

Special Article - Psychopathology in Older Adults

The Effects of Music Therapy on Anxiety and Depression

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Editorial

The French Federation of Music-therapy defines music-therapy as « ...a therapeutic practice for care, support or rehabilitation that consists in managing individuals who present with communication and/or relationship problems. Different music therapy techniques are available, adapted to the populations concerned: psycho-affective disorders, social or behavioral difficulties, sensory, physical or neurological disorders. Music therapy is based on the close links that exist between the elements that make up music and the subject's individual history. It uses sound and/or musical mediation to open or restore communication and expression within a relationship, in the verbal and/or non-verbal registers ».

Musicotherapy is a care technique that can be used with old people having pathologies in order to preserve their capacities. It helps to promote communication and to keep social ties with in the elderly. There are several types of musical therapies:

*Receptive musicotherapy is based on music listening.

*Active musicotherapy, the one which gives the person, the possibility to create his own acoustic with the help of musical instrument or with the voice.

The Effects of Receptive Music Therapy on Anxiety

First of all, we will exploit the effects of receptive music therapy on behavior disorders in the elderly. At present, several scientific studies show the benefits of music on anxiety, anguish and depression [1]. A published study has shown the effects of music on the patient with Alzheimer's disease but also on the main caregiver. These variables were measured by different scales (ZaritScale, CornellScale and Scale of Hamilton), the workshop was set up once a week for ten consecutive weeks to observe the effects. This study shows the efficiency of this mediation with patients with dementia disorders. It allows treating anxiety disorders and depression but also helps relieve the main caregiver considerably improving the morale of this person. The music would be an excellent mediator to restore social ties, family ties but also emotional [2].

A recent study published in the NPG review shows the impact of musicotherapy on anguish and on the process autobiographic memory process. The objective of this mediation is to encourage the exchanges and above all to give the patient the possibility to put words on ills, on painful. The work room of musicotherapy took place once

a week for one hour with care professionals and a psychologist. The evaluation of anxiety was made with the visual analogical scale at the end of the session and three hours after it/later. This evaluation reveals the decrease of anxiety after the workroom but also prolongation of this after 3 hours later (Perrot).

It is important to notice that the therapeutic relation as well as the setting established in these different articles constitutes an important part in musicotherapy.

A study shows the effects of musical listening on old people suffering from dementia during nursing cares. The aim of this study was to examine the effects of the favourite music during the shower. This music could lead to a significant decrease of the aggressive behavior of the people suffering from Alzheimer's disease.

18 old people, with a serious stage of Alzheimer's disease have been picked in an aleatory way.

Two groups have been constituted:

- * A control group without music
- * A group listening to (pre-selectionned) music during showers.

Results reveal that listening to music lead to a significant decrease of the behavior disorders during the shower. During the musical listening, les «soignants» pointed out an improvement of the behaviors and a general incensement of the cooperation during showers. This study shows cares improvement in its global quality concerning old people suffering from serious cognitive diseases. This study confirms/valids a previous study made by Thomas D.W that shows a reduction of physical aggressivity and a reduction of people who do not want to have showers thanks to musical listening.

Among all this research, a study of 24 cancer patients, hospitalized in oncology was conducted to show the effects of music on pain.

The evaluation of the pain has been estimated on a scale EVA (from 0 to 10) with a pain superior or equal to 3. Patients had the benefit to have receptive musicotherapy sessions realized by a music therapist according to the protocol adapted from the U standardized method. They quantify the level of pain and anxiety on the pain scale on a specific temporality (before, after and 30 minutes after each session). Musicotherapy allows a significant reduction of the pain but also of the anxiety until 30 minutes after the session and improve the quality of life of those patients thus it allows them a moment of relaxation out of cares and a time for speaking and listening.

Pierre Lemarquis [3] gives us important elements on the effects of music on the brain. Indeed, music comes from emotions and it is logical that it causes emotions to the person who is listening to it. IRM funder lines an activation of the reward circuit (pits of Acubens) during the musical listening session. This activation provokes a dopamine secretion, essential in motivation but also a serotoninergicanti-depressive and endorphin analgesic secretion. Therefore, listening to music has relaxing property reducing stress and anguish. The author

underlines the fact that the brain of old person has an active synaptic plasticity thanks to a stimulating environment such as music. Some compensatory strategies can appear causing dendritic regrowth and new synaptic formation.

The Effects of Active Music Therapy on Depression

In practice, Active Music Therapy (AMT) consists of establishing a sound or musical relationship with patients. AMT allows the patient to express him or herself by using voice (singing) or playing an instrument or using him/her body (tapping). The rhythm, the tonality, the intensity, the melody are used to help patient to recover or discover positive feeling through pleasure, and develop his social abilities. Singing, can further help with aphasia to facilitate speech rehabilitation, breath control, and motricity in the verbal and/or non-verbal registers [4].

AMT is also particularly adapted to reduce behavioral and psychological symptoms (BPSD) [5-7] for Alzheimer's patients, significantly approved with BPSD like delusions, agitation, apathy, irritability, aberrant motor activity, and night-time disturbances [8,9]. Music is effective in decreasing the frequency of agitated and aggressive behaviors for individuals diagnosed with Alzheimer's disease and related dementias which are highly correlated with anxiety and depression.

Several epidemiologic studies have examined depression as a risk factor for Alzheimer disease with conflicting results [10]. They conclude that depression was associated with an increased risk of Alzheimer disease. Could be Music Therapy used in prevention of the risk for Alzheimer disease?

To pursue on this meta-analysis, we found a study about the effects of AMT on depression. It is effective because active music-making within the therapeutic frame offers the patient opportunities for new aesthetic, physical and relational experiences [11]. Music has effects on mood and emotional changes. Through autobiographic memory recall, it contributes to reminiscence and the sense of control of life through positive experiences. Hearing music, singing, tapping, increased attention to music and accompanies awareness of self and environment. It contribute to « reconnect » the patient with his environment against mood disorders like depression and anxiety increasing his quality of life.

Music is also efficient with patient's family and caregivers. It provokes and stimulates interest even when no other approach is effective through emotional intimacy experiences shared [12]. Another study shows the efficacy of MT as a complementary therapy for social functioning and participation in rehabilitation with individuals with acute traumatic brain injury and stroke. The MT group was more actively involved and cooperative than in the control group with a trend toward improvement in mood during acute rehabilitation [13].

Neurophysiological hypothesis is based on the release of the neurotransmitter dopamine in the striatum. Salimpoor et al. [14] experienced some anticipation in the dopamine release. Dopamine is released a few seconds before the emotional peak by anticipation and the predictability, provokes responses like feelings of security

associated with pleasure. Salimpoor describes it as "...each act of listening to music may be thought of as both recapitulating the past and predicting the future".

Perrot et al. [15] analyzed the impact on anxiety and processes of autobiographical memory on subjects with cognitive impairment combined with psychopathological suffering. This survey showed that anxiety decrease significantly at the end of the workshop (73 % patients - 14/19). They concluded that MT envelope the patients and have a cathartic effect. MT also helps to maintain identity in Alzheimer's disease. This therapy can be an alternative to the administration of psychotropic treatments or restraints for patient in pain.

About pain treatment, we know now that pain is linked with anxiety which can become depression with chronic pain. Anxiety can very quickly move from a temporary sensation, fleeting a quasi-permanent state, the crisis turns into anxiety. Dumber et al. [16] concluded that performance of music with AMT elevates pain threshold with endorphin release and positive effects. Music therapy offers a nonpharmacologic and safe alternative in the treatment of pain in palliative care patients [17]. In this experiment, the MT group was assigned to receive physical exercise training combined with listening to music versus subjects control group who received a therapy with antidepressant drugs. The effects of interventions were assessed by differences in changes in mood states between the two groups. In the exercise/music therapy group the results was a reduction in anxiety and in depression at 3-months and at 6-months.

Some hypotheses are based on neurological response to music. The reward circuit is activated when something pleasant is happening like sex, good food etc... but music is not tangible so, how does it makes our brain sing? The most simply explanation is that music brings a unique pleasure to humans. A feeling of love which moves us like nothing else through emotion.

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