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Is Animal Assisted Therapy Using Dogs an Effective Treatment for Positive and Negative Symptoms for Adult Inpatient Schizophrenics?

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ABSTRACT

OBJECTIVE: The objective of this selective EBM review is to determine whether or not Animal Assisted Therapy (AAT) using dogs is an effective treatment for positive and negative symptoms for adult inpatient schizophrenics.

STUDY DESIGN: Systematic review of 3 articles published in English in peer reviewed journals between 2005-2009

DATA SOURCES: Two randomized controlled trials and one allocation by minimization controlled trial comparing the effects of AAT using dogs on positive and negative symptoms of schizophrenia to control groups. All articles were found using PubMed and PROQuest

OUTCOMES MEASURED: Focused questionnaires were given before and after AAT to analyze the effects on positive and negative symptoms.

RESULTS: Chu et al. and Vilalta-Gil et al. showed improvement following treatment in positive symptoms. Vilalta-Gil et al. also showed improvement in negative symptoms. Nathans-Barel showed no improvement in positive or negative symptoms, but marked improvements in hedonic tone.

CONCLUSIONS: The results of the three studies gave inconclusive evidence for the use of AAT in the treatment of positive and negative symptoms. Limitations in the study designs, such as size and lack of follow up, prevent the results from sufficiently identifying a relationship between AAT and positive and negative symptoms. However, the results encourage further study, especially when the relatively minimal risk of the intervention is considered.

KEYWORDS: animal assisted, dog therapy, schizophrenia

INTRODUCTION

Schizophrenia is a complex, common and debilitating psychiatric disorder that is characterized by two types of symptoms, positive and negative. Positive symptoms are characterized by a disconnect from reality, such as hallucinations, delusions and deranged thoughts. Negative symptoms are characterized by disrupted emotions and behaviors such as flat affect, anhedonia and lack of communication. Schizophrenia has varying forms and degrees of severity but is often incapacitating, with more than half of individuals experiencing significant impairment in functioning throughout adulthood.[7] It is the most common diagnosis amongst institutionalized individuals[3], with 1/3 of individuals meeting the criteria for a diagnosis.[4] Schizophrenia affects 24 million people worldwide, with a prevalence of 7 per 1,000 and incidence of 3 in every 10,000 due to its chronicity.[4]

Treatment and management costs are quite substantial due to the need for long term institutionalization and complex multidimensional therapies, with an estimated total cost of $62.7 billion (2002) in the US[5], and 1.5-3% of the total national health care expenditures worldwide.[6] These large costs make it prudent to search for cost effective treatment methods that work towards reducing symptomatology associated with the condition and allow them to function at a higher level, thus easing financial, family and institutional burden associated with treating institutionalized schizophrenics.

The effects of schizophrenia can be widespread and require extensive care and clinical interventions. Standard pharmacological treatments using atypical antipsychotics (e.g. aripiprazol, clozapine) and typical antipsychotics (e.g. chlorpromazine, haloperidol) have been shown to improve positive symptoms, but are less efficacious with the treatment of negative symptoms. This is of clinical importance because negative symptoms have been shown to be

better predictors of long term disability than positive symptoms.[3] Alternative approaches such as Animal Assisted Therapy (AAT) have been shown to improve social functioning and thus aid in the long term management and autonomy of schizophrenics.[1]

Many aspects of schizophrenia are not well understood and are a source of continuing research. The exact etiology of schizophrenia is unknown and is likely without a unifying source; however research shows several different factors associated with the condition. There is evidence to support genetic inheritance as playing a role in development, but it is likely that multiple genes acting in concert are the cause and thus not easily used in predicting prevalence amongst families. Several genes have been linked with schizophrenia but each account for only a small proportion of cases.[7] Structural abnormalities, such as enlarged lateral ventricles, and reduction in volume of the hippocampus, temporal and frontal lobes have been shown in effected individuals. Disruptions in several neurotransmitters, especially dopamine, play a role in the development of the disease and are important targets for pharmacologic therapy.[7] Environmental stressors, such as; poor family support, physical and emotional neglect and abuse have all been shown to precede initial onset of the disease process in children, as well as aggravate individuals with established disease. These stressful events trigger the hypothalamic-pituitary-adrenal (HPA) axis and cause chronically high levels of cortisol, which can lead to alterations of neurotransmitter activity and reductions of hippocampal volume.[7]

Antipsychotic medications that lower dopaminergic activity diminish the severity and prevalence of psychotic symptoms, especially positive symptoms, but have varying degrees of motor side effects depending upon the specific agent that is used, with the newer atypicals having less harmful side effect profiles than the typical antipsychotics.[7] Several psychosocial treatment methods currently exist that aim to improve interpersonal interactions, autonomy, and

reduce the prevalence of psychotic episodes. Cognitive behavior therapy, family therapy and stress management techniques have all shown promise as adjunctive therapies to pharmacologic treatments, though the wide variety in presentations of patients requires various treatment options.[7]

Animal Assisted Therapy (AAT) has been shown to have several positive effects such as helping to improve socialization and communication while decreasing anger, depression, and anxiety in psychiatric patients.[8] AAT also comes with very minimal risk, especially when compared to the large side effect profiles of the antipsychotic medications that are currently available. Fear of the animal, allergy, and underlying asthma conditions are among the limited number of factors that would hinder the use of this therapy.[8] This paper evaluates three studies comparing the effects of regimented exposure to trained therapy dogs to control groups using clinical questionnaires to evaluate AAT's efficacy on positive and negative symptoms of institutionalized schizophrenics when used as an adjunctive therapy.

OBJECTIVE

The objective of this systematic review is to determine whether or not animal assisted therapy using dogs is an effective treatment for positive and negative symptoms for adult inpatient schizophrenics.

METHODS

The population chosen was adult (>18 y/o) inpatients with clinically diagnosed schizophrenia. Interventions all involved the use of trained dogs for animal assisted therapy with variation amongst the studies regarding the specific methods used for AAT. Comparison groups looked at other institutionalized schizophrenics who were not receiving AAT. All studies used clinical questionnaires to study the effects of AAT on positive and negative symptoms of

schizophrenia. The questionnaires and specific symptoms being studied varied between the three papers. Two randomized controlled trials and one allocation by minimization-controlled trial were used.

All articles were published in English in peer reviewed journals. Articles were found by the author in PubMed and PROQuest using the keywords "schizophrenia" AND "animal assisted" OR "dog therapy". Articles were selected based on relevance and that the outcomes of the studies mattered to patients (POEMs). Inclusion criteria were controlled studies using patient >18 y/o who were also institutionalized schizophrenics. Excluded from the review were studies looking at children <18y/o, outpatient schizophrenics and the use of animals other than dogs. The statistics used in the studies all used p-values.

OUTCOMES MEASURED

Chu et al. looked at positive symptoms and negative symptoms (all assessed using an unnamed self-survey).

Nathans-Barel et al. studied hedonic tone (Snaith-Hamilton Pleasure Scale (SHAPS)) negative symptoms (Schedule for the Assessment of Negative Symptoms (SANS)) and positive symptoms (Positive And Negative Syndrome Scale (PANSS)).

Villalta-Gil et al. studied positive symptoms and negative symptoms (PANSS)

RESULTS

Three studies compared the use of AAT with dogs on clinically diagnosed institutionalized schizophrenics who were 18 or older. The studies by Chu et al. and Vilalta-Gil et al. were both single blind randomized controlled trials and the Nathans-Barel et al. study was an allocation by minimization controlled trial. No intervention related negative effects or adverse reactions were reported in any of the 3 studies.

Table 1: Demographics and Characteristics of Included Studies

Study	Type	# pts	Age (years)	Inclusion criteria	Exclusion criteria	W/D	Interventions
Chu[1] (2009)	RCT	30	<60	<60, ability to speak, read and write mandarin Chinese, diagnosis of schizophrenia for >10yrs, score >39 on the schedule for the assessment of negative symptoms, no cognitive impairment	Receiving any other experimental treatment during the study period	3	Weekly 50min sessions, x8 weeks, of loosely organized activities w/ 2 medium sized trained therapy dogs
Nathans[2] (2005)	Allocation by minimization-controlled trial	20	19-62 (mean 39.9)	Diagnosed chronic schizophrenia, inpatients in long-term ward >2 continuous years,	Change in antipsychotic medications <6 months ago, allergies to dogs	0	1hr therapy sessions, x10 weeks, w/ female golden retriever. Patients interacted with the dog in a number of ways including but not limited to: playing, grooming, introducing the dog to new people, feeding and walking the dog
Villalta-Gil[3] (2009)	RCT	21	>18	>10 years clinically diagnosed schizophrenia, >18 y/o, institutionalized during the program	Mental retardation, neurological disorders, adverse psychological or physical reactions to animals	3	Group therapy involving a female Labrador trained as a therapy dog. The sessions had the patients performing a number of different tasks involving the dog directly

Chu et al. studied 30 patients from a psychiatric institution in Taiwan, all of which were <60 and >18 years old, could speak, read and write mandarin Chinese, had a diagnosis of schizophrenia for >10yrs, score >39 on the schedule for the assessment of negative symptoms, and had no cognitive impairment. Excluded from the study were any patients who were receiving other experimental treatment during the study period. The 30 patients were randomly split into 2 groups, with one receiving weekly 50 minute sessions with the dog for 8 weeks along with their regular treatment regimens and the other group receiving only their regularly scheduled treatment regimens. Sessions consisted of loosely organized activities w/ 2 medium sized trained therapy dogs. Self-reported questionnaires were given before and after the 8 week trial. Table 2 shows the pre and post treatment scores and the corresponding p-value. Post treatment positive symptoms were shown to be significantly improved in the treatment group when compared with the control group using a Mann-Whitney U test (p-value = .005). Negative symptoms were not significantly improved (p-value = .097)

Table 2: Change in Symptoms Pre and Post AAT Treatment

	Treatment Group (mean)		Control Group (mean)		
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	p-value
Positive symptoms	14.88	8.46	15.85	16.54	0.005
Negative Symptoms	13.28	10.13	13.78	14.88	0.097

Nathans-Barel et al. studied 20 diagnosed schizophrenics living in a long term care ward of a hospital for a minimum of two continuous years. Excluded from the study were any individuals with a change in their antipsychotic medications within the last 6 months and individuals with an allergy to dogs. The subjects were assigned to the treatment or control group on a minimization basis in order to reduce age and sex differences, with no reference to clinical or other factors. Both the treatment and control group received 10 weekly 1 hour sessions with

the same therapist, with the treatment group participating in activities with a well-trained dog.

The treatment participants were given the choice of several activities to perform with the dog,

including but not limited to: petting, feeding, cleaning, walking and making contact with the dog.

The control group participated in similar activities, but without the dog. Pre and post treatment

SHAPS, PANSS, and SANS questionnaires were administered and compared. Post treatment

scores were compared using an ANCOVA. Positive and negative symptoms failed to show

significant change compared to the control group as seen in table 3 (p-values = 0.82, 0.20

respectively). Hedonic tone was shown to have significant change (p-value = 0.02)

Table 3: Change in Symptoms Pre and Post AAT Treatment

	Treatment Group (mean)		Control Group (mean)		ANCOVA	
	Pre	Post	Pre	Post	p-value	F
Negative Symptoms	54	48.1	58.1	52.4	0.82	0.05
Positive Symptoms	17.9	16.3	15.8	13.3	0.2	1.79
Hedonic Tone	2.82	3.44	2.89	3.12	0.02	6.3

Villalta-Gil et al. studied 24 inpatients at Saint John of God-Mental Health Services

Hospital in Barcelona Spain. For inclusion, patients had to be over 18 y/o, have diagnosed

schizophrenia for >10 years, and be institutionalized. Excluded were those with mental

retardation, neurological disorders or adverse psychological or physical reactions to animals. Of

those selected, three patients declined to take part in the study prior to it beginning. Following

baseline testing, participants were randomly assigned to the treatment (n=12) or control group

(n=9). Both groups received 25 45 minute sessions, given twice a week of a group based therapy

based on Integrated Psychological Treatment (IPT), with the treatment group receiving a

modified version to allow for the use of the therapy dogs. Using the Wilcoxon signed-rank test,

positive symptoms showed significant improvement following treatment in both the treatment

(p-values = 0.005) and the control (p-value = 0.027) groups, as seen in Table 4. Negative

symptoms were significantly improved following treatment in the treatment group (p = 0.005) but not in the control group. There were no significant changes found when comparing the treatment group to the control group before or after treatment using the Mann Whitney U Test.

Table 4: Changes in Symptoms Pre and Post Treatment

	Treatment Group				Control Group			
	Pre	Post	Z	p	Pre	Post	p-value	Z
Negative Symptoms	28.92	19.36	-2.81	0.005	25.44	16.67		-1.89
Positive Symptoms	20.83	15.64	-2.81	0.005	22.67	17	0.027	-2.21

DISCUSSION

This systematic literature review investigated whether or not animal assisted therapy could improve positive and negative symptoms for inpatient adult schizophrenic patients. The results obtained in these three studies are inconclusive and requires additional studies to further examine AAT's efficacy for schizophrenia. Though this paper looked specifically at positive and negative symptoms of schizophrenia, the papers looked at several other factors. One observation that was noted by all researchers was that the patients receiving AAT expressed excitement, compassion and increased social interactions after starting their program. Such observations, though not always evident in the statistical analysis, should not be over looked.

All three of the studies that were reviewed share some characteristics that limit their efficacy. All of the studies were small in size and lacked any follow up after the conclusion of the study. The outcomes that were measured are inherently subjective and require the completion of questionnaires to obtain objective data. Schizophrenics are also prone to bouts of psychosis which could affect the reliability of the questionnaires that were administered. Additionally due to the nature of the intervention, none of the studies were double blinded.

In addition to the limitations listed above, the study by Chu et al. used a less structured method of animal therapy, known as Animal Assisted Activity (AAA) which has a more general goal of improving patient's physical health and sense of well-being as opposed to AAT which has specific aims for each interaction between the patient and the animal. The Nathans-Barel et al. study was additionally limited by being an allocation by minimization study rather than an RCT. This makes the results of the study inherently weaker. Finally the Study by Villalta-Gil et al. had 3 patients drop out (14.3%) before the end of the trial. No mention is made of performing worst case analysis to account for the loss of these subjects.

AAT with dogs as an adjunctive therapy for schizophrenia has very few drawbacks and besides those with allergies to the animal, shows very little risk.[9] When well trained dogs and trainers are used, the risk of injury to a patient by the dog is minimal. The initial cost of starting an AAT program can be large, [9] but is less with dogs than with larger animals like horses.

CONCLUSIONS

Based off of the results highlighted in this review, AAT's efficacy on positive and negative symptoms of inpatient schizophrenics is inconclusive. 2 of the 3 studies showed improvements with positive symptoms, while only 1 showed improvement of negative symptoms, though hedonic tone was significantly improved in 1 study, and is similar to negative symptomology. Larger and longer studies must be done to explore AAT's efficacy in this population, but early studies show promise. All of the patients studied had diagnosed schizophrenia, but there were varying degrees of the disease amongst each group member. More strict regulation of the severity of the subjects' disease state could potentially more accurately assess AAT's efficacy. Additionally using other animals besides dogs could help to expand the range of possibilities for AAT in this population.

Schizophrenia is a complex chronic condition that poses significant challenges in its management. Continued research in the use of adjunctive therapies such as AAT can help provide additional treatment options in order to improve patient care, lower costs and reduce unwanted side effects of antipsychotic medications.

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