoyable environment for the patient, staff and other residents.

## Recommendations

To aid in the development of innovative animal-assisted interventions, several suggestions will be offered. Finding specially trained and evaluated therapy dogs is fairly easy for the social work practitioner. There are many national organizations that evaluate and register these canines; the largest is Pet Partners. Pet Partners registers nine different species of animals, requires the animal handler to complete educational training before testing with their animal, and involves re-evaluation every two years which includes an animal health update (Pet Partners, 2019). Social work practitioners can contact this organization to locate qualified volunteers in their area. It is important to stress that these dogs are not service dogs that are permitted anywhere, but rather these are dogs are invited and welcomed into facilities for a purpose. There is no charge for these volunteer visitors and the organization provides liability insurance for registered volunteers. Practitioners are encouraged to fully review the requirements of these therapy animal organizations to assure they are comfortable with them. Also, despite these organization's processes, each animal has a different personality and temperament. Calm, obedient, quiet, affectionate, friendly dogs that do not react to noise and activity are best suited for this work (Chandler, 2005). It is also a good idea to meet and observe the animal before utilizing them with clients/patients/residents to assure practitioner comfort with the animal and handler.

Based on the author's experience, a few other considerations are recommended for successful

AAI. One concern is to consider the size of the animal. For example, if an older adult is bed bound, a small animal that can be placed on their lap or bed may be best as many medium-sized dogs cannot be easily reached from the bed. Many individuals are attracted to very large dogs as well that can be reached from the bed; however, clients may be more fearful of such large animals. A second consideration is to determine the location of the AAI. Many facilities offer individual room-to-room visits, but others utilize an activity room or similar setting for group AAI. Individual room visits benefit the client by occurring in the comfort of their room or bed. Multi-bed rooms, however, may cause an uninterested client to be afraid or to be exposed to potential allergens. Individual room visits can be very time consuming and tiring for the animal, so this should also be taken into consideration. There are other items one will need to address, such as client eligibility, agency requirements, and other policies and procedures, such as infection control. There are many resources available online or through pet partners.org to assist practitioners who are considering the development and implementation of AAI. Another thorough resource for the practitioner is the *Handbook on Animal-Assisted Therapy* (Fine, 2015).

More social workers are finding that animals are good assistants in the therapeutic process. Social workers, counselors, and therapists may use animals to aid in a therapy session (Blank, 2015). AAI can also be a useful tool for social workers to teach socialization skills, provide comfort, enhance physical health, among other therapeutic goals. The animal essentially acts as a go-between to foster a relationship between a social worker and a client, which promotes comfort and a sense of safety to expedite the therapeutic response. Animals can be a valuable bridge to establishing rapport and a therapeutic relationship (Tedeschi, 2015).

Social work practitioners are very familiar with the types of social work practice. Strategies for AAI in micro practice (with individuals and families) and meso (mezzo) practice (within groups and organizations) will be discussed. These concrete inter-

ventions will be focused on residential treatment for older persons, such as retirement communities, assisted or skilled care facilities, and hospitals.

### Micro Practice

AAA can occur where the handler brings the animal to individual client rooms to inquire if they would like a visit. The handler and animal then interact with the older person. In the author's experience, these types of visits generally occur in one of two ways. Some facilities create a pre-determined list of clients and room numbers who indicated, based on inquiry earlier in the week, they would like a visit. The handler is then given this list and conducts independent visits room by room with the clients on the list. A second option is to have a staff member accompany the handler and animal. In this situation, the staff member who knows the clients enters the rooms and inquires if they would like a visit from the therapy dog. Depending on the size of the facility, these approaches may take some time to accomplish these visits. These visits typically last 1-1 ½ hours and can be scheduled and included on an activity calendar for residents.

AAA is also increasing in many facilities via a resident animal, a cat or dog that lives as a pet at the facility. This strategy then enables the older person to have more frequent access to a support animal. Obviously this example takes a lot of planning and policy development to assure that the animal has its own private place to escape from constant petting and stimulation. In this situation, questions must be addressed such as who will arrange and take the animal to the veterinarian, who pays for the care of the animal, and who will feed and take the animal out. In these situations, these are not registered therapy animals that are evaluated and handled by a designated person. Therefore, it is critical that an appropriate animal behavior professional has evaluated the animal for sound temperament and behavior so as to not present unnecessary risks to residents or visitors.

AAT is frequently utilized in settings and can be easily linked with the goals of existing treatment

providers. Social workers in facilities for older persons are often involved in acclimating new residents during the admissions process and helping them to feel comfortable. AAT can be useful for this purpose to establish rapport with the older person and provide comfort and support throughout a difficult change. AAT can be paired with other treatment providers as well, such as Physical therapists (PT), Occupational therapists (OT), and Speech therapists (ST). For example, the PT can utilize the animal to increase a client's range of motion by placing the dog on one side of the client for petting. Speech therapists may also find benefit in AAT. For example, they may encourage the client to give certain commands to the therapy dog to improve their speech. OT Melissa Winkle (2013) offers practical, detailed activities with therapeutic benefits to integrate into healthcare settings.

For individuals with fears or allergies, AAA and AAT can still be beneficial. For example, an AAA activity where therapy dogs are doing tricks or activities can elicit laughter and enjoyment without the resident having to pet or hold the animal. They can be seated toward the back of the room where they feel more comfortable and not within close proximity of the animal. Hypoallergenic dogs, such as Shih Tzus or Havanese, may also be another option for those who wish to engage with therapy dogs but who have allergies or compromised immune systems. Finally, there are several robotic animals on the market that could present an alternative to real animals.

A final micro AAA intervention may include family support. Families often have an emotionally difficult time making long-term care decisions. Sharing the option of a therapy animal may provide a little comfort during family meetings and demonstrate the homelike nature of the facility. Therapy animals could also accompany the families during case review meetings, especially where difficult information or decisions may be addressed.

### **Meso Practice**

Offering AAI in groups is often more time and resource friendly than other strategies. The activi-

ties department in many facilities often plans and executes a variety of options to benefit the older person and enhance their quality of life. Many animal-assisted interventions can help facilities fulfill these goals.

Recreational benefits can be enhanced by offering trips that involve animals. AAA can include outings to Humane Societies or other shelters, zoos, or farms. According to the American Pet Products Association (APPA, 2017), almost 80 million households have pets; therefore outings involving animals will likely be very attractive to the older person who most likely had pets in their past. If an outing is not feasible, many of these organizations may offer traveling programs to facilities.

Another form of AAA often utilized in various facilities is group interactions with the therapy dog. The activities department schedules regular visits for a therapy dog team or teams to come and visit with a group of residents. This works best in a very large room with residents positioned in a circle. The handler and animal then go around the circle interacting with the residents. This type of intervention offers many social benefits while the residents share stories of their previous pets and engage with the visiting animal and handler.

AAA can also take the form of entertainment via dogs who can demonstrate various obedience skills, perform tricks or engage with the residents in games. One game the authors have modified for use with clients is Jenga. Each wooden block has a number written on it that corresponds to a question about animals. For example, share a story about a previous pet you had, who is your favorite TV animal or ask the therapy dog to "sit." When a client pulls a block from the tower, they answer the question that corresponds to that number. This game engages the residents in a fun way to discuss animals while interacting with the visiting dog. If stacking and pulling blocks from the tower is difficult, one can just lay the blocks on the table and clients can select one.

A more formalized group intervention can be facilitated by the Social Worker. This AAT group would be provided to individuals with similar

concerns. For example, a group for individuals who have anxiety may benefit from learning deep breathing. Grover (2010) has several fun activities to integrate the dog into these AAT groups; she suggests using flavored bubbles for dogs to teach the clients how to engage in deep breathing. Clients enjoy blowing bubbles and watching the dog attempt to catch these bubbles which invariably leads to a lot of laughter as well as skill development.

Although most of these strategies are focused on clients, one must also take measures to care for the valuable human service professionals. Job burnout is a severe consequence that can cause workers to feel dissatisfied, uncommitted or ready to leave the job (Beheshtifar & Omidvar, 2013; Jourdain & Chenevert, 2010). Implementing simple strategies to demonstrate concern for the staff will go a long way to diminishing the likelihood of burnout. Therapy animals can be invited to staff meetings for general support or fun, engaging team building activities. Professionals who are working with older adults are not invincible to the grief and loss experienced when a client dies. Offering small group interventions with a therapy dog present to help them process and share their feelings demonstrates that the organization cares for their staff.

Fortunately significant crises and disasters, such as fires or tornadoes, rarely happen within a facility. Following crises, however, many clients and staff are impacted. HOPE AACR, a national, non-profit organization can be called in to provide animal-assisted comfort and support to individuals following disasters (HOPE AACR, 2019). No cost for this service makes it especially feasible for facilities serving older adults. These crisis "comfort" dogs can be utilized to work with groups or individuals and provide a calming presence following a disruptive incident.

## Conclusion

As the aging generation continues to grow, it is essential that social work practitioners utilize the most effective and evidence-based interventions to enhance the quality of life for these seniors. Re-

search on AAI documents several benefits which are especially relevant for the seniors with neurocognitive impairments. Developing and using innovative animal-assisted interventions in micro and meso practice will certainly contribute to improving outcomes for older adults and their families.

Social workers experienced with AAI are in a unique position to increase the awareness of AAI as a therapeutic modality which can be used in different environments. It is essential for social workers to educate professionals and paraprofessionals on the advantages of AAI as an intervention which ultimately assists in improving the quality of life for older adults with dementia. Social workers will need to work closely with the administration of different environments to achieve their support towards the integration of AAI into their living facilities. They will also work with the administration to develop policies and procedures to ensure the safety of residents, staff, and the animals they encounter, as well as the certification of the dogs and their handlers. As a therapeutic intervention there exist documented studies which illustrate the potential of AAI in decreasing symptoms associated with dementia, however additional studies are needed. Practical recommendations have been identified for social workers interested in incorporating animals into the therapeutic process; however additional research is clearly indicated to advance AAI as modality which can be used with various populations. There are many resources<sup>1</sup> to assist practitioners in locating qualified canines to assist in the provision of services.

Unfortunately, there are limited research studies that target the aging population with neurocognitive impairments and animal-assisted intervention. Searching research titles for "animal-assisted" and "dementia" using SAGE premier, yields only five studies. Much of the research on animal-assisted interventions and the aging population continue to utilize smaller sample sizes and anecdotal evidence. Utilization of formalized

<sup>1</sup> National resources are available on the journal websites <https://www.petpartners.org>, <https://www.therapydogs.com>, and <https://www.hopeaacr.org>

assessment measures to demonstrate change will enhance the validity of this intervention. Extending these assessment measures to include all symptoms of dementia, such as psychotic symptoms, will further evaluate how AAI may be useful in the management and treatment of dementia and specific symptoms.

## References

- Almeida, O. P., Hicker, L., & Rees, M.** (2014). Depression, dementia and cognition in older people. *Maturitas, 79*(2), 133-135. [Crossref]
- Alzheimer's Association** (2017). 2016 Alzheimer's disease facts and figures. Retrieved from <https://www.alz.org/facts/>
- APA** (American Psychiatric Association) (2013). *Desk Reference to the Diagnostic Criteria from DSM-5*. Arlington, VA: American Psychiatric Association.
- APPA** (American Pet Products Association, Inc) (2017). 2015-2016 APPA National Pet Owners Survey Statistics: Pet Ownership and Annual Expenses. Retrieved from <https://www.americanpetproducts.org>
- ASPE** (The Assistant Secretary for Planning and Evaluation) (2015). National Alzheimer's project act (NAPA): National plans to address Alzheimer's disease. Retrieved from: <https://aspe.hhs.gov/national-plans-address-alzheimers-disease>.
- Beheshtifar, M., & Omidvar, A. R.** (2013). Causes to create job burnout in organizations. *International Journal of Academic Research in Business and Social Sciences, 3*(6), 107-113.
- Bernabei, V., De Ronchi, D., La Ferla, T., Moretti, F., Tonelli, L., Ferrari, B., Forlani, M., & Atti, A. R.** (2008). Animal-assisted interventions for elderly patients affected by dementia or psychiatric disorders: A review. *Journal of Psychiatric Research, 47*(6), 762-773. [Crossref]
- Berry, A., Borgi, M., Terranova, L., Chiarotti, F., Alleva, E., & Cirulli, F.** (2012). Developing effective animal-assisted intervention programs involving visiting dogs for institutionalized geriatric patients: A pilot study. *Psychogeriatrics, 12*(3), 143-150. [Crossref]
- Blank, B. T.** (2015). Animal-assisted therapy, veterinary social work, and social work with people and pets in crisis. *The New Social Worker*. Retrieved from <http://www.socialworker.com/feature-articles/practice/animal-assisted-therapy-veterinary-social-work>
- Buettner, L. L., Fitzsimmons, S. & Barba, B.** (2011). Animal-assisted therapy for clients with dementia: Nurses' role. *Journal of Gerontological Nursing, 37*, 5, 10 - 14. [Crossref]
- Bunn, F., Burn, A., Goodman, C., Rait, G., Norton, S., Robinson, L., & Brayne, C.** (2014). Comorbidity and dementia: A scoping review of the literature. *BMC Medicine, 12*(1), 1-28. [Crossref]
- Calvo, P., Fortuny, J. R., Guzman, S., Macias, C., Bowen, J., Garcia, M. L., Orejas, O., Fatjo, J.** (2016). Animal-Assisted Therapy (AAT) program as a useful adjunct to conventional psychosocial rehabilitation for patients with schizophrenia: Results of a small-scale randomized controlled trial. *Frontiers in Psychology, 7*, 631-645. [Crossref]
- Chandler, C. K.** (2005). *Animal-assisted therapy in counseling*. NY: Routledge.
- Cherniack, E. P. & Cherniack, A. R.** (2014). The benefit of pets and animal-assisted therapy to the health of older individuals. *Current Gerontology and Geriatrics Research, 1-9*. [Crossref]
- Chu, C., Liu, C., Sun, C., & Lin, J.** (2009). The effects of animal-assisted activity on inpatients with schizophrenia. *Journal of Psychosocial Nursing, 47*(12), 42-48. [Crossref]
- Cohen-Mansfield, J., & Golander, H.** (2012). Analysis of caregiver perceptions of "hallucinations" in people with dementia in institutional settings. *American Journal of Alzheimer's Disease and Other Dementias, 27*(4), 243-249. [Crossref]
- Fine, A. H.** (2015). *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions*, 4<sup>th</sup> edition. U.S.: Academic Press.

- Grover, S.** (2010). *101 Creative Ideas for Animal-Assisted Therapy: Interventions for AAT Teams and Working Professionals*. U.S.: Motivational Press.
- HOPE AACR** (Animal-Assisted Crisis Response) (2019). Comfort in times of crises: Frequently asked questions. Retrieved from <http://hopeaacr.org/frequently-asked-questions/>
- Jourdain, G., & Chenevert, D.** (2010). Job demands-resources, burnout and intention to leave the nursing profession: A questionnaire survey. *International Journal of Nursing Studies*, 47(6), 709-722. [[Crossref](#)]
- Katsinas, R. P.** (2000). The use and implications of a canine companion in a therapeutic day program for nursing home residents with dementia. *Activities, Adoption and Aging*, 25, 1, 30. [[Crossref](#)]
- Kawamura, N., Niiyama, M., & Niiyama, H.** (2009). Animal-assisted activity: Experiences of institutionalized Japanese older adults. *Journal of Psychosocial Nursing*, 47(1), 41-47. [[Crossref](#)]
- Kay, S. R., Opler, L. A., Fiszbein, A., & Ramirez, P.** (2000). PANSS: Positive & Negative Syndrome Scale. NY: Multi-health systems, Inc.
- Kyomen, H. H., & Whitfield, T. H.** (2008, July). Agitation in older adults: Understanding its causes and treatment. *Psychiatric Times*, 25(8), 52.
- Laun, L.** (2003). Benefits of pet therapy in dementia. *Journal for the Home Care and Hospice Professional*, 21(1), 49 - 52.
- LeRoux, M. C., & Kemp, R.** (2009). Effect of a companion dog on depression and anxiety levels of elderly residents in a long-term care facility. *Psychogeriatrics*, 9(1), 23-26. [[Crossref](#)]
- Majić, T., Gutzmann, H., Heinz, A., Lang, U. E., & Rapp, M. A.** (2013). Animal-assisted therapy and agitation and depression in nursing home residents with dementia: A matched case-control trial. *American Journal of Geriatric Psychiatry*, 21, 11, 1052-1059. [[Crossref](#)]
- Marx, M. S., Cohen-Mansfield, J., Regier, N. G., Dakheel - ali, J., Srihari, A., & Thein, K.** (2010). The impact of different dog-related stimuli on engagement of persons with dementia. *American Journal of Alzheimer's Disease & other Dementias*, 25,1, 45. [[Crossref](#)]
- McCabe, B. W., Baun, M. M., Speich, D., & Agrawal, S.** (2002). Resident dog in the Alzheimer's special care unit. *Western Journal of Nursing Research*, 24(6), 684-696. [[Crossref](#)]
- Menna, L. F., Santaniello, A., Gerardi, F., DiMaggio, A., & Milan, G.** (2016). Evaluation of the efficacy of animal-assisted therapy based on the reality orientation therapy protocol in Alzheimer's disease patients: A pilot study. *Psychogeriatrics*, 16(4), 240-246. [[Crossref](#)]
- Moretti, F., DeRonchi, D., Bernabei, V., Marchetti, L., Ferrari, B., Forlani, C.,...&Atti, A. R.** (2011). Pet therapy in elderly patients with mental illness. *Psychogeriatrics*, 11(2), 125-129. [[Crossref](#)]
- Mossello, E., Ridolfi, A. & Mello, A. M.** (2011). Animal-assisted activity and emotional status of patients with Alzheimer's disease in a day care. *International Psychogeriatrics*, 23, 899 - 905. [[Crossref](#)]
- Motomura, N., Yagi, T., & Ohyama, H.** (2004). Animal-assisted therapy for people with dementia. *Psychogeriatrics*, 4, 40-42. [[Crossref](#)]
- Olsen, C., Pedersen, I., Bergland, A., Enders-Slegens, M., Patil, G., Ihleback, C., ...& Ihleback, C.** (2016). Effect of animal-assisted interventions on depression, agitation and quality of life in nursing home residents suffering from cognitive impairment or dementia: A cluster randomized controlled trial. *International Journal of Geriatric Psychiatry*, 31(12), 1312-1321. [[Crossref](#)]
- Perkins, J., Bartlett, H., Travers, C., & Rand, J.** (2008). Dog-assisted therapy for older people with dementia: A review. *Australasian Journal on Ageing*, 27(4), 177-182. [[Crossref](#)]
- Pet Partners** (2019). About: How our program is different. Retrieved from <https://petpartners.org/about-us/our-programs-different/>
-

- Pet Partners** (2019). Learn: Terminology. Retrieved from <https://petpartners.org/learn/terminology/>
- Pope, W. S., Hunt, C. & Ellison, K.** (2016). Animal-assisted therapy for elderly residents of a skilled nursing facility. *Journal of Nursing Education and Practice*, 6, 9, 56 - 62. [[Crossref](#)]
- Richards, M., & Brayne, C.** (2010). What do we mean by Alzheimer's disease? *British Medical Journal*, 34(7778), 865-867. [[Crossref](#)]
- Skoog, I.** (2000). Vascular aspects in Alzheimer's disease. *Journal of Neural Supplement*, 59, 37-43. [[Crossref](#)]
- Tedeschi, P.** (2015). Methods for forensic animal maltreatment evaluations. In L. Levitt, G. Patronek, & T. Grisso (Eds.) *Animal Maltreatment: Forensic Mental Health Issues and Evaluations*. New York: Oxford University Press, 309-331.
- Travers, C., Perkins, J., Rand, J., Bartlett, H., & Morton, J.** (2013). An evaluation of dog-assisted therapy for residents of aged care facilities with dementia. *Anthrozoos*, 26(2), 231-225. [[Crossref](#)]
- Villalta-Gil, V., Roca, M., Domenec, E., Escanilla, A., Asensio, M. R., Esteban, M. E., Ochoa, S...**Schi-Can group (2009). Dog-assisted therapy in the treatment of chronic schizophrenia inpatients. *Anthrozoos*, 22(2), 149-159. [[Crossref](#)]
- Webber, L.** (2017). Prescribing in the elderly. *InnovAid*, 10(2), 96-104. [[Crossref](#)]
- Williams, E. & Jenkins, R.** (2008). Dog visitation therapy in dementia care: A literature review. *Nursing Older People*, 20, 8, 31 - 35. [[Crossref](#)]
- Winkle, M. Y.** (2013). *Professional Applications of Animal-Assisted Interventions: Blue Dog Book*, 2<sup>nd</sup> ed. NM: Dogwood Therapy Services.
- Woodhouse, K.** (2013). Treating older people. *European Journal of Clinical Pharmacology*, 69, S53-S57. [[Crossref](#)]