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## MELOTHERAPY- A PROMOTER FOR PHYSICAL ACTIVITY IN DEMENTIA PATIENTS

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### Abstract

**Objective.** Alzheimer's disease is currently a real health problem for the elderly, affecting the family, society and health systems. Music reflects positive outcomes in the human beings and studies have demonstrated the curative proprieties that music therapy has on cognitive system. We are proposing a melotherapy focusing on the physical activity of dementia patients.

**Methods.** A lot of five elders, suffering from dementia, were the patients were recruited, accepting to be part of this study which supposed that the patients would listen to CDs with specially chosen music for each moment of the day, without interfering with their activities for six months. In the morning, the patients listened to classical music, in the afternoon they listened to jazz or bossa nova, and in the evening they listened to opera or religious music, according to their tastes.

**Results.** The Physical Activity Scale for the Elderly (PASE) questionnaire comprises section on leisure time activity, household activity and work-related activity. The PASE questionnaire and the Quality of life questionnaire were performed before and after the six months period of the study, showing important improvements in the patient's results before and after.

**Conclusions.** Among the complementary care, the Music Therapy is a non-pharmacological therapy that has shown that can improve the physical activity, that has a beneficial effect on the memory and orientation and promote social interaction and communication for patients with dementia.

**Keywords.** dementia, melotherapy, quality of life, physical activity.

### Introduction

Dementia is represented by neurological characteristics with various origins and with distinct pathophysiological ways that are able to cause an involution process affecting in a chronic, progressive manner memory, communication, thinking process and other cognitive functions. The major in importance part of dementia is the cognitive impairment, which frequently acquires the parts of memory, attention, thinking, emotions, with important consequences on daily living. In this sense, dementia is a final stage, identified by some authors as neuronal damage that goes beyond the defense mechanisms and the functional and structural compensation of the nervous system.

Dementia affects each patient differently, depending on the impact of dementia and the previous personality of the subject. It also identifies the signs and symptoms of dementia in which it differentiates three stages: the early stage: often it is unnoticed, because the onset is slow.

The most common symptoms include, the tendency to forget, the loss of the notion of time and space for relocation, even in known places. The intermediate stage: as dementia develops in the intermediate stage, the signs and symptoms become

more obvious and limited. At this stage, the affected people start to forget about the recent events, as well as the names of the people; they are in their own house; they have more and more communication difficulties; they are beginning to need help with care and personal care and are undergoing behavioral changes, for example, walking around the house or repeating the same questions.

In the late stage of the disease, the dependence and inactivity are almost complete. Memory impairment is severe, and physical symptoms and signs are more evident. Symptoms include increased relocation in time and space; difficulties in recognizing family and friends; a growing need for help with personal care; difficulty in walking; behavioral changes that can be aggravated and lead to aggression.

The dependence generated by dementia not only affects the person suffering from it, but also their families and different groups of society; is considered a problem that obliges to propose multidisciplinary approaches, which demands the support of the administrations, caregivers and family members. There is consensus that no one is available treatment that cures dementia, the approach should focus on alleviating the consequences of disease, promoting the

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dignity, well-being and quality of life of the suffering patient/dementia.

Currently, the study of dementia is developed in different areas of knowledge, as they are, the genetic, clinical, and physiological, in diagnostic techniques, as well as in studies aimed at pharmacological and non-pharmacological treatment. It is in this last area, where the aim is to focus this bibliographic review, since in recent years they have emerged studies that suggest the existence of benefits, both in symptoms and quality of life, of music therapy applied to patients with dementia.

In relation to the concept of music therapy, the different authors define it as a therapeutic medium, with the application of music and / or its elements (melody, rhythm, harmony, sound) to a patient or group of patients, with the intention of promoting and facilitating communication, interaction, learning, mobility, expression, organization and other significant therapeutic goals to meet the needs physical, emotional, social and cognitive of people. Other authors define it as "The clinical and evidence-based use of musical interventions to achieve goals individualized within a therapeutic relationship".

Currently, there are numerous authors who research and use a variety of techniques neurological music therapy clinics for use in the treatment of patients with different diseases, including dementia patients. Music therapy itself for many of them, it considers a non-pharmacological intervention of first line which has potential effects on reducing cognitive impairment, improving symptoms and improving the quality of life of dementia. In this regard, the authors identify that music produces its effect in a variety of brain areas involved in emotions, motivation, cognition, and motor functions.

At the brain level, the mechanisms involved are different. First, it is considered that music exerts an action of neuroplasticity, with changes in brain function valued by imaging techniques which confirm that singing familiar songs through Karaoke, improves cognitive ability after training in patients with dementia. Secondly, it acts through neurogenesis mechanisms, in this respect music has an effect on neuronal count and increases the number of cells, and authors argue that listening to music could promote neuron recovery and reserve cognitive during the early stages of the disease, as well as exercising its action regeneration and repair; the neuroendocrine mechanism has shown that Music therapy has an influence on the secretion of hormones, such as, cortisol, testosterone and estrogen, in the release of neurotransmitters, neuropeptides and other biochemical mediators, such as endocannabinoid endorphins, dopamine and nitric oxide, which indicates that music participates in the intrapsychic mechanisms of reward, in the stress, arousal, immunity and in the systems of social affiliation of people and themselves considers it helpful to prevent the exacerbation of dementia.

Finally, by the mechanism neuropsychiatric, the influence on emotions and their association with the Cognitive ability thus identifies that decreased anxiety is associated with improved mood autobiographical memory and found that sad music is the most effective way to remember personal biographical aspects, so that the music itself could not evoke memory, but the neuropsychiatric symptom associated with music had an effect on semantic memory (long-term memory associated with consciousness).

Music has been used in the field of dementia for many years. In addition, the music therapy is considered to be capable of modulating the factors involved in cognition and behavior, attracts attention, elicits emotional responses and modulates them, implying a various cognitive functions and evokes patterns of movement. At this level, music therapy aims to develop potentials and / or restore the individual's functions so that he or she can achieve them better intra- and interpersonal integration and, consequently, have a better quality of life. Objectives are raised to help prevent, restructure daily life, develop creativity and freedom of decisions, keep the body moving and to facilitate the use of breathing and relaxation techniques, generating auditory stimuli and sensorial; therefore, it is applicable in the field of cognitive rehabilitation, sensory-motor and memory, stimulating speech and language in patients with diagnoses of dementia in early stages. Studies show that receptivity to the music can be maintained until the last stages of dementia.

In relation to the characteristics and effects of music therapy on the activity psychomotor of the patient with dementia, to say that music is considered an element of animation and stimulation, and through the sound the experience of movement is experienced, physical or psychic and its aim is to promote health. Studies agree that to develop music therapy sessions it is necessary to have a qualified guide or music therapist with musical experience and in interpersonal relationships that makes it possible to value the changes that develop through music. The music therapist can modify the treatment according to the different ones patients, of the psychological and / or rehabilitation approach that is intended. In relation to the types of music selected for the sessions, in general the studies do not neither the style nor the type of music are specific, although one of them details and generalizes that the classical music and native pop music, are the most used in therapeutic sessions with music, inspired by the fact that people select classical music when they intend to relax. In general, this author recommends slow, slow music with absent rhythm and use of natural sounds such as water, wind or animals. In this regard another author reported an increase in changes in patient behavior if listen to Baroque music.

In relation to the effects that music therapy exerts on socialization activity of the patient suffering

from dementia, studies report that musical interventions have been used to increase socialization, cognitive, emotional states. At the psychological level, music can participate in various social functions, increasing the communication and social cohesion and promoting empathy relations. In addition, the music, in itself, has an important impact referring communication and social life, allowing the patient to share the pleasure and the gratification of music with other people. Specifically, in the systematic reviews developed by scientists, was demonstrated a significant and positive effect of music therapy in patients with dementia and found out that listening to music reduced verbal agitation.

Among the recognized benefits of music therapy in maintaining and improving social skills and socio-emotional aspects of patients with dementia are identified as helping to maintain or to improve verbal and non-verbal expression, moreover, if associated with rhythmic activities, that they contribute, for example, to a better understanding and use of the language; in addition, it helps to maintain the attention and to connect the person with the reality. While language is deteriorating over the course of the disease, certain musical skills continue to be preserved, as is the ability to interpret musical pieces that they had previously learned or kept playing a musical instrument, and so did they collaborate in the socialization of the patient.

### Methods

A lot of five elders, diagnosed with dementia by a neurologist doctor, were the patients recruited. The patients accepted to be part of this study which supposed that the patients would listen to CDs with specially chosen music for each moment of the day, without interfering with their activities for six months. In the morning, the patients listened to classical music, in the afternoon they listened to jazz or bossa nova, and in the evening they listened to opera or religious music, according to their preferences.

### Results

The first patient, A.M., female, 80 year old, being diagnosed with dementia for 5 years.

Results of the Physical Activity Scale for Elders before the 6 months of listening music. The patient performed every day sitting activities such as reading, watching TV and sitting without any activity for 12-14 hours per day. In the last week before the questionnaire, the patient never did walk outside. Also, the patient did not engage in light sport or recreational activities. In addition, the patient did not engage in strenuous sport and recreational activities or in exercises specifically to increase muscle strength and endurance. The patient seldom engaged in light housework activities, but the patient did not involved in heavy housework activities and also the patient was not engaged into volunteer activities. The score was 10 points.

After the 6 months of music therapy, the patient obtained 17 points. The patient performed every

day sitting activities such as reading, watching TV and sitting without any activity for 10-12 hours per day. In the last week before the questionnaire, the patient made short walks outside. Also, the patient started to engage in light sport or recreational activities in the house. In addition, the patient did not engage in strenuous sport and recreational activities or in exercises specifically to increase muscle strength and endurance. The patient frequently engaged in light housework activities, but the patient seldom involved in heavy housework activities and also the patient was not engaged into volunteer activities.

The patients' s results of Older People's Quality of Life Questionnaire were: 105 points before the melotherapy and 93 points after the melotherapy.

The second patient, M.S., female, 76 year old, being diagnosed with dementia for 3 years.

Results of the Physical Activity Scale for Elders before the 6 months of listening music. The patient performed every day sitting activities such as watching TV for 9-10 hours per day. In the last week before the questionnaire, the patient rarely did walk outside. Also, the patient rarely engaged in light sport or recreational activities. In addition, the patient did not engage in heavy sport and recreational activities or in exercises specifically to increase muscle strength and endurance. The patient seldom engaged in light housework activities, but the patient did not involved in heavy housework activities and also the patient was not engaged into volunteer activities. The score was 13 points.

After the 6 months of music therapy, the patient obtained 21 points. The patient performed every day sitting activities such as reading, watching TV and sitting without any activity for 8-9 hours per day. In the last week before the questionnaire, the patient performed short walks outside almost every day. Also, the patient started to engage in light sport or recreational activities inside and outside of the house. In addition, the patient did not engage in strenuous sport and recreational activities. The patient started to perform exercises specifically to increase muscle strength and endurance. The patient frequently engaged in light housework activities and the patient started to involve in heavy housework activities and also the patient was not engaged into volunteer activities.

The patients' s results of Older People's Quality of Life Questionnaire were: 99 points before the melotherapy and 89 points after the melotherapy.

The third patient, N.T., female, 73 year old, being diagnosed with dementia for 2 years.

Results of the Physical Activity Scale for Elders before the 6 months of listening music. The patient performed every day sitting activities such as watching TV for 8-9 hours per day. In the last week before the questionnaire, the patient rarely did walk outside. Also, the patient rarely engaged in light sport or recreational activities. In addition, the patient did not

engage in heavy sport and recreational activities or in exercises specifically to increase muscle strength and endurance. The patient rarely engaged in light housework activities, but the patient did not involved in heavy housework activities and also the patient was not engaged into volunteer activities. The score was 15 points.

After the 6 months of music therapy, the patient obtained 20 points. The patient performed every day sitting activities such as reading, watching TV for 7-8 hours per day. In the last week before the questionnaire, the patient performed 3-4 days per week short walks outside. Also, the patient began to engage in light sport or recreational activities inside and outside of the house. In addition, the patient did not participate in strenuous sport and recreational activities. The patient begin to perform exercises specifically to increase muscle strength and endurance. The patient frequently engaged in light housework activities and the patient started to involve in heavy housework activities. Also the patient was not engaged into volunteer activities.

The patients' s results of Older People's Quality of Life Questionnaire were: 101 points before the melotherapy and 88 points after the melotherapy.

The fourth patient, T.I., male, 78year old, being diagnosed with dementia for 4 years.

Results of the Physical Activity Scale for Elders before the 6 months of listening music. The patient performed every day sitting activities such as watching TV for 10-12 hours per day. In the last week before the questionnaire, the patient did never walk outside. Also, the patient did never engage in light sport or recreational activities. Also, the patient did not engage in heavy sport and recreational activities or in exercises specifically to increase muscle strength and endurance. The patient neverengage in light housework activities, also the patient did not involve in heavy housework activities and also the patient was not engaged into volunteer activities. The score was 11 points.

After the 6 months of music therapy, the patient obtained 15 points. The patient performed every day sitting activities such as reading, watching TV for 8-9 hours per day. In the last week before the questionnaire, the patient 2-3 days per week performed short walks outside. The patient did not engage in light or strenuous sport or recreational activities inside and outside of the house. The patient did not start to perform exercises specifically to increase muscle strength and endurance. The patient begin toengage in light housework activities and the patient started to involve in heavy housework activities. Also the patient was not engaged into volunteer activities.

The patients' s results of Older People's Quality of Life Questionnaire were: 112 points before the melotherapy and 101 points after the melotherapy.

The fifth patient, M.S., male, 77 year old, being diagnosed with dementia for 3 years.

Results of the Physical Activity Scale for Elders before the 6 months of listening music. The patient performed every day sitting activities such as watching TV for 10-12 hours per day. In the last week before the questionnaire, the patient rarely did walk outside, once per week. Also, the patient was not engaged in light sport or recreational activities. In addition, the patient did not participate in heavy sport and recreational activities or in exercises specifically to increase muscle strength and endurance. The patient rarely engaged in light housework activities, but the patient did not involved in heavy housework activities and also the patient was not engaged into volunteer activities. The score was 14 points.

After the 6 months of music therapy, the patient obtained 20 points. The patient performed every day sitting activities such as reading, watching TV and sitting without any activity for 8-9 hours per day. In the last week before the questionnaire, the patient performed short walks outside. Also, the patient did not start to engage in light sport or recreational activities inside and outside of the house. In addition, the patient did not engage in strenuous sport and recreational activities. The patient did not start to perform exercises specifically to increase muscle strength and endurance. The patient frequently engaged in light housework activities and the patient started to involve in heavy housework activities. The patient was not engaged into volunteer activities.

The patients' s results of Older People's Quality of Life Questionnaire were: 107 points before the melotherapy and 92 points after the melotherapy.

### Discussions

As far as active music therapy is concerned, as the name implies, it is actively involved participants by singing, dancing or performing instruments, which includes more activities during the treatment process.

However, in passive music therapy, the patients listen to live or recorded music without actively participating, this being heard frequently, in order to stimulate the senses and achieve the goals of the treatment.

In relation to live music, it seems to be more effective than recorded, probably because it creates a stronger sense of reality and because the patient can watch musicians play and interact with them. Not just listening or singing introduces changes, but it also influences and regulates the functioning of motor areas to make music, an effect connected with pleasure and the improvement of the mood.

Thus, it is considered that if person has the skills to play an instrument, work to keep them active proven to help discern sounds at later stages

Music can improve mood and generate psychological well-being. Tothe combination of music and hearing has effects on the brain structures of the brainemotion regulation. From a neurochemical point of view, music is knownit can activate limbic and paralimbic structures such as the amygdala, hippocampus or nucleusaccumbens, among others that

do not work in depressive patients. It can affect the system autonomous nervous and decrease stress, rebalances the immune system, especially when the person recognizes and appreciates the music they listen to.

In addition, listening to music can help increase serotonin levels, the neurotransmitter responsible for regulating mood and sleep, which inhibits negative emotions such as anger. Auditory stimulation with music evokes emotions that are often accompanied by physiological reactions such as changes in heart rate, breathing, skin, and the secretion of hormones that direct the person to a state of excitement that according to the authors improve cognitive functioning, spatial reasoning, attention, and information processing.

### Conclusions

In conclusion, of our study and research, music therapy has a beneficial effect on psychomotor activity, stimulates the senses and decreases disruptive behaviors, especially if the sessions are guided, structured, individual or group, active or passive, with slow music or sounds natural and develop more than two sessions per week.

Music therapy applied to the rehabilitation programs of the dementia patient provides important benefits for the social life of the patient and his family, facilitates aspects important, such as initiative, commitment, self-expression, and mutual understanding it allows to fulfill the psychosocial needs through the positive work of the person, improving their quality of life.

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