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The Effect and Benefits of Pet Facilitated Therapy (PFT) in the Elderly

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Abstract: With the advanced age, the elderly people are facing undergoing decline in their physical, mental and social aspects. Alzheimer, Dementia, and Cognitive function disorders are among the common health problems which has been experiencing by the elderly. Other than the conventional therapy, the complementary and alternative therapies are required to be considered for their long-term care. This study aims to identify the effects and benefits of PFT among the elderly population and their health care. The systematic literature review method is used as the research methodology. 14 articles related with the use of PFT in the elderly are chosen based on the inclusion criteria, and the findings from these studies are examined and discussed in this study. Based on the findings, it is indicated that PFT have the potential benefits on the care of the elderly with cognitive dysfunction. It is recommended to use as part of the complementary therapy in the care of older people after considering and removing the limitations. Since raising awareness about PFT and their potential benefits in the care of elderly is a necessary, it is hoped that this paper will serve as a knowledge sharing for the nurses and health care providers especially those living in areas where the use of PFT is very limited. Yet, further studies still need to be conducted in the related area to have more in-depth understanding about the application of PFT and the related matters.

Keywords: Pet Facilitated Therapy (PFT), elderly people, Dementia, Alzheimer, Cognitive dysfunction.

INTRODUCTION

Elderly and the Ageing

Ageing is generally defined as being old or reaching older adulthood [1]**.** With the advancement of technology nowadays and improved medical treatment, humans have been on longer lifespan than ever before. The world's elderly population grows continuously at an unprecedented rate and therefore Richard J. Hodes, Director of National Institute of Ageing mentioned that "Older people are a rapidly growing proportion of the world's population" [2]. The elderly population (aged 60 years and above) is expected to be nearly 2 billion in 2050 [3]**.** Obviously, 8.5 percent of today people worldwide (617 million) are reached their ages as 65 and above, however, based on the United Nations report of "An Ageing World: 2015" this percentage is supposed to jump to nearly 17 percent (1.6 billion) of the world's population by 2050 [4]**.** Moreover, it is noted that "Ageing is a complex process of biologic, psychosocial, cultural, and experiential change" [5] and many factors contribute to ageing process in addition to the genetics factors. Major life events such as retirement, changes in social relationships and roles, changes in living arrangements, and dealing with loss are usually experienced and can affect someone's health status and outlook on life.

Elderly people and their Problems

One of the utmost fears related to the advancing age is poor health since ageing is associated with the decline in every aspect of their life. These problems include deterioration in the physical, mental and social aspects. Basic and common health problems of older adults are hypertension, diabetes, high cholesterol, head and body aches, sensitive to injury due to weakness of muscle, tendon, bone, ligaments and heavy fat stomach. Because of genetic or pathophysiologic conditions, the older people are becoming the victims of negative changes, and those elderly involve easily in unwelcomed health problems.

In addition to these, adequate periods of sleep and rest are essential for the restoration of energy in all living beings, however the elderly persons commonly experience changes in both sleep pattern and sleep structure. Abnormal sleeping leads to abnormal eating and other health problems also are unexpectedly invaded to the longer life of people. Therefore, the

family and society become a burden for taking care of elderly instead of looking for further developing in terms of business and other affairs. It may lead to disturb or bankrupt the whole budget of family or company or even the country. Age wave is coming, and society will need well-educated and experienced nurses and health care providers to meet the challenge of providing care for this ever-increasing, complex segment of the population. According to Lundy & Janes [6], healthy people 2010 goals to provide holistic care for the elderly population are to maintain their health and functional independence.

Moreover, older adults like any age group have certain basic needs such as physiologic and safety needs, as well as the needs for love and belonging, self-esteem, and self-actualization. All human beings have psychosocial needs that must be met for their lives to be rich and fulfilling. Without healthy relationships with other people, life can be very lonely and lacking in quality. The relative few (4.1%) of older adults are institutionalized in nursing homes and the majority live in the community setting [7]. The elderly should receive physical, mental, and social well-being in all aspects of their life, and have all the rights to be protected and respected.

Background of the study

The elderly population in the world including South East Asian countries has been increasing throughout the years. The average life expectancy for women and men in Malaysia is 76 and 73 years respectively. Like other developed and developing countries, Malaysia with increased ageing population is also facing to answer the question of who cares for our elderly [8]**.** Thus, it is increasingly important among social service authority and government administrative body to take precaution and the best managements for the elderly population. The previous researches suggested that PFT may have positive effects on the elderly population. But very few studies were conducted in Malaysia, and the use of PFT as incorporated care of the elderly is very limited. It may be the fact that there is limited awareness of the benefits of PFT among the public as well as the health care providers. Being health care team members, it is our responsibilities to explore more about the benefits of PFT and raise awareness among health care providers and the public who will become a source of incorporating the use of PFT as part of the conventional therapy.

OBJECTIVE OF THE STUDY

This study aims to explore the use of pet therapy and potential therapeutic effects of it among the elderly population. It is intended to raise awareness about animal assisted therapy and serve as a source of knowledge contribution in the field of elderly care. In this study, the different names of pet therapy will be used interchangeably as pet facilitated therapy (PFT), animal-assisted therapy (AAT), animal assisted activity (AAA), pet assisted therapy (PAT), and pet insects since all these represent the similar meaning and purpose.

METHODOLOGY

The systematic literature review method was used for this study, and the data searches were mainly done from the internet sources namely google scholars, and Mendeley as well as Proquest, Pubmed, Clinikalskills, and Research Gateways through International Islamic University, Malaysia (IIUM) library online data base. As the inclusion criteria, the articles written in English and the studies based on the use and benefits of pet therapy in elderly population are selected. The key words such as pet therapy in the elderly/ geriatric clients, the use of pet therapy in nursing homes, the benefits of animal therapy were typed and searched online. The studies based on the benefits and use of the live pets or live pets with any comparison studies were taken. But the studies solely based on the robotic animals or pet toys used in the elderly were excluded. Moreover, the uses of PFT in the elderly with the psychiatric illness were excluded. The chosen articles included the use of different methodologies such as the quantitative, qualitative, or mixed methods while the studies based on the literature review method were excluded. Moreover, the articles were screened based on the year of publications and those published within 5 years starting from 2013 to 2017 were chosen. After thorough screening was done, 14 articles which met the inclusion criteria were chosen to be studied and discussed.

FINDINGS AND DISCUSSIONS

From the chosen articles, it was noted that the animals used as PFT include dogs, horses, and fish. Many of these studies were conducted in nursing homes rather than the residential area which may be due to the feasibility of the data collection. Most of the studies emphasized on the effects of PFT in Dementia, Alzheimer clients, and elderly with cognitive function, and some studies focused on the sleep pattern, postural balance and fear of fall (FOF) of the elderly. The findings from these articles are presented and discussed as follows.

A study was conducted by Tournier, Vives and Postal [9] with the aim of assessing the effects of an animal-assisted therapy (AAT) program on the neuropsychiatric symptoms in the elderly with Alzheimer. The 11 elderly residents (age between 71 to 93years) from dementia care unit with medium to severe dementia were involved as the study participants. They were given weekly interventions for 5 months led by AAT certified psychologist along with her dog**.** During the session, the participants were permitted to interact and take care of the dogs, and recall their memories related with the animals. 21 behaviors in relation to their positive and negative effects,

interactions with the dog, and participation in these sessions were observed. The data from the pre-and post-intervention were collected using the Neuropsychiatric Inventory (NPI) under which (total 12) Neuropsychiatric symptoms were measured. Moreover, a list of 21 behaviors under four categories (negative affect, positive affect, interaction with dogs, and participation in the sessions) were rated during AAT sessions. The findings from this revealed that the positive effects of AAT were seen during the first few sessions, but it tended to decline overtime. No statistically significant changes were observed in NPI total score and caregiver distress score, though the positive effect of AAT is seen for several neurological symptoms. Thus, it is suggested that the effects of regular and long-term AAT sessions may serve as an alternative method to pharmacological intervention for decreasing neuropsychiatric symptoms in the elderly with dementia.

Swall *et al*. [10] conducted a study on "the lived experiences of dog handler who visiting the older persons with dementia with a therapy dog". The qualitative, phenomenological method was used as the study methodology. The data from nine participants were collected by using open-ended interviews and the positive and negative experiences of the participants were identified during (22-96 minutes) interview sessions. The findings are presented and discussed as "a naive understanding, a structural analysis and a comprehensive understanding" as per the phenomenological hermeneutic analysis method. Under a structural analysis, 3 subthemes are emerged as: "Being an unintentional listener and using one's skills, being responsive to the emotions of a person with dementia, and creating an existence free from illness for the person with dementia". And out of which, one theme emerged: "Respite from the burden of illness for persons with dementia" was taken since the therapy dog visit provide meaningful relationship and the time of communication between the handler and the dementia clients, and contributed to reducing symptoms and promote well-being of the persons. But, the skills and knowledge of the dog handlers is highlighted as important in caring the person with dementia by considering the individual needs. This study suggested PFT for contributing as a nonpharmacological intervention for the person with dementia since it helps provide as an act of caring, temporary break from their illness, and create the communication between trainer and patient.

The study of Menna *et al*. [11] evaluated the effects of animal assisted therapy (AAT) in elderly patients with Alzheimer. The study was undertaken with 50 patients from an Alzheimer's Center for 6 months. The participants were divided into three groups: (i) 20 patients received AAT based on the formal Reality Orientation Therapy (ROT) protocol; (ii) 20 patients were exclusively based on the ROT; and (iii) 10 patients (control group) without based on AAT intervention or ROT. Mini-Mental State Examination (MMSE), 15-item Geriatric Depression Scale (GDS) of participants were administered to all three groups. Both groups (AAT and ROT) are seen to improve in GDS and mood status, but MMSE measured slight improvement in cognitive function while no changes are seen in the control group. The post-hoc comparison was done, and the mean scores among different groups were measured, the result was significant with ($P< 0.001$) between the AAT and the other two groups. The study pointed out that Pet therapy interventions based on the formal ROT protocol may have the potential effect to improve mood and depressive symptoms of the elderly with Alzheimer compared to the ROT protocol alone.

Pope, Hunt, and Ellison [12] carried out a study for examining the effects of AAT on social behaviors and engagement of the elderly with dementia. The 44 participants (24 female and 20 male) were divided into two groups, and each group received biweekly visits either with animals or human interaction. During the animal session, the participants were allowed for some activities as touching, petting, brushing and talking to the dogs. On the other hand, human interaction sessions included conversation, reading from and looking at pictures in a newspaper. The results revealed both animal and human interaction shows significant improvement in the social behavioral scores ($p < .001$) but with the group receiving AAT having a higher score and lower inappropriate responses. The engagement level of the participants measured by Menorah Park Engagement Scale, and, though the type of therapy has no significant effects on it, the AAT visits receive greater pleasure and lower inappropriate responses from the participants. Cohen Mansfield Agitation Inventory also found no significant results, but the screaming and verbal aggression was reduced in the weeks of the dog visits ($p=.002$). The findings suggested that AAT practiced in accordance with the guidelines and ethical principles helps improve social behavior and quality of life in elderly with dementia.

Thodberg *et al*. conducted the study. [13] with the purpose of ruling out the therapeutic effects of dog visits on sleep pattern and psychiatric well-being of the elderly. 100 elderly patients from the 4 nursing homes in Denmark were chosen as the study participants in whom they were assigned to receive dog visits 2 times per week for six weeks (total 12 visits). Sleep pattern of the participants were measured before, during, and after dog visits. The Geriatric Depression Scale (GDS), the Gottfries-Brane-Steen Scale (GBS), and the Mini-Mental State Examination (MMSE) before and after the visits were used to measure the psychiatric well-being of the elderly. Their behaviors in dealing with the visitor and the animals were recorded in detail. The results revealed that the sleep duration (min) was

increased in the third week of dogs' visits compared to the robot seal and cat toy (P= 0.01). But the visit type has no effect on cognitive function, GDS, body mass index (BMI), the GBS Scale, and the MMSE of the elderly due to dog visits with p value greater than 0.05. Though GDS was reduced (P<0.05) during the experimental period, the cognitive impairment was worsened with decreased MMSE (P<0.05), and increased GBS scales (P<0.05). The study suggested that visit type have no long-term effect and suggested for further investigations to determine the association between sleep pattern and dog visits.

Another study by Thodberg *et al.* [14] was conducted in 100 nursing home residents to rule out their behavioral responses to visits either with the animals or animal models. The randomized controlled design was used, and the participants were divided into three groups. Each group was visited with either dog or robotic dog (which can respond to touch, sound, light and make movement) or toy cat. 2 times per week visits for 6 weeks (total 12 visits) interventions were provided. The findings revealed that the dog and the interactive robot provided the most interaction in their physical contact (p< 0.001), conversation p< 0.05), and eye contact (p< 0.001), compared with the toy cat. But, the participants with higher cognitive level tend to engage in longer conversation with the visiting person compared to those with low cognitive level. However, the degree of cognitive impairment is related with their interaction with the dogs, participants with severe cognitive impairment interact more with the animals, and less with humans (p< 0.01) regardless of the type. The therapy dog able to maintain the same level of attention over time compared to the robotic dog. Thus, this study pointed out the potential benefits of using dog or interactive robotic toy to initiate and stimulate the communication of the elderly with impaired cognitive function compared to the toy cat. More research is recommended to focus on the relationship between the cognitive level and interaction of the elderly residents.

Christine Oslen *et al*. [15] conducted a project on "Effect of animal-assisted activity on balance and quality of life in home-dwelling persons with dementia". The study was done in 16 day-care centers with 80 participants including n=42 (intervention group) and n=38 (control group with usual treatment) with the purpose of examining the effect of AAA on risks for fall accidents, balance, and quality of life. The balance scale (Berg balance scale (BBS), (Quality of Life (QOL) in late-stage dementia with the checklists are used for data collection. For intervention, the dog was used as an assisted animal and the participants were regularly visited by the dog along with qualified dog handler. Each group of participants (3-7) were arranged to receive 30 min per session dog visit biweekly for 12 weeks. The results indicated that the positive effect of AAA with the significant relationship between AAA and the balance (BBS scores) from pre-test to post-test compared to control group (p=0.03). No effect was found between pre-test and follow-up, though the result constantly remained after post-intervention and there was no significant effect on the quality of life (QOL) of the participants. The study suggested AAT as useful clinical implications for improvement of balance and prevention of falls.

Another study by Christine Oslen *et al.* [16] examined "Engagement in elderly persons with dementia attending animal-assisted group activity". In this study, 49 participants with dementia were included in which both types of participants: living at home who attended day care center (n=28) and nursing home residents (n=21). Each session was limited to 30 minutes to adjust the short attention span nature of the dementia client. Twice a week intervention session was continued for 12 weeks which is led by a certified dog handler. During the sessions, the participants could interact with a dog by petting, giving a treat, and throwing a toy to fetch in which the Video-recordings were taken at week 2 & week 10, and their behaviors were categorized using an ethogram (a catalogue of behaviour descriptions**).** The findings exposed that some behavioral differences were seen depends on the type of residents who stayed at home or nursing home, and level of dementia. But, AAT provide opportunity for engagement with the dog as well as the handlers by showing positive behaviors such as smiles and laughter. The study suggested a consideration of AAA as a suitable and health promoting intervention for elderly after catering the individual needs, interests, and degree of dementia.

Edwards, Beck and Lim [17] assessed the effects of aquarium on resident behavior and job satisfaction of the staffs. 71 participants with dementia and 71 professional staff from three dementia units were chosen as study participants. A pretest was done for the baseline data of the participants; behavioral assessment of the participants and job satisfaction surveys in the staffs. Then, Post-test was obtained after introducing the aquarium setting. The data from the pre-test and post-test were compared which revealed improvement in four domains of residents' behaviors: uncooperative, irrational, sleep, and inappropriate behaviors. Moreover, it was noted the significant improvement of the overall residents' behavior (p< .001), the staff's satisfaction score (p< .001), and the decrease in disruptive behavior score (from 67.2 to 58.2). Thus, Aquariums was suggested as an innovative way for introducing animal assisted therapy to reduce behavioral and psychological symptoms of dementia clients and promote staff job satisfaction of the staffs in dementia care unit.

Another study was undertaken by Dabelko-Schoeny *et al.*, [18] in adult day health center (n= 16) with the purpose of determining "the feasibility and effectiveness of the equine-assisted intervention (EAI)

as a nonpharmaceutical intervention". In this study, the members were divided into two groups; one with therapy horses (EAI), and the other without EAI but receive usual services. During intervention session, the elderly participants were encouraged for the activities such as grooming, painting, and leading horses. The pretest-posttest results were compared after 4 weeks intervention by using the randomized crossover design, and the findings revealed positive improvement in the physical and behavioral conditions, and reduction in behavioral problems of the elderly. Moreover, the cortisol levels which used as a physiological measure of coping with stress was increased in participants with higher Mini Mental State Examination scores after the EAI. Yet it was assumed as the marker of good stress because of being temporary in nature. And thus, the possible benefits of Equine-assisted interventions (EAI) in elderly with dementia and Alzheimer's disease was suggested. But, the additional studies which involve selection criteria as well as, additional process and outcome measures (quality of life and mood) based on the specific activities were recommended.

Swall *et al,* [19] identified the effects of pet therapy on the sleep pattern of elderly with Alzheimer from the nursing home. The data were collected from five participants with moderate to severe Alzheimer's disease. The sleep patterns for 16 intervention weeks were measured using an Actiwatch (which can register daytime and nighttime activities including the sleep onset), the measurement was done during the session, one hour before and one hour after the session. The transferred data in the computer which presented as the activity curves were analyzed using descriptive statistics. These data were also compared with the video observation which keeps record of the different type of activities made during the intervention. The findings showed no clear indications that a therapy dog influences daytime activity and sleep pattern, but it pointed out that activity and night-time sleep pattern may vary between persons from baseline, and at different time points such as during dog visits and follow up. It is proposed that the frequency of visits to be catered based on the individual person needs and habits. And further investigation and analysis regarding daytime and nighttime activities from the perspective of the participants with Alzheimer is recommended.

Wehofer, Goodson, & Shurtleff [20] conducted a study on "the use of Equine Assisted Activities and Therapies (EAAT)" on balance, postural sway, and Fear of Falling (FOF) toward improving participation in Older Adult (OA). It was undertaken in a 75-year-old woman in whom she received 10 Adaptive riding (AR) sessions for 6 weeks. Each session lasted for 45 minutes was led by a certified occupational therapist, and the results indicated that EAAT has improved in balance, postural stability, head and trunk control of the participant, as well as the participation in activities. The participant also stated of reducing back pain, fear of fall, and the ability to recover self after a fall. It is noted that though, the researchers intended to get more participants, they managed to recruit one participant only because numerous factors included such as the interest, cognitive skills, and other physical disabilities of participants, screening assessments criteria, previous horse riding experience, and time limits. Thus, it is suggested the potential benefits of AAT in the OA. And further research to conduct in larger group of participants with longer time span using different methodological approaches is recommended.

A study by Ian H. Stanley *et al*. [21] identify the association of pet ownership and loneliness in the older adults (N=830) with the age (age ≥ 60 years). The cross-sectional survey questionnaires were used to collect data in three primary care offices in the Rochester, NY. It was found that pet owners reported loneliness 36% less likely than the non-pet owners though no significant differences between gender and age of participants. Moreover, it was noted that non-pet owners living alone reported feelings of loneliness more than the pet owners ($p < .001$). Thus, it is indicated that pet therapy may offer as potential benefits for well-being of the older adults by reducing their feelings of loneliness, and the consequences related to loneliness. The findings suggested the pets' ownership may have the beneficial effects for well-being and reducing feelings of loneliness among older adults.

The study on evaluation of the effects of AAT on the perception of loneliness in 21 geriatric nursing home residents (mean age 80 years) was conducted by Vrbana *et al*. [22]. The participants were arranged to receive dog companionship for 90 minutes and it was continued three times per week for a six-month period. The UCLA Scale of loneliness was used to measure the loneliness level before and after interventions. The results revealed the significance effect of dog companionship and the perception of loneliness ($p=0.003$) with the significant statement "I lack company" ($p=0.000$). The study also observed that though percentage is varied, all participants showed the expression of joy for having a dog, most of them petted and some of them talked to the dogs. It is suggested that AAT program may serve as an effective and low-cost therapy since the presence of dogs provide emotional and psychological well-being of the elderly by reducing their perceptions of loneliness and providing better life quality.

The findings from the above articles pointed out that PFT have the beneficial effects in the care of elderly population especially those with dementia, Alzheimer, cognitive decline. Moreover, one qualitative study explored the experiences of elderly with one theme emerged "Respite from the burden of illness for persons with dementia" which indicated that the therapy dog visit provides meaningful communication between

the handler and the dementia clients, and contributed to reducing symptoms and promote well-being of the persons [19]. The results of many studies indicated significant findings with p value less than 0.05 in measurement of different perspectives.

The significant positive effects of PFT are seen in the following studies: non-pet owners living alone reported feelings of loneliness more than the pet owners ($p < .001$) [21], significance effect of dog companionship and the perception of loneliness ($p=0.003$) with the significant statement "I lack company" ($p=0.000$) and all participants showed the expression of joy for having a dog [22], improved overall residents' behavior ($p< .001$), the staff's satisfaction score ($p < .001$), and reduced disruptive behavior score (from 67.2 to 58.2) [17], significant relationship between AAA and the balance (BBS scores) from pre-test to post-test compared to control group ($p=0.03$) [13], significant result with post-hoc comparison ($P< 0.001$) between the AAT with ROT protocol compared to other two groups [11], significant enhancement in the social behavioral scores in AAT ($p< .001$) with higher score and lower inappropriate responses than human interaction group [12], dog and the interactive robot provided significant interaction in physical contact ($p< 0.001$), conversation $p< 0.05$), and eye contact ($p< 0.001$), participants with severe cognitive impairment interact more with the animals, and less with humans ($p< 0.01$) regardless of the type [14].

Some results showed no statistically significant changes but some positive effects as follows; activity and night-time sleep pattern may vary between persons and at different time period [19], though not long term, increased sleep duration (min) in the third week of dogs' visits compared to the robot seal and cat toy ($P = 0.01$) [13], no significant results in Cohen Mansfield Agitation Inventory scores but AAT visits receive greater pleasure and lower inappropriate responses, the screaming and verbal aggression was reduced in the weeks of the dog visits ($p=.002$) [12], positive results of AAT are seen during the first few sessions, and AAT have positive effect on several neurological symptoms[9]. The studies revealed positive results of AAT are as follows: EAAT has improved in balance, postural stability, head and trunk control of the participant, and participation in activities and participants stated for reducing back pain, fear of fall, and the ability to recover self after a fall [20], improved physical and behavioral conditions, and reduced behavioral problems [18], AAT allows positive engagement with the dog and handlers [16].

LIMITATIONS

Though numerous benefits of pet facilitated therapy is ruled out and it is recommended as the complementary therapy for the elderly, it has its own limitations. Since the animals are involved, the risk of animals should be avoided at all costs. Moreover, the elderly like any other age group of humans may have their individual animal preferences. Some studies have pointed out the differences in individual responses based on the types of animals used and animal preferences may be based on their individual or cultural aspects. For instance, some Muslims may prefer to choose cats or other pets as the therapy animal rather than dogs. Moreover, the role of the qualified PFT trainers is important, and the involved animals should be trained and prepared as needed to fit for the therapy such as vaccination and hygienic aspects. And the number of animal visits should be limited, and obtained approval from the participants involved to prepare the visits plan. After all these limitations is considered and removed, PFT is recommended for the elderly care setting because of its potential beneficial effect.

CONCLUSION

From all the discussions above, PFT is highly suggested as part of therapy in elderly population with the appropriate implementation which is led by the certified therapists. The different time points, the degree of dementia, and socioeconomic factors of the participants and individual preferences, needs, habits and interest need to be considered. Moreover, the animals involved should be arranged to make sure that the zoonosis is prevented. Since the elderly are part of our society who has been contributed to a lot to the community during their younger time, when they grow old, and have declined in every function, they have the rights to be protected and respected. They deserved to have the longer life span with full quality of life and the optimal health care. Promoting the health and prevent complications of the elderly will also be one way of reducing the economic burden of the country. It is the responsibility of the nurses to provide the best care to the elderly as part of the health care team members with the best of our knowledge. Thus, this paper is hoped to contribute knowledge source about the benefits of PFT, it's strength and weakness among nurses, health care workers and patient family members who need to have increased awareness of PFT, incorporate it in their care and the best use of it in taking care of the elderly.

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