



Case Report

The Effects of Listening to Persian Music on the Hand Dexterity and Depression in a Patient with Stroke: A Case Report

Reyhaneh Maktoufi, Nastaran Ghotbi*, Nouredin Nakhostin Ansari

Department of Physiotherapy, Faculty of Rehabilitation, Tehran University of Medical Sciences, Tehran, Iran

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ABSTRACT

Introduction: Nowadays the use of music therapy for neurological disorders in developed countries is widely emphasized. Despite this, there is little scientific evidence regarding the use of this method for the treatment of Iranian patients with stroke.

Case report: Since Iranian patients are more familiar with Persian music, this study was performed to describe the effects of listening to the Persian music played with Daf (an Iranian music instrument) in a 54-year-old man with chronic stroke.

Discussion: This case report could show for the first time, the positive effect of passive listening to Persian music with Iranian Daf instrument on the hand dexterity and depression in a patient with chronic stroke.

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Introduction

Stroke survivors often experience poor hand function [1] and depression [2]. Music is the most ancient art [3] which has an important role in regulating mood in everyday activities [4]. Music therapy (MT) has been introduced in neurological rehabilitation since 1980s [5], particularly in disorders related to the central nervous system [6-9]. However, most studies demonstrated the effects of MT with active participation of the patients [10, 11], especially in early stages of stroke [4, 11]. So, little is known about the therapeutic role of listening to music in patients with chronic stroke. On the other hand, while MT is frequently used in America and Europe [12], it is not commonly used for stroke rehabilitation of Iranian patients. Limited published data exist in this regards. For example Bonakdarpour et al's case study showed the positive effects of melodic intonation therapy in the treatment of Persian speaking patients with non-fluent

aphasia [13]. It is believed that auditory mirror neurons are involved in a hearing-doing network and there is an interaction between auditory and motor functions [14]. Therefore it is supposed that listening to music could improve motor function in neurologic patients. To the best of our knowledge there was not any research concerning Persian music therapy for post stroke Iranian patients. Regarding the role of culture on the effectiveness of MT, this case-report was performed to demonstrate the effects of listening to the Persian music played with Daf (an Iranian musical instrument) on hand function and depression of a patient with stroke.

Case Report

The patient was a 54-year-old man with right-sided hemiparesis following a cortical infarction of left front parietal lobe since 18 months ago. He was smoker and had a history of hypertension with no history of diabetes mellitus, cardiac disease, or hypercholesterolemia. In addition, he did not have any speech disorders such as aphasia. Prior to participating in this study, he had 50 physiotherapy treatment sessions. At the end of these

*Corresponding author: Nastaran Ghotbi, Department of Physiotherapy, Faculty of Rehabilitation, Tehran University of Medical Sciences, Enghelab Ave, Pich-e-shemiran, Tehran, Iran. Tel: +98 21 77533939
E-mail: nghotbi@sina.tums.ac.ir

interventions, he still presented with poor hand function and decreased motivation. At the first assessment session he had normal muscular tone and sensation. Furthermore, goniometry revealed full range of motion of the wrist, metacarpophalangeal and interphalangeal joints in the affected hand. The study measures for assessing the patient's hand dexterity and depression were the Minnesota Manual Dexterity Test (MMDT) and Beck Depression Inventory (BDI-II), respectively. These measures were chosen for their validity, reliability and simplicity [15-17]. For performing MMDT, the patient sat in front of a table and was asked to move as many cubes as possible within 30 seconds. The total number of cubes moved by the affected hand was counted. After performing 3 times MMDT, the mean score was 8.3 indicating poor hand dexterity. In addition, the 21-item self-report instrument of BDI-II scored 14 for him showing a mild depression [17, 18]. The treatment consisted of the patient listening to a music played with Daf in the supine position, 30-minute [19] daily for twelve sessions. Daf is a hand percussion instrument originally Persian or Kurdish and the ancestor of the western Tambourine integrated into Persian music. It has a large frame covered with goatskin, with one or more rows of metal rings or chains adding a jingling effect [20]. In this study Maqams (structural scales and melodic pieces) with old style playing made up of regular beat-based sequences, were used. These consisted of Hayy'Allah, Zekr-e-dovvom, Da'em, Haddadi, Hayy'Allah-Allah, Maddahi (another version), Compound Maqams, Geryan and Hal Gerten. No additional intervention was administered.

The tests were repeated at the 6th and 12th treatment sessions. The MMDT and BDI- II scores illustrated improvement from the pre-listening to the post-listening measurements. The post MMDT score improved in both of the 6th (score 10) and 12th sessions (score 11.3; 36% improvement). The post listening BDI-II score was 6 at the 6th session and did not change after the end of the listening to the music at 12th sessions (57% improvement).

Discussion

This case report provides evidence that 12 sessions listening to Persian music played with

Daf improved the hand dexterity and depression of a patient with chronic stroke. The patient's improvement in the MMDT suggests that listening to the Persian music may help improving motor function during the chronic stage of stroke. In other words, passive listening may facilitate neural reorganization which involves the supplementary motor area, mid premotor cortex and cerebellum and integrative auditory-sensorimotor circuits [21-24]. The patient's mood was also improved from mild depression to minimal depression. Indeed, music processing involves a wide-spread bilateral network of frontal, parietal and temporal as well as regions related to emotional processing (i.e. limbic) [25, 26] and therefore the patient's mood was improved. However, since this research was performed on a patient; further studies including more subjects are warranted to clarify the

mechanisms of the improvements.

In conclusion; this case report could show for the first time, the positive effect of passive listening to Persian music with Iranian Daf instrument on the hand dexterity and depression in a patient with chronic stroke.

Conflict of Interest: None declared.

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