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Pet therapy: an effective strategy to care for the elderly? An experimental study in a nursing home

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Abstract. *Background and Aim:* There has recently been a growing interest towards patients' affective and emotional needs, especially in relational therapies, which are considered vital as to increase the understanding of those needs and patients' well-being. In particular, we paid attention to those patients who are forced to spend the last phase of their existence in residential facilities, namely elderly people in nursing homes, who often feel marginalized, useless, depressed, unstimulated or unable to communicate. The aim of this study is to verify the effectiveness of pet therapy in improving well-being in the elderly living in a nursing home. *Methods:* This is a longitudinal study with before and after intervention variables measurement in two groups of patients of a nursing home for elderly people. One group followed an AAI intervention (experimental group) the other one did not (control group). As to perform an assessment of well-being we measured the following dimensions in patients: anxiety (HAM-A), depression (GDS), apathy (AES), loneliness (UCLA), and quality of life (QUALID). Both groups filled the questionnaires as to measure the target variables (time 0). Once finished the scheduled meetings (time 1), all the participants, including the control group, filled the same questionnaires. *Results:* In accordance with scientific evidence the results confirmed a significant reduction of the measured variables. Especially for the quality of life, which showed a greater reduction than the other. *Conclusions:* The implementation and success of the Pet Therapy could have a great emotional and social impact, bringing relief to patients and their family members, but also to health professionals.

Key words: elderly, relational therapies, quality of life, pet therapy

Introduction

There has recently been a growing interest towards patients' affective and emotional needs, especially in relational therapies, which are considered vital as to increase the understanding of those needs and patients' well-being. In particular, we paid attention to those patients who are forced to spend the last phase of their existence in residential facilities, namely elderly people in nursing homes, who often feel marginalized, useless, depressed, unstimulated or unable to communicate. The willingness of taking care of another living being could be described as an intrinsic need of human nature, whose satisfaction might bring substantial

benefits to patients and especially in geriatrics. Notwithstanding, we noted how this connection has barely been studied as of today (1).

In recent decades, the conception of human-animal relationship has substantially changed and evolved in a stronger awareness of the benefits that such connection may bring, in particular to children, to the elderly or to people suffering from physical and mental illness. The relationship with a pet, which has always been invested with an emotional role, has recently been re-evaluated, thanks to methodological structures and therapeutic applications targeted to specific diseases (2).

These interventions, used as a support to traditional therapies (defined co-therapies), are performed

by a multi-professional team with trained animals and are individually tailored on each patient.

The expression “Pet therapy” relates to those therapies or health care activities performed with the decisive involvement of a pet. The proper definition of the above-mentioned treatment is “Animal Assisted Interventions” (AAI) and have therapeutic, rehabilitative, educational and recreational function (3). These interventions mainly target people with physical (neuromotor control function), mental and psychic disorders, but can also be directed to healthy individuals (3).

The correct application of AAI requires the involvement of a multidisciplinary team composed, according to the type of intervention, by health, educational and technical professionals with different tasks and responsibilities (3). In this environment, nurses can and must integrate themselves with their specificity, with a holistic approach to patients’ care. Pet Therapy is not only referred to animal’s activities, but it also relates to the work of a team composed by the pet, the conductor as well as the nurse. It is the nurse’s duty to know how and when it is necessary to implement the activities, which are proposed (and never imposed!) to the patients and to evaluate the activities effectiveness (4). Moreover, the animal improves not only the patient’s condition during his hospital stay, but also the nurse’s: it can certainly relief for a few hours stress and routine 9. The nurse must identify final and intermediate subjective goals to perform ongoing checks of successes and failures of the program, through a constant measuring of its effectiveness, its results and any arising issue throughout the intervention cycle (4).

Pet Therapy and the elderly in nursing home

In the geriatric population, interaction with animals seems not only to reduce behavioral disorders (e.g. agitation, aggression), stress and mood disorders (anxiety, apathy, depression) but also to stimulate some residual cognitive function (5). In particular, previous research shows a significant benefit on long-term memory, linked to the stimulation of previous memories, on verbal and nonverbal communication, as well as on sensory stimulation. In the meantime, it satisfies some basic human needs such as attention and affection feelings (6).

A research led by Berry and his colleagues evaluated the effectiveness of time spent with dogs in improving mood, facilitating social interaction and decreasing apathy in the elderly living in a nursing home. Results showed an increase in positive behaviors like smiles, willingness to communicate and spontaneous interaction with dogs. They also found that the human-dog interaction could effectively reduce social isolation (7). Another study conducted by Colombo (8) and colleagues showed that the presence of a canary bird, brought psychological benefits to the elderly who took care of it. At the end of the intervention, patients showed reduced depression and anxiety and less obsessive-compulsive disorders (9). Another survey evaluated the effects of the presence of animals on perceived loneliness. Patients were asked to interact three times a week for six months with four dogs. Patients showed a significantly lower score in the “UCLA Loneliness Scale” both during and after the intervention (10).

Other studies explored the effects of pets on the elderly with dementia. A study conducted by Chemiak (11), assessed the effectiveness of pet therapy on cognitive status and mood in the elderly with cognitive impairment. Participants were asked to walk, play and pet a dog. Results showed that the animal’s presence fostered less agitation and more prosocial behaviors. Nordgren and Engström in another study, evaluated the effect of AAI on the behavioral and psychological symptoms of dementia. They found decreased levels of depression, improved memory functions and increased motivation for physical activity (12). Another research showed an important increase in nutrition and body weight in some patients with Alzheimer’s disease after the introduction of an aquarium in the dining room (13). Also Mossello (14) analyzed the condition of patients with Alzheimer’s disease and he noted, after three weeks of visits with a trained dog, a substantial improvement of anxiety and sadness in patients, as well as a general level of arousal, motor and vocal expression. Another pilot study evaluated the effects of AAI on the quality of life (QoL) in people with dementia in four nursing homes, showing an improvement of QoL (15).

It is interesting that the above-mentioned studies always refer to a single dimension of patients’ wellbeing, and we could not find a study focusing on multiple dimensions of well-being.

Aim of the study and initial assumptions

The aim of this study is to verify the effectiveness of pet therapy in improving well-being in the elderly living in a nursing home.

As to perform an assessment of well-being we measured the following dimensions in patients: anxiety, depression, apathy, loneliness, and quality of life.

The initial assumption is that after a pet therapy intervention, in the experimental group the levels of the measured dimensions will be lower than in the control group.

Methodology

Study design

This is a longitudinal study with before and after intervention variables measurement in two groups of patients of a nursing home for elderly people. One group followed an AAI intervention (experimental group) the other one did not (control group).

Procedure/Participants

In May 2016, the project called: "The dog is my co-therapist" was presented to the guests of a nursing home near Reggio Emilia (Italy). It was afterwards delivered an information sheet and an informed consent form. Each patient was asked to sign the informed consent to take part to the study. As to evaluate the number of participants, we performed a t-test of two independent samples using the G*Power 3.1.9.2 software.

Twenty eight guests were included in the study program, all meeting the following inclusion criteria: older than 60, Italian native speakers, mild or absent cognitive impairment (assessed using Mini-Mental State Examination - MMSE-) (16), more than 2 months of permanence in the nursing home, interested in the interaction with a dog. Exclusion criteria, as to safeguard patients, were: the presence of allergies, asthma, phobia, wounds, severe aggression attitude or being bedridden. Patients were therefore randomly assigned to the experimental or to the control group

(14 for each group). Both groups filled the questionnaires as to measure the target variables (time 0). The control group carried out the normal activities in the nursing home, while the experimental group had 16 AAI meetings: 2 times a week, with one hour sessions. The chosen animal was a dog trained and certified as suitable for Pet Therapy, with previous health and behavioral assessment.

Once finished the scheduled meetings (time 1), all the participants, including the control group, filled the same questionnaires.

Intervention

During the AAI were firstly performed introductory sessions, as to introduce the dog and the operator to the participants. At a second stage, caregiving activities were gradually performed, which included the filling of the basic needs, as nutrition and care of the dog's coat to arouse a sense of safety and privacy thus reducing nervous tension. Afterwards, as a practical exercise, participants were taught the correct method of physically interacting with the dog, aimed to stimulate the manipulation. Participants were asked to use tools, such as brushes, to avoid focusing on their personal needs while giving instead attention to the animal through an increased empathy. Participants played fun activities with the dog such as fetch games, hidden objects searches, fun dramas, giving basic and complex orders to the animal and walking with the dog. The last step of the intervention was the re-elaboration of the experience, which was stimulated in the participants using the recognition tools, representations, images, and words.

Measured variables

Depression

In order to assess the depressive symptoms we used the Geriatric Depression Scale - GDS (17). This instrument consists of 15 items (e.g. Do you feel pretty worthless the way you are now?). Answers are on a dichotomous scale (1=yes; 2=no). In our study, we found

an excellent internal reliability (Cronbach's $\alpha=0.81$). The total score is made by the sum of the answers (0 to 5=not depressed; 6 to 10=mild depression; 11 to 15=maximum severity of depression).

Apathy

In order to assess the level of apathy we used the Apathy Evaluation Scale - AES (18). This instrument consists of 18 items (e.g. "Are you interested in new experiences?"). Answers are a Likert-type scale with three positions (from 0=not at all to 3=very much). The scale identifies three factors: behavioral (Cronbach's $\alpha=0.47$), cognitive (Cronbach's $\alpha=0.78$), emotional (Cronbach's $\alpha=0.65$). The total score is the sum of the scores for each factor (0 to 13 absence of apathy; 14 to 26 mild apathy; 27 to 39 moderate apathy; more than 39 severe apathy). The scale has a high total reliability (Cronbach's $\alpha=0.85$).

Quality of Life

In order to assess the quality of life we used the Quality of Life Scale In Late-Stage Dementia (QUALID) (19). This scale measures the frequency of target behavior or an attitude in the last two weeks. This instrument consists of 11 items whose answers are on a 5-position type Likert scale (0=never to 5=always). The scale identifies three factors: discomfort (Cronbach's $\alpha=0.80$; e.g. "Makes statements or sounds that suggest discontent, unhappiness, or discomfort"), social interaction (Cronbach's $\alpha=0.74$; e.g. "Enjoys interacting or being with others") and depression (Cronbach's $\alpha=0.74$; e.g. "Appears sad"). The total score is the sum of the answer to each item and it goes from 0 (best quality of life) to 55 (worst quality of life). The total reliability is good (Cronbach's $\alpha=0.70$).

Anxiety

In order to assess the level of anxiety we used the Hamilton Anxiety Scale - HAM-A (20). This scale's purpose is measuring feelings experienced by the individual in the last week, focusing particularly on the subjective experience. It consists of 14 items, and each item is a cluster that collects different symptoms (e.g. fears,

insomnia). The answers are on a Likert-type five-point scale (from 0=absent to 5=very severe) (Cronbach's $\alpha=0.88$). The total score is the sum of the answers to each item (0 to 13=no anxiety; 14 to 27=mild anxiety; 28 to 41=moderate anxiety; 42 to 56=severe anxiety).

Loneliness

In order to assess loneliness, we used the Loneliness Scale - UCLA (21). This tool is mono-factorial (Cronbach's $\alpha=0.89$) and it consists of 20 items (e.g. "I feel completely alone"). The answers are on a Likert-type scale with four positions (0=never to 4=always). The total score is the sum of the answers to each item (10 to 19=no loneliness; 20 to 25=mild loneliness; 26 to 30=moderate loneliness; 31 to 40=severe loneliness).

Data analysis

Statistical analysis was performed using SPSS 23 software (© IBM). We used Wilcoxon test to evaluate the effect of AAI; we used Mann-Whitney test and to evaluate differences between experimental and control group.

Results

The characteristics of participants of both groups, such as cognitive impairment, age and length of hospital stay, are shown in Table 1.

Before-after AAI intervention analysis

As to evaluate the effect of the pet therapy intervention we performed a statistical analysis using the mean before and after intervention values in the experimental group (Tab. 2).

The difference between the means (Delta post_pre) was negative, which means that the after-intervention values are lower than pre-intervention ones, in line with the initial assumptions. Statistical tests show that this difference is significant for each variable.

Apathy (AES) and quality of life (QUALID) scales are composed by several factors. The mean of these factors showed the significant difference in the

Table 1. Distribution of respondents in both groups according to cognitive impairment, age and years of hospitalization

		Experimental group (n=14)	Control group (n=14)
Cognitive deficits (Score Mini Mental State Examination)	slight (da 19 a 23)	11	11
	none (da 24 a 30)	3	3
Age	m	85.07	84.91
	DS	±10.12	±9.07
	Min	63	65
	max	95	96
Years of hospitalization	m	3.43	7.93
	DS	±4.55	±16.24
	min	1	1
	max	18	46

Table 2. Measures of pre and post variables in experimental group

	PRE			POST			Delta post-pre	Test di Wilcoxon	
	N°	M	DS	N°	M	DS		Z	p
GDS	14	7,57	±4,07	14	6,00	±2,88	-1,57	-2,102	,036
AES	14	29,36	±6,87	14	23,93	±4,45	-5,43	-3,183	,001
QUALID	14	30,14	±5,55	14	21,29	±4,36	-8,86	-3,3	,001
HAM	14	24,21	±5,37	14	18,71	±4,86	-5,50	-3,311	,001
UCLA	14	50,00	±5,64	14	44,43	±2,71	-5,57	-3,301	,001

experimental group before and after the treatment. In particular, the factors cognitive and emotional in apathy and depression, discomfort and social interactions in quality of life (Tab. 3).

Differences between experimental and control group

As to assess the difference in means between the two groups we used the statistical test of Mann-Whitney. Table 4 shows how the values reported by

the experimental group are lower than those found in the control group.

Discussion

Collected data fully confirmed the initial assumptions. Considering the variable Quality of Life, we registered the biggest difference before-after AAI intervention (Δ post-pre=-8,86; $Z=-3,3$; $p=0,001$).

Table 3. Measurements of the factors of apathy stairs (AES) and the Quality of Life (QUALID)

	PRE			POST			Delta post-pre	Test di Wilcoxon	
	N°	M	DS	N°	M	DS		Z	p
AES_behavioural	14	6,79	1,72	14	6,50	1,34	-0,29	-1,414	,157
AES_cognitive	14	10,93	3,32	14	6,93	2,37	-4,00	-3,313	,001
AES_emotional	14	10,07	2,62	14	9,00	2,11	-1,07	-2,303	,021
QUALID_discomfort	14	13,50	3,88	14	9,29	2,52	-4,21	-3,304	,001
QUALID_depression	14	8,29	1,59	14	6,71	1,27	-1,57	-3,236	,001
QUALID_social interaction	14	8,36	1,82	14	5,29	1,27	-3,07	-3,341	,001

Table 4. Measures of pre and post variables in experimental and control group and related statistical tests

	Gruppo						Test di	
	Experimental			Control			Mann-Whitney	
	N	M	DS	N	M	DS	Z	p
GDS_tot_delta=GDS_tot_post-GDS_tot_pre	14	-1,57	2,68	14	,57	,94	-3,234	0,001
AES_tot_delta=AES_tot_post-AES_tot_pre	14	-5,43	3,74	14	2,43	1,40	-4,523	0,000
QUALID_tot_delta=QUALID_tot_post-QUALID_tot_pre	14	-8,86	3,55	14	1,86	1,10	-4,548	0,000
HAM_tot_delta=HAM_tot_post-HAM_tot_pre	14	-5,50	1,61	14	2,43	2,47	-4,526	0,000
UCLA_tot_delta=UCLA_tot_post-UCLA_tot_pre	14	-5,57	3,65	14	2,86	1,75	-4,526	0,000

Above mentioned data seems to suggest that patients in the experimental group improved their perception of quality of life. Also, considering the factors that compose the scale we found significant improvements, such as: a lower perception of discomfort (Δ post-pre=-4,21; $Z=-3,304$; $p=0,001$), lower depression (Δ post-pre=-1,57; $Z=-3,236$; $p=0,001$), better social positive interaction (Δ post-pre=-3,07; $Z=-3,341$; $p=0,001$).

This finding is also supported by the loneliness variable, which had a significant improvement (Δ post-pre=-5,57; $Z=-3,301$; $p=0,001$) with a decrease of the mean overall score (M -pre=50,00 a M -post=44,43).

Also for the variable anxiety, we found the same decrease in the mean score (Δ post-pre=-5,50; $Z=-3,311$; $p=0,001$), indicating a decreased perception of anxiety.

Also for apathy, we found the same overall trend (M -pre=29,36 a M -post=23,93), with a shift from initial moderate apathy (27-39) to mild apathy (14-26) (Δ post-pre=-5,43; $Z=-3,183$; $p=0,001$).

Moreover, still in apathy, we found a significant improvement in cognitive apathy (Δ post-pre=-4,00; $Z=-3,313$; $p=0,001$) and emotional apathy (Δ post-pre=-1,07; $Z=-2,303$; $p=0,021$).

Conclusion

The presence of the dog during the intervention facilitated social activities, acting as a catalyst for interpersonal relationships. In fact, the elders were pleased, stimulated and they really had fun dealing with the animal, during game phases, such as fetch games, as well as during caring activities.

An increasingly active participation was also noted in those patients who were initially wary and isolated: they got better integrated and socialized thanks to the ability of the dog as well as of the operators who actively involved them.

From a psycho-affective point of view, we can consider this intervention effective, since it generated the assumed “emotional contagion”: participants were involved in an emotional collective participation and in a deeper feeling of belonging and sharing. The relationship with the dog stimulated communication and proper explanation of words or phrases. In fact, guests spoke more spontaneously and more adequately, improving, albeit in a specific context, their relationship with the external world.

We are fully conscious of the limited range of this research, but it is necessary in our view to continue on this track, working on the evaluation of the therapy’s effectiveness, and investigating the mechanisms underlying this phenomenon. For a better analysis of the AAI effects, it might be interesting to use a search “Mixed Method”, in order to analyze qualitative variables thus getting a more complex framework.

As suggested by several authors (4, 6, 12), it would be interesting to expand the research focus from patients’ well-being to health professionals’. The implementation and success of the Pet Therapy could have a great emotional and social impact, bringing relief to patients and their family members, but also to health professionals. Recently, much has been written on the holistic vision of the man in the framework of care and support: Pet therapy could be considered as a resource that the nurse (but not only) could use to provide a

more effective assistance to the patient. The health professional would obviously need to acquire specific skills as to work with Pet Therapy, as for other specializations. Pet Therapy could be listed together with other effective therapies such as the “Touch Therapy” or the “Behavioral Cognitive Therapy”, where a team of health professionals acts closely for patient’s “health” according to each professional expertise. It is, therefore, desirable to continue and strengthen the research activities in this field with such potentially incisive repercussions on several social aspects.

Limitations

The results of this study should be interpreted with caution because of its methodological limitations. The small sample size, taking into account only a structure and the diversity of disease, prevents the generalization of the observed effects. Also, the time factor is not to be omitted, since the project was carried out during a little number of meetings and altered temporal continuity. Also, other variables, like quantitative variables, should be considered for the assessment in future research.

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