



# Effect of Turkish classical music on blood pressure: A randomized controlled trial in hypertensive elderly patients

Tansel Bekiroğlu<sup>a,\*</sup>, Nimet Ovayolu<sup>a</sup>, Yusuf Ergün<sup>b</sup>, Hasan Çetin Ekerbiçer<sup>c</sup>

<sup>a</sup> Department of Internal Medicine Nursing, Faculty of Health Science, Gaziantep University, Gaziantep, Turkey

<sup>b</sup> Department of Pharmacology, School of Medicine, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Turkey

<sup>c</sup> Department of Public Health, School of Medicine, Sakarya University, Sakarya, Turkey

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## KEYWORDS

Anxiety;  
Elderly;  
Hypertension;  
Music Therapy;  
Turkish Classical Music

## Summary

**Background:** Existing studies suggest that music therapy can have favorable effects on hypertension and anxiety. We therefore set out to investigate the effect of Turkish classical music.

**Objectives:** To investigate whether Turkish classical music has positive effects on blood pressures and anxiety levels in elderly patients.

**Design, setting and subjects:** This was a randomized controlled trial performed on 60 hypertensive patients living in a local elderly home in Adana, Turkey.

**Methods:** Following the completion of a socio-demographic form for each patient, Hamilton anxiety scale was applied. Thereafter, the subjects were randomly divided into two equal-size groups and were allowed to either listen to Turkish classical music (music therapy group) or have a resting period (control group) for 25 min.

**Outcome measures:** The primary and secondary outcome measures were blood pressure and Hamilton anxiety scale scores, respectively.

**Results:** The mean reduction in systolic blood pressure was 13.00 mmHg in the music therapy group and 6.50 mmHg in the control group. The baseline adjusted between treatment group difference was not statistically significant (95% CI 6.80–9.36). The median reductions in diastolic blood pressures were 10 mmHg both in the music therapy and control groups. The between treatment group difference was not statistically significant (Mann–Whitney *U* test,  $P=0.839$ ). The mean reduction in HAMA-A was 1.63 in the music therapy group and 0.77 in the control group. The baseline adjusted between treatment group difference was not statistically significant (95% CI 0.82–1.92).

**Conclusion:** The study demonstrated that both Turkish classical music and resting alone have positive effects on blood pressure in patients with hypertension.

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\* Corresponding author at: School of Health, Kahramanmaraş Sütçü İmam University, 46100 Kahramanmaraş, Turkey. Tel.: +90 542 6340268; fax: +90 344 2212371.

E-mail addresses: [tanselbekiroglu@hotmail.com](mailto:tanselbekiroglu@hotmail.com), [tanselbekiroglu@ksu.edu.tr](mailto:tanselbekiroglu@ksu.edu.tr) (T. Bekiroğlu), [yusufergun@yahoo.com](mailto:yusufergun@yahoo.com) (Y. Ergün).

## Introduction

It has been known for several decades that hypertension is one of the major risk factors for cardiovascular morbidity and mortality.<sup>1</sup> The prevalence of hypertension has been shown to range between 25 and 55 percent in the epidemiological studies conducted to date.<sup>2</sup> Specifically for Turkey, PATENT study has demonstrated that the prevalence of hypertension among adults is 31.8 percent across the country.<sup>3</sup> Obviously, hypertension is a serious worldwide health problem pending effective treatment by health professionals.

Due to the high expenditure and various adverse effects of drugs and the presence of drug-resistant hypertensive patients, it was suggested that non-pharmacological interventions in support of the classical therapies are necessary at least for those irresponsive to standard procedures.<sup>4</sup> In this context, music therapy, utilized as an alternative therapy with regard to different disease states, could be a rational option to lower blood pressure.<sup>5,6</sup> Several studies have demonstrated music exposure to have favorable effects on blood pressure.<sup>7–11</sup> Turkish classical music is a national and traditional music form appreciated by the Turkish people. For this reason, the first aim of the present study was to investigate whether Turkish classical music has a positive effect on blood pressure in hypertensive elderly patients. This particular age group was selected due to the high prevalence of hypertension (75.1%) in the Turkish elderly population.<sup>3</sup> Another reason was that the elderly have many additional disease states forming a basis for multiple drug usage, which in turn brings about increases in drug interactions and adverse effects. A non-pharmacological intervention like music therapy, therefore, could be advantageous in attenuating the drug load of such patients.

In parallel with the purpose of the study, participants were selected from the individuals living in an elderly home. This approach had led us to control the confounding factors derived from daily activities, which have the capacity to influence the efficacy of music therapy on hypertension. The similarities in daily life activities (Watching television, playing card games, and resting and walking in the garden) of elderly home residents formed the basis for this approach. On the other hand, the fact that the anxiety prevalence of elders living in elderly homes occur in the range of 7–69 percent and that there may be a relationship between blood pressure and anxiety,<sup>12–16</sup> precipitated the second aim of the study, which is the assessment of the effects of music on anxiety state of our patients. The third aim was to demonstrate whether antihypertensive effect of music, if any, has a connection with the effect of music on anxiety.

## Materials and methods

### Study design and settings

This was a parallel group, randomized controlled trial conducted in a local elderly home in Adana, Turkey. Prior to the study, the approvals were obtained from the Ethics Committee of Gaziantep University and the Ministry of Family and Social Policies, Republic of Turkey.

## Participants

The eligible volunteer participants were all adults aged 60 or over with hypertension. The bedridden subjects and those with hearing loss or unconscious state were excluded from the study. Each subject gave written consent prior to the study. During the course of the study, two subjects, one due to the departure and the other failing to follow instructions, were replaced by the two new volunteers with similar features.

### Study protocol

According to the study flow-chart (Fig. 1), following the enrollment of the participants, they were randomly (simple randomization) assigned to either music or control group ( $n=30$  each). Afterwards, a socio-demographic form with 14 queries were completed and the Hamilton anxiety scale (HAM-A) were applied to the patients in each group. HAM-A was performed in a face-to-face manner so that the subjects could response to all questions in approximately 10 min. The validity and reliability of the scale, introduced by Hamilton in 1959, was confirmed in Turkey by Yazıcı et al.<sup>17</sup> HAM-A is a rating scale developed to quantify the anxiety level and the severity of the symptomatology. It consists of 14 items, each defined by a series of symptoms. Anxious mood, fears, intellectualism, somatic complaints (muscular), cardiovascular symptoms, gastrointestinal symptoms, autonomic symptoms, tension, insomnia, depressed mood, somatic complaints (sensory), respiratory symptoms, genitourinary symptoms, and behavior at interview are the items of HAM-A. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where higher points indicate higher anxiety levels.

After obtaining information regarding socio-demographic features and anxiety levels, subjects were directed to either listen to Turkish classical music (music therapy group) or have a resting period (control group) for 25 min. Subjects in the music therapy group were instructed to rest for at least 5 min in a sitting position prior to the music exposure, enabling blood pressure to reach a stable level. Thereafter, systolic and diastolic blood pressures were measured by a registered nurse with a sphygmomanometer at brachial arteries. Measurements obtained at this point (Day 1) were identified as the "first measurement". The subjects were then exposed to a 25-minute session of Turkish classical music ("Nihavent" and "Buselik" mode) in an MP3 format, using headphones in a sitting position. The selection of the music type was inspired by the consultations with specialists working for either the Turkish Music Department of State Conservatory of Gaziantep University or the Traditional Turkish Music Research and Promotion Society. Immediately after the music exposure, the blood pressure measurements were done by the same nurse. The measurements obtained before and after each music exposure were defined as pre-measurement and post-measurement, respectively. The study protocol was a 28-day trial in which the patients of the music therapy group were subject to the same application every day. Post-measurement of day 28 was identified as "last measurement". All the same procedures but music listening were applied to those in the

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