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Treating Palliative Care Patients with Pain with the Body Tambura: A Prospective Case Study at St. Joseph's Hospice for Dying Destitute in Dindigul South India

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ABSTRACT

Background: The Body Tambura is a recently invented stringed instrument that is used for receptive music therapy designed to be placed and attached on the human body. The aim of this study was to record perceived effects of a treatment with the Body Tambura on palliative care patients with special reference to pain.

Materials and Methods: A prospective case study was carried out with patients of St. Joseph's Hospice for Dying Destitute in Dindigul/South India. Patients were treated with a treatment after baseline assessment and also on the next day. Outcomes were measured quantitatively by using a numeric rating scale (0–10, 10 maximum intensity of pain felt) at baseline, directly after treatment, and the day after the treatment to determine the intensity of the pain.

Results: Ten patients (five women and five men) participated in the study. The majority described the therapy as a pleasant experience. The pain intensity at baseline was reduced from 8.3 ± standard deviation (SD) 1.16 to 4.6 ± 1.52 at day 1 and from 4.6 ± 2.07 to 2.4 ± 1.58 at day 2.

Conclusion: A clinically relevant pain reduction was described as short time outcome; the therapy was received and perceived well. Forthcoming research should include a control group, randomization, a larger number of participants, and a longer period of treatment.

Key words: Body Tambura, Palliative care, Pain, Receptive music therapy

INTRODUCTION

In the recent years; the Body Tambura, which is a new instrument in the field of receptive music therapy inspired by the classical Indian Tanpura, has received increasing attention by German music therapists working in palliative care or with coma patients.

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Body Tambura

This instrument was originally conceived and designed for bedridden clients (coma patients) to transmit vibrations and energy to specific areas of the body (to the back, chest, stomach, or pelvic region) through targeted, gentle superimposition of a resonator. By playing the strings evenly, fine vibrations are produced and a softly enveloping acoustic space is created for the listener. The therapeutic concept adapts the original Indian Tanpura,

which is a long-necked plucked lute with four to six wire strings.

Indian Tanpura

Plucking the strings in a regular pattern creates a base tone harmonic resonance, which is called bordun or drone function. The notes of the Tanpura are not part of the melody itself, but support and sustain the melody by providing a colorful and dynamic harmonic resonance field of basic tones.

The Tanpura is absolutely essential to classical Indian music culture, not only in the musical sense but also in the spiritual sense and due to the special healing qualities of its sound: Small wonder that in southern India the Tanpura is used in preparation for childbirth, where expectant mothers hold it to their bellies while singing.

It is the only means to forget. Like the waters of the Lethe, its sound washes away the past and erases loneliness. It brings us back to our essence, so that we can sing from the core of our innermost being. Once the sound of the Tanpura has penetrated our consciousness, nothing else seems to matter. (Note: In Greek mythology, the Lethe is a river in the underworld from which the deceased drink in order to forget their earthly existence).

The wide field of music therapy can be structured into two main areas: Active and receptive music therapy. The receptive music therapy refers to the hearing of music compared to the active mutual improvisation on instruments in active music therapy. The receptive music therapy includes either any type of recorded music, or so called monochrome sounds produced by gongs, monochords, dingeridous, rainsticks, and ocean drums. The Body Tambura belongs to this group of instruments.[1-5]

The sounds of these instruments help to reach a trance-like state of consciousness, in which subconscious images and feelings can easily emerge.[6-9]

The Body Tambura consists of a very lightweight corpus equipped with an ergonomically contoured base and a sounding board fitted with 28 7 × 4 strings, tuned in the same way as an Indian Tanpura (A – d – d – D). This sequence of tones appears to be very important in inducing a feeling of being grounded: The sound opens in a leap of fourth upwards into boundless, celestial spheres; before descending again softly to arrive to the lower octave and to ascend again to the height via the fifth. The tone has neither a beginning nor an end, it is indivisible. Every moment of the sound is in itself beginning, middle, and end.

Since 2005; more and more music therapists, especially in Germany, working in different fields (schools, kindergartens, old age homes, hospitals, hospices, etc.) began using the Body Tambura as a treatment and appreciate its positive therapeutic effect on their clients' vitality of body, mind, and spirit.[10]

To investigate the Body Tambura's effects in the field of palliative care, in 2010 a pilot study was conducted with patients of a hospice in Berlin (Germany). In this German hospice there is space for about 25 terminally-ill patients who are living in double or single rooms. Their relatives are always welcome to pay a visit to them. A medical doctor is available daily to offer and adapt the medication requirements according to the patient's health needs. For all patients, strong analgesic medications like morphine are available and are frequently prescribed. Occupational therapy and music therapy are also offered as well as pastoral care. The main result of this pilot study[11] was that all participating patients reported beneficial effects: Patients described relaxing and calming experiences and pleasant images and visualizations while being treated. Family members seemed to benefit from the music therapy treatments as well.

In this research context, the following research question arose: Would patients of another sociocultural background equally benefit from the sound of the Body Tambura? Hence, two other pilot studies in India were carried out in cooperation and collaboration with the Department of Gandhian Thought and Peace Science, Gandhigram University, Dindigul, South India.

The first qualitative study in India explored how patients of St. Joseph's Hospice in India experienced treatment with the Body Tambura. The St. Joseph's hospice for 320 dying destitute was founded by Fr. Thomas Rathapillil in 2006. The patients of St. Joseph's hospice are rescued from the streets of the nearby cities like Madurai, Trichy, and Coimbatore by the hospice's dedicated and committed team. The people admitted to St. Joseph's hospice are all abandoned by their families, relatives, and friends. They were collected from the streets by Fr. Thomas Rathapillil and his specialized team, regardless of their caste, color, sex, age, or religion. Every week, there is an average of five patients who die there in human dignity. A medical doctor is always on call and visits the hospice once every 2 weeks. The medications of the inmates in St. Joseph's hospice/India differ strongly to the medication in Lazarus Hospice in Berlin. At that time this research was conducted, not all of the inmates of St. Joseph's hospice received a

permanent analgesic pharmacological treatment. The situation in St. Joseph's hospice differs greatly from European hospice care. The basic needs of the patients like food, a clean place to sleep, and fresh clothes are prioritized before the patient receives medication. There are also strong financial limitations. The same interview guideline as in the German hospice was used in the study.(1) Interviews' statements were carefully recorded immediately after the treatment by both an English- and Tamil-speaking scholar of Gandhigram University to ensure the accuracy and strength of the results. Data was analyzed qualitatively with a hermeneutical analysis strategy. As was the case in the German hospice, almost all of the participating patients described the treatment as a pleasant experience. Two of the treated and interviewed patients recommended and felt a positive effect on their breathing parameters. One patient reported the experience to be like flying and felt full of joy from the effect of the Body Tambura's vibrations on the body.

But the most surprising result was that eight of the 10 patients reported a strong pain reducing effect of the treatment. In order to further investigate the pain reducing effects of the Body Tambura, we therefore designed another prospective case study using quantitative outcomes. The aim of this new study was to record the therapeutic effect of a music therapy treatment with the Body Tambura on palliative care patients suffering from pain.

MATERIALS AND METHODS

Design

The study was carried out as a prospective case study with patients of St. Joseph's Hospice for Dying Destitute in Dindigul/South India. (Indian Research visa No AP 0912158 Date: 31.12.2010. Certificate of research authentication by Prof. Dr. S Narayanasamy, Gandhigram Rural Institute, 23.5.2013).

Participants

The study included patients of St. Joseph's Hospice for Dying Destitute in Dindigul/South India, which is a 320-bedded hospice for dying destitute people located in Dindigul, Tamil Nadu, South India. Hospice patients selected to participate in this study had to suffer from physical pain due to various diagnoses and should be able to rate their pain on a numeric rating scale. Their current ECOG status was between 4 and 5. Not all of the patients had a life-limiting disease. In addition all of them were also suffering from emotional pain caused by abandonment.

Intervention

Patients were treated with a single treatment session at baseline and on the following day. Each patient underwent a 10-min treatment with the Body Tambura. After a short introduction to relaxation of asking the patient to close the eyes and focus on body and breathing, the instrument was placed near or on the painful part of the patient's body. The sound of the Body Tambura could be heard by the patient and the sound vibrations could be felt. Each treatment lasted for about 10 min.

Fr. G Thathews conducting the patients' personal inteviews

All the participants in the study gave their informed consent. Dr C Dietrich performed the music therapy treatment with the Body Tambura after an informative introduction of the parameters and methodological approaches of the study through the translation done by Fr. G Thathews.

Dr C Dietrich giving a music therapy treatment with the Body Tambura

Outcomes

Outcomes were measured quantitatively by a numeric rating scale (0–10, 10 maximum intensity of pain) at baseline, directly after the first treatment, and on the following day. Interviews according the intensity of pain were performed by a native Tamil-speaking person translating the questions and answers. Interviews were carefully noted, digitally recorded, transcribed, and then translated into English immediately after the treatment [Appendix].

The quantitative outcomes were analyzed descriptively and graphically using Excel 2007. A hermeneutic analysis was used to qualitatively analyze interviews.

RESULTS

Sample

The study included 10 patients (five males and five females) with a mean age of 57.8 ± 17.8 years. Patients suffered from ischemic stroke ($N = 5$), fatal working accidents with fractures or trauma ($N = 3$), or other reasons. Nine patients were workers (e. g., watchman, tailor, and constructor) and only one was a housewife. They were complaining about poking pain in both knees, heavy leg pains, pain in the arms, pain in the hips, or pain in the hand due to different diagnoses; for example, hemiparesis after a stroke, fractures, amputations, and arthritis. In St. Joseph's Hospice, there

is a medical doctor always available on call and visits the hospice every 2 weeks. Primarily only the basic needs of the patients are covered; such as food, liquids, a clean bed, clean clothes, and a quiet and caring place to stay and die with human dignity. Strong financial limitations are apparent. None of the patients participating in the study received a permanent analgesic medical treatment.

Qualitative analysis of interviews

Almost all patients felt a significant relief of physical pain after the first music therapy treatment with the Body Tambura. All of them then reported another significant reduction of physical pain after the next session of treatment the following day as well. A numeric rating scale was used to measure the reduced intensity of pain felt by the patient without describing the pain specifically (e. g. for example (FE) pins, needles, etc.). They all experienced the treatment with the Body Tambura as very pleasant.

Quantitative analysis

The pain intensity on the numeric rating scale at baseline was reduced from 8.3 ± standard deviation (SD) 1.16 to 4.6 ± 1.52 at day 1 and from 4.6 ± 2.07 to 2.4 ± 1.58 at day 2. Figure 1 shows the described outcomes for each patient.

DISCUSSION

A clinically relevant reduction of pain was reported as direct outcome of the treatment and patients experienced the treatment as a pleasant experience. Different aspects should be discussed that could explain our observation. First of all, the Body Tambura may induce a deep relaxation of the patients' body and mind. A harmonic acoustic space is created by the sound of the instrument and the patient feels the sound vibrations on the body.[12,13]

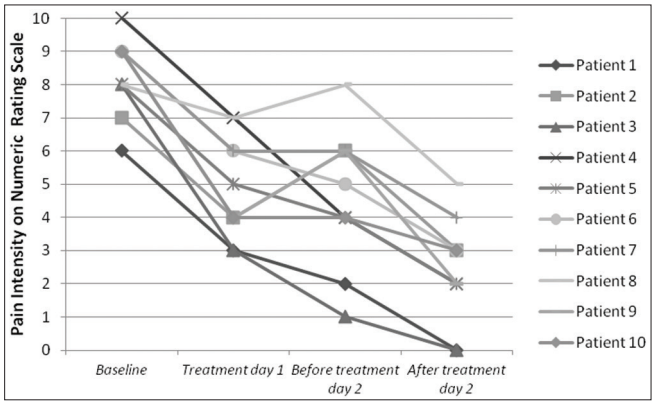

Figure 1: Pain intensity on the numeric rating scale for individual patients at baseline, after the first treatment, and on the 2nd day before and after treatment

Relaxation

Physical effects

A deep relaxation is reported to have the following physical effects: The skeletal muscles could reduce their activity, the blood pressure and heart rate could be reduced, and the peripheral blood vessels could dilate and trigger a feeling of warmth in the body. The breathing could become more constant; the blood sugar could be raised; and the level of blood cholesterol, cortisol, and norepinephrine could decrease (Herbert Bensons, The relaxation response 2000). In light of such physiological effects, Benson concluded that "relaxation techniques should serve as a model of how to integrate worthy, unconventional therapies in the practice of mainstream medicine" (Relaxation Revolution Herbert Benson 2011 S.59).

Psychological effects

Psychologically, the patient could experience the relaxation as follows: Mental freshness, inner awareness, higher awareness for impulses from outside, and serenity.

Psychophysiological effect

In the psychophysiological process of relaxation, different parts of the human body are involved simultaneously. The sounds and vibrations of the Body Tambura stimulate several receptor cells of the patient's body: The hairy cells of the ear, Pacini bodies at the surface of the patient's body, and the mechanoreceptor cells inside the patient's body. By this stimulation, neuronal areas of the brain like the auditorial, somatosensorial cortex, the further insula,[14] parts of the limbic system regions (emotional reprocessing), the amygdala (part of the limbic system coordinating the emotions), further prefrontal cortex (attentiveness and vigilance), hippocampus region (short- and long-term memory), hypothalamus (conducting vegetative functions of the body through hormones), and the middle part of the brain (extrapyramida system, and coordinating the eye muscles) are activated.[15] Mechanoreceptor cells of the patient's body will measure the intensity of the relaxation of the body tissues and the thermoreceptor cells will inform about the state of relaxed and warmed up tissues in the body caused by a better blood circulation through relaxation by sound and vibration of the Body Tambura.[16-21]

Emotional effect

Emotionally, the feeling of physical relaxation is connected positively with the limbic system. In this process, the activation of the sympathetic nervous system will decrease and the distribution of transmitters like adrenalin and noradrenalin will be reduced. These psychophysiological

effects could also be one reason for the significant reduction of physical pain felt by the patient through a music therapy treatment with the Body Tambura.

Meditative, trance-like state of mind

A meditative, trance-like state of mind can be precipitated by a music therapy treatment with the Body Tambura. Various researches have already been done on the effect of deep meditation on physical pain. An investigation of Lazar *et al*., (2000) on people practicing meditation in an advanced state could monitor that brain areas (amygdala, hippocampus, upper cingulate cortex, hypothalamus, and the middle part of the brain) have been equally activated as is the case in deep relaxation. In deep meditation, the sensation of physical pain could also be less intense. With its monotone sound and a fine melody of overtones, the sound of the Body Tambura helps to easily reach a trance-like state of consciousness, where images and feelings from the subconscious area can arise.[22-24]

Sometimes deep traumatic experiences can be reexposed and healed by this sound. This sound has been described by having no beginning and no end, somehow like a musical bridge to eternity. By creating a trusting and mindful therapeutic setting, the sound can help the terminally-ill or dying patient to experience a spiritual space which helps to let go, move on, and die in peace.

Other factors

However, other factors may have contributed to the reported reduction of pain:

The fact, that a patient suffering from physical pain is receiving direct attention from the therapist might have influenced the very positive outcome of this study. In addition to that, only patients were selected to participate who could answer questions without difficulty. Also all interviews were very kindly taken by Fr. Thadeus after the treatments, what also might have been of positive influence.

The study in Germany showed, that a confidential therapeutical setting can easily be created through the sound of the Body Tambura and make it possible for the patient to share a positive experience of music therapy not only with the therapist but also with the hospice team or relatives.[11] The patients in the German hospice strongly experienced that positive connection. A terminally-ill patient may silently long for such moments of positive encounter, especially in St. Joseph's Hospice, where normally no relatives are going to be present in the dying process.

Cultural background

The positive effect of the sound of the Body Tambura seems to not depend on the social, economic, political, geographical, and cultural background of the person receiving the treatment. Additionally, in October 2013 in Japan, a first survey of experiences of the sound of the Body Tambura in different locational areas (e. g., hospices, old age homes, schools, music schools, and at home) was carried out by a Japanese music therapist. It is interesting to note that S Masuda told the author, that she observed similar positive effects during treatments with the sound of the Body Tambura as described in Germany in 2005 (article Deutz/Dietrich) and also in the recent study at Lazarus Hospice, Berlin/Germany.[11,25-27]

According to her unpublished research, a music therapy session with the sound of the Body Tambura also had a very positive effect on people in Japan. She had offered music therapy sessions of 10 min to the leading staff of old age homes, to the dean of a psychiatric clinic, to handicapped children, to people suffering from physical pain, to old people suffering from depression, to stressed musicians, and she offered also one session to a person suffering from tinnitus. All of these groups reported experiencing benefits from the treatment. They described effects like deep physical relaxation, relaxation of breathing, a calming effect in general, reduction of physical pain, joy, and happiness. According to the patient's cultural background, the present research investigations reveals, that both in Germany and India, most of the patients receiving a treatment with the Body Tambura found it to be a very pleasant experience and would recommend it as highly beneficial to many others in the world. Further research should also be done to validate the hypothesis that people of other cultural backgrounds will equally benefit from the treatment.

Better still, it is worthy to note that the hospice team of St. Joseph's Hospice also enjoyed the sound of the Body Tambura. They could also benefit from this music therapy treatment by listening to the pleasant sound of the instrument, creating a softly enveloping acoustic space for all listeners, patient, therapists, and staff members alike. As a result; permeability, breathing and body awareness contents are promoted for everybody who takes part in the sessions. In this sense, all the sessions with the Body Tambura could also be helpful to prevent states of stress and burnout of all people who are involved in the care of a terminally-ill person in the caring environment.

CONCLUSION

Hospice patients described a strong reduction of pain

and pleasant experiences after a receptive music therapy treatment with the Body Tambura. Further research should include a control group, randomization, higher number of participants, and a longer period of treatment.

APPENDIX: TECHNICAL INFORMATION

The following are the most pertinent questions that appeared more prominently in the questionnaire for the personal interview:

- Have you had any unpleasant experiences?
- How did you experience the treatment?
- Did you feel comfortable during the treament?
- Any complaints you had before, that changed during the treatment?
- Do you think other people could benefit from the treatment?

The research study paradigms indicate that, just only recently, the laws in South India (Tamil Nadu) were amended and changed to the possibility, that strong analgetic medications like morphine can be prescribed in all the regions of South India by a qualified medical doctor. It is pertinent to note here that, at the time when the research study was carried out, not all of the inmates of St. Joseph's Hospice received permanent analgetic pharmacological treatment, and hence the patients frequently experience pain. The patients that were participating in the present study were preselected by the hospice staff to ensure, that they could understandably follow the interviews after the treatment and be able to respond to the questionnaires in a reasonable manner.

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