

Original Research Article

## **Potential Benefits of Pet-Facilitated-Therapy (PFT) In Children with Autism Spectrum Disorder (ASD)**

<sup>1</sup>Cho Cho Zaw @ Raheema, <sup>2</sup>Norfadzilah Binti Ahmad, <sup>3</sup>Myat Min @ Mohd Omar

<sup>1,2</sup> Kulliyah of Nursing, IIUM Kuantan Campus, <sup>3</sup>Kulliyah of Allied Health Sciences, IIUM Kuantan Campus

### **\*Corresponding author**

Cho Cho Zaw @ Raheema

Email: [raheema@iium.edu.my](mailto:raheema@iium.edu.my)

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**Abstract:** Autism Spectrum Disorder (ASD) is a wide range of social, mental, and developmental disorder seen among the young children. It is commonly used to describe individuals who have autism or autistic type features. And it is mentioned as a spectrum since different individuals with autism shows different symptoms rather than one single disorder. However, they have some basic features to mention them generally as having autism such as deficits in social interaction, communication and the presence of restricted or repetitive behaviors. Autism seems to be related with genetic, non-genetic or environmental factors. Since the causes of ASD are not clear, the specific treatments of it are still lacking. Alternative and complementary therapies such as diet, exercise, medications, acupuncture are utilized for improving the conditions of the children with ASD. Pet facilitated therapy (PFT) has been increasingly popular in recent years and it is counted as one form of alternative therapies in human medical field in some countries. The purpose of this study is to examine the potential benefits of PFT that would offer to the children with ASD. The findings revealed that pet therapy is considered as highly beneficial and recommended as one of the alternative therapies. The findings are categorized into different themes such as potential benefits of PFT in physical movement; communication, social and language skills; improving positive behaviors and reducing negative behaviors; and stress in children with ASD. This study is hoped to give insight to public, health care professions so that they can make use of PFT in providing effective care to the children with ASD.

**Keywords:** Pet Facilitated Therapy (PFT), Autism Spectrum Disorder (ASD), Physical, mental, and social benefits

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### **INTRODUCTION**

#### **History and Definition of ASD**

Autism Spectrum Disorder (ASD) is a common developmental disorder among children and the term “ASD” is commonly used to describe individuals who have autism or autistic type features [1]. It includes a wide range of conditions such as autism, Asperger syndrome, pervasive developmental disorder, childhood disintegrative disorder, Rett syndrome, and fragile X syndrome. Since different individual with autism shows different symptoms rather than one single disorder, autism has been described as a spectrum. However, autism children have some core commonalities or basic features to describe them as having this condition [2]. These basic features include deficits in “social interaction and communication and by the presence of restricted or repetitive behaviors” [3]. These behaviors are known as the “Triad of Impairments” and are used as the basic diagnostic tools for autism in the UK (ICD-10) and the USA (DSM- IV

[1]. The “autistic syndrome” in children before the age of two was first described by Leo Kanner in the year 1943 [4] and again in 1944 by Austrian pediatrician Hans Asperger [5]. The prevalence of autism seemed to improve in recent times since people awareness and identification of autism has increased than 30 or 40 years ago [6]. It is estimated that the prevalence of ASD is 20 in 10,000 children and the ratio to male female is 4:1 [7].

#### **Causes and Treatment of ASD**

Children with autism are not differentiable with other children in terms of their facial appearances or body frame. No specific causes are responsible for the development of autism; it could be related with genetic and non-genetic. The other possible causes identified as predisposition include environmental factors [8]. Despite the large number of therapeutic approaches such as developmental/behavioral strategies, sensory-integration or social skills training, there are no

proven therapies or preventive measures exist for the treatment of autism. There is lack of established treatment for ASD since no specific causes are responsible for it. Additional research and the development of therapies for improvement of conditions in children with ASD are needed. Because of the incurable nature, the alternative treatments are utilized to improve the conditions of the children with ASD, and pet facilitated therapy using pets as part of therapy is counted as one of them.

### **Human-Animal Bond**

Human-animal bond refers to the relationship developed between human and animals throughout the human generations. Animals have been benefitting to human society in a variety of ways including providing services to as source of food. Nowadays, the animals' contribution to human lives goes far beyond basic physiologic or safety needs to companionship and even the therapeutic purpose. The American Veterinary Medical Association's Committee defines the Human-animal bond as "a mutually beneficial dynamic relationship between people and other animals that is influenced by behaviors that are essential to the health and well-being of both" which includes "emotional, psychological, and physical interactions of people, other animals, and the environment" (JAVMA) [9] cited in Jackson, [10]. An animal can be used as part of the therapy animal since they can work as a substitute for therapeutic touch as if appropriate physical contact of the therapist would greatly benefit to the client during therapy [11]. The different types of animals such as dogs, cats, rabbits, horses, and dolphins are used for PFT and it is needed to choose the best type of animal based on the preferences and suitability of the child and family.

### **PFT as Part of Complementary and Alternative Therapy**

Many interventions designed to improve the conditions of children with ASD have yet not been proven effective. Animal therapy is greatly beneficial to the children with ASD since they help them develop the skills that they are lacking [12]. The use of pet therapy is not uncommon among the developed countries as US, UK, and some other countries. In this paper, the term Pet-Facilitated Therapy (PFT) will be used for both PFT and Animal Assistance Therapy (AAT) since both have similar meaning and involved the use of animals. PFT is known as an applicable method of assisting clients in nursing, medicine, and psychotherapy [10]. Though PFT has been using widely since 19th century, more studies were published only in 20th century. The use of PFT has increasingly paid more attention in recent years

and it is recommended to include among other complementary and alternative therapies such as diet, exercise and acupuncture. Though the specific cause of ASD is not clear for some scholars, Pasco (2011) [13] encouraged alternative therapy for ASD since the possible cause of autism is identified as gene mutation which is difficult to cure completely and resulting in a lifelong impairment [13, 14]. In the paper of Robson in 2013 [15] also highlighted the role that PFT may play for improvement in quality of life of children with autism.

### **A NEED FOR STUDY**

Family members are facing with numerous challenges in addition to the physical and emotional demands for taking care of their children with ASD. They need to adjust their life styles to meet the needs of their disabled child, for themselves as well as other children in the family. Moreover, children with autism need to receive additional support and encouragement so that they meet their physical, emotional, social and learning needs. They should have the rights to get the chance to live on their life independently, achieve academic success as possible within their maximum capacity and limitations. It is important to put effort in those measures for developing and improving the quality of life of children with ASD. Some research studies have been conducted in the area and pointed out the potential benefits of PFT for children with ASD. Nonetheless, very few studies were conducted in Malaysia regarding PFT especially the application of it in children with autism. Thus, it is a need to conduct this study for the benefits of individual, family and society.

### **METHODOLOGY**

In this study, the available literature sources of online and offline such as articles, journals, and books related with ASD and pet therapy are explored using systematic literature review. The scientific findings of the scholars from medicine, nursing, veterinary and other health related field are identified systematically. The key words such as "pet/animal-facilitated-therapy", "pet/animal-assisted-therapy", "pet/animal-facilitated-therapy in autism children" "benefits of pet therapy in children with developmental disorder", "effects of pet therapy in children with autism" are typed as for online search study. All available sources of online from medicine, nursing and related field regarding PFT are searched through library research gateway of IIUM and online data bases such as "Pubmed, Ovid, Science-direct, Pro Quest Health & Medical Complete, SCOPUS, Springer Link, SINAHL Plus, MEDLINE", as well as "Mendeley and google scholars." In addition

to these, the possible offline data are gathered from the IUM library. The findings on the physical, psychological, social benefits of PFT in ASD children are analyzed systematically and thoroughly. After thematic and indepth analysis of the data, the discussion on benefits of ASD are made with different themes underwhich include compilation of similar results or findings of different studies in the related filed.

### **FINDINGS AND THE DISCUSSIONS**

From the literature sources and the previous studies, it is observed that the PFT has the potential beneficial effects on physical, mental, and social perspectives of the children with ASD. In addition to social and communication skills, PFT has improved general and mental wellbeing, self-efficacy, and self-esteem which are needed for improving the quality of life and a general functioning of the child [16]. PFT has increased social interaction, communication skills, reduced problematic behaviors, severity of autism, and stress based on the outcomes of the study of O’Haire in 2013 [17] in which the systematic review was done on the fourteen papers of the previous researchers. Moreover, another study by Borgi *et al.*; in 2016 [16] examined the effect of Equine Assisted Therapy (EAT) in adaptive and executive functioning in children with autism spectrum disorder (ASD), (n = 15 intervention and n=13 control group) using with structured activities in children involving horses. The results indicated an improvement in social functioning, milder effect on motor abilities, improved executive functioning (i.e. reduced planning time in a problem-solving task) at the end of the EAT program. From these studies, it could be suggested that the use of PFT as part of complementary and alternative therapy for the children with ASD. In this paper, the findings of the potential benefits of PFT are further divided into different themes as physical movement and exercise, language use, communication and social interactions, improving positive behaviors, reducing negative behaviors and stress as follows.

#### **Physical Movement and Exercise**

The use of PFT has great beneficial effects on the physical activities and movement of the children with ASD regardless of the different types of animals used. A study examined on the effects of the therapeutic horseback riding indicated that it causes children to learn mounting and dismounting activities, warm up exercises, grooming activities which in turn promote body coordination and gross motor development [18]. A study conducted by Solomon in 2010 [19] in which “the use of PFT in child with autistic behaviors” are examined and the results discussed the various benefits the child received from PFT. Among them include the

physical benefits such as taking pets for a walk, giving commands and taking care of dogs as a daily basis; feeding him, bathing him which might be very difficult for autistic children to do in other human beings [19]. The descriptive-explanatory study performed between 2008 and 2011 which is conducted in children of various ages with various physical and mental disabilities. The findings indicated that the use of PFT help the children improved the use of their physical bodies within their capabilities [20]. Moreover, another study mentioned that the association between children with weaker motor skills and greater deficits in social communicative skills from the results of the study identified in 159 young children (14-33 months) with confirmed ASD [21]. From this, it tends to reason that improving the children’s physical movement and motor skills with PFT are expected to improve their social and communicative skills.

#### **Language Use, Communication and Social Interactions**

Pasco (2011) [13] mentioned the signs of autism such as disturbed social and communication skills, and difficulties in language and abstract thinking. Numerous studies pointed out that the use of PFT help increased child social interactions, communications and the language use. In the study of Sams, Fortney, and Willenbring in 2006 [22], 22 children with autism are examined by comparing children who received occupational therapy using standard techniques, and those who received occupational therapy incorporating animals. Results revealed that the use of language and social interaction of children in sessions incorporating animals are increased compared to those in sessions with standard occupational therapy techniques. Moreover, one interesting study by Solomon in 2010 [19] stated how the life of a child has changed by using PFT, since it helps children engaged longer in their activities, increase responses to actions, social competence and improve in collaborative activities.

And the study examined on the therapeutic riding (TR) and the social communication and sensory processing skills of children with autism, the findings showed the significant improvement in their social interaction, sensory processing, and decreased the severity of symptoms. Though it pointed out that the treatment effects will not be able to maintain 6 weeks after removal of TR, it clearly suggested the potential benefits of TR and a need for further research Ward *et al.*; in 2013 [23], Berry *et al.*; in 2013 [24] study based on the results of six published studies done in children diagnosed with ASD shows encouraging results in improvement of social behaviors and language use

through interaction with dogs, and the possible benefits of PFT are discussed.

Another study of Therapeutic Horseback Riding (THR) conducted in the 116 participants by Gabriels *et al.*; in 2015 [12], two groups of children with or without THR were evaluated as pre-and-post interventions. The findings indicate the use of PFT since it causes significant improvements in irritability, hyperactivity, social cognition, communication and language use. The study conducted by Grigore & Rusu in 2014 [25] examined in children with ASD by using two methods; Social Story and Animal Assisted Therapy for enhancing social abilities and observing social behavioral changes in three preschool autistic children. The results revealed that the presence of the therapy dog while reading the social story increased the frequency of social initiations and decreased the level of social prompt needed to elicit social responses from children with autism. Moreover, children showed more playful and cheerful mood in the presence of pets since they provide them as a source of love, comfort and attachment.

#### **Improved Positive Behaviors and Reduced Problematic Behaviors**

The previous studies indicated the benefits of PFT as increased positive behaviors and reduced negative behaviors in children with autism. Lupien, et al (2010) has done a study with the goal of assessing the effects of service dogs on production of cortisone in 42 children with ASD, and the results indicated that CAR of children with ASD is sensitive to the presence of service dogs suggesting the potential behavioral benefits of service dogs in children with ASD. A study of therapeutic horseback riding on social functioning in 34 children with autism (both intervention and control), the results identified that social functioning of the children improve significantly, reduce in less inattention, distractibility, and sedentary behaviors (Bass et al, 2009).

A single case study conducted on an autism boy showed positive behaviors (smiling and physical contact) and reduced negative behaviors (aggression) in the presence of the dog [26]. Another study on quantitative measurement of the smiles of a child with autism spectrum disorder (ASD-C) in the presence of animals, the findings suggested that increased of the smiles is related with the increased in positive social behaviors and decreased in negative social behaviors. This study suggested that by creating an environment that causes smiles and positive feelings, the child's negative behaviors may be reduced [27]. These findings

are synchronized with the study of O'Haire in 2014 [28] which identified significant improvements in social functioning, social approach behaviors, social skills, increased interest in attending school and reduced social withdrawal behaviors in children with ASD after AAA program.

#### **Reducing Stress in ASD Children**

It is known that animals have been greatly beneficial in improving human cardiovascular health, reducing stress and depression since numerous studies highlight the positive outcomes of PFT. The findings of a study by Wilson in 1991 [29] indicated that some individuals tend to reduce physiological and psychological responses to stress after interacting with a pet. Another interesting study by Friedmann *et al.*; in 1995 [30], pet ownership or nonhuman form of social support are associated with increased coronary artery disease survival mentioning that dog owners are less likely to die within one year compared to those who did not own a dog.

Odendaal in 2000 [31] measured the six neurochemicals associated with a decrease in blood pressure in both human and dog species (pets and pet owners) and it is suggested PFT as a rationale for AAT. Another study of Viau and colleagues (2010) [32] assess the effects of service dogs on the physiologic variables in autistic children by using pre-test, intervention with introducing dogs and post-test. It is found that the Cortisol Awakening Response (CAR) was reduced upon the introduction of dogs as an acute effect, but long term effect is not sustained since CAR rose again after the animals were removed. Moreover, parents also reported reduce problematic behaviors (such as self-stimulation, repetitive behaviors, and tantrums) when the dogs were living in the families. These findings support potential behavioral benefits of PFT in children with ASD.

In a study by Krause-Parello in 2012 [33], 33 adults (pet and non-pet owners) were examined and the results suggested that interaction with canines may help reduce biological effects of stress. The study done in Turkey by using three dogs as therapy found that the children who experienced fear, anxiety and difficulties because of their disabilities able to cope with their anxieties and fears (Elmaci & Cevizci, 2015). Another study measured the benefits of pet therapy on stress levels of primary care givers (n= 38 with dogs and n= 24 controls without dog) of children with Autism Spectrum Disorder (ASD) using the Parenting Stress Index. The findings revealed that the intervention groups with pets significantly reduce parental stress of

the difficult child highlighting the potential benefits of pets in reducing stress among caregivers of autism children [34]. The finding of this study was synchronized with the study of Hall *et al.*; in 2016 [35] on exploring long-term effects of a pet dog on intervention (n=22 with dog) and control group (n= 15 without dog) in which the findings indicated that the reductions of parental stress and parent-child dysfunctional interactions are evident in intervention group.

#### **Individual, Family, Cultural and Ethical Considerations**

Though PFT is generally known as the beneficial therapy, there are some individual aspects influences on the effects of PFT in children with ASD. A study examined by Hall *et al.*; in 2016 [36], the researchers measured how children behavior changes specifically in the presence of the dog by using three scales: Adaptability, Social Skills and Conflict Management. The individual differences (aspects) that effect on these three factors are measured, and the findings show Family and Dog factors were not significantly related with the scores but Child Aspects (including: contact with horses, child age, disability level and language abilities) with the scores of all these factors. Moreover, Training Aspects were related to scores on Social Skills (formal training of ASD children with dogs and attendance at PAWS workshops). Thus, individual differences of the child and training approach are important considerations for a positive impact from dog ownership on families with children with ASD.

ASD encompasses a wide range of social and mental afflictions that are difficult to treat and the purpose of this study is to provide the best care possible for them to improve their quality of life. It is not aimed to suggest the use of PFT as the main treatment of ASD but to include PFT as among other possible therapies for the best interest of the children with ASD and their family. Though, it is clearly noted that PFT is greatly beneficial based on the previous studies discussed, more researches with different methodologies need to be conducted in this area. Since the use of pets is involved, potential dangers from the animals such as biting and injuring the humans, as well as the risk of zoonosis (diseases transmitted from animals to humans) could not be neglected. Moreover, temperaments of the individual child and the pets need to be matched for the best interest of both parties. And the types of animals used may be the possible restrictions for some families due to their cultural and religious belief. For example, the use of dogs in PFT may be controversial for some Muslim families, and thus, the family should be

provided an opportunity to choose the preferred pets from a list of animals which can be used in PFT. Moreover, while using the pets as therapy, animal abuse or exploitation must be prevented as possible such as beating, kicking, not giving adequate food and water to animals or overfeeding them. For all the reasons mentioned, the family should be well-informed about animal abuse, the type of pets used, and the importance of receiving trained pets which are vaccinated and well-groomed to prevent zoonosis.

#### **LIMITATIONS**

The potential benefits of PFT are enormous and PFT is highly recommended as part of the therapy in children with ASD. However, since the use of animals is involved in the therapy, the risks of zoonoses (the diseases that can transmit between humans and animals) are possible and it needs to be prevented. PFT may be a challenge for some family with the family members who are allergic to animals, sick, reduced immune status or pregnant to own the pets and for this the family should receive adequate information of the awareness of the problems and preventive measures of zoonosis. The family also should be given the chances to choose alternative animals based on their preferences and cultural value, since it may be possible that these individual factors and choices of animals may play a role in the extent of the effectiveness of PFT. Moreover, this study is based only the literature source and it can summarize the empirical findings of the studies. But, it is lack of intervention and control groups which can measure the empirical evidence of the PFT. Thus, further research with different approaches and methodologies using larger sample size is suggested to conduct in this area.

#### **CONCLUSIONS**

From all the above discussions, it is clearly noted that the animals provide a significant contribution to human health and wellbeing. The findings from numerous studies indicated the encouraging results of PFT such as improving social behaviors, language use and positive behaviors as well as reducing stress and negative behaviors in children with ASD. Thus, the application of PFT is highly recommended as part of therapy in children with ASD since it has the potential to be a successful part of treatment if the appropriate implementation is applied. Nonetheless, certain factors such as the type of animals used the temperament of pets and pet owners, the ethical and cultural considerations need to be addressed. It is also necessary to ensure that the animals involved received adequate vaccinations and training certificates for the use of PFT to prevent zoonosis and obtain the best effect of the

therapy. Thus, further research with different methodologies using quantitative and qualitative study is still a need in the field of PFT. The purpose of this paper is to identify the potential benefits of PFT in children with ASD, improve their social communication skills and allow them to have independent life as much as possible. It is observed that PFT helps reduce physical, financial, and emotional burdens of the family and the potential benefits of it in improving the quality of life of children with ASD. Thus, it is hoped that this paper provides awareness of PFT and the increases usage of it in human medical field to receive physical, mental, and social benefits to the family as well as the society.

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