

# Music Therapy Effects on the Quality of Life and the Blood Pressure of Hypertensive Patients

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## Summary

**Background:** Arterial Hypertension (AH) is a mass disease, with consequences for the cardiocirculatory system, since its complications raise the rates of morbidity and mortality. Controlling blood pressure (BP) reduces complications and may preserve the quality of life (QOL) of patients. Studies show positive effects of music therapy as an adjuvant in the treatment of several diseases.

**Objective:** to evaluate the effect of music therapy on the QOL and BP control of hypertensive patients.

**Methods:** This was a controlled clinical study that evaluated patients of both genders, aged over 50 years, with stage 1 hypertension, in use of medication and enrolled in multidisciplinary service for treatment of hypertension. They were divided into an experimental group (EG) and a control group (CG). The EG, in addition to the conventional treatment, participated in weekly music therapy sessions for twelve weeks. The CG received the standard treatment of the service. Before and after the intervention, the SF-36 questionnaire was applied in both groups, and the BP of each patient was measured. The voice, an important element of communication, reflecting the patient's physical, mental and emotional state, was the main resource used. Statistics: Student T-test and Wilcoxon test were considered significant at  $p < 0.05$ .

**Results:** The groups were initially similar in gender, age, education, and the assessed QOL. In the initial and final comparison of EG patients, we observed a significant improvement on the QOL ( $p < 0.05$ ) and BP control ( $p < 0.05$ ), with no change in adhesion.

**Conclusions:** Music therapy has contributed to an improvement on the QOL and BP control of patients, suggesting that this activity may represent a therapeutic approach to help strengthen the programs of multidisciplinary care of hypertensive patients. (Arq Bras Cardiol 2009; 93(5):495-500)

**Key Words:** Hypertension; Music Therapy; Adjuvant treatment; Quality of Life; Public Health.

## Introduction

Arterial hypertension (AH) is a mass disease with serious consequences, since it is an important risk factor for cardiovascular diseases. Its complications raise the rates of morbidity and mortality<sup>1</sup>, and its evolution can interfere with the quality of life of individuals<sup>2</sup>. For the treatment of hypertension, pharmacological and non-pharmacological measures are indicated. The non-pharmacological interventions may be prescribed by all health professionals and are important for reducing the blood pressure and for promoting a healthy lifestyle.

A multidisciplinary team contributes to better outcomes in caring for hypertensive patients. The work philosophy of the V Guidelines of Arterial Hypertension<sup>3</sup> suggests

a multidisciplinary approach in caring for hypertensive patients, seeking the welfare of the patients and of the community.

Within this context, the music therapist can fit in as a participant of a multidisciplinary team and can contribute to the non-pharmacological treatment, particularly in the treatment of AH. Music therapy is defined as follows: the use of music and/or its elements (sound, rhythm, melody, and harmony) by a qualified music therapist, with a client or group, in a process to facilitate and promote communication, respect, learning, mobilization, expression, organization and other objectives of therapeutic relevance, in order to fulfill physical, emotional, mental, social, and cognitive needs<sup>4</sup>.

In several studies involving the influence of music therapy, various effects have been observed in different clinical situations, which resulted in physiological changes, affecting blood pressure, heart rate, breathing, electroencephalogram readings, body temperature and galvanic skin responses, biochemical parameters of the

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endocrine and immune systems, emotional changes, and sensitivity to pain<sup>3-9</sup>.

The contribution of music therapy in several hospital contexts (hospitalization, day-hospital, and outpatient services) has been recognized for minimizing the effects of hospitalization, among others, and directly influencing the patient's quality of life<sup>10</sup>.

Quality of life means a life that is good and fulfilling in at least four areas: social, emotional, professional and health<sup>11</sup>. It is a construct, which includes five major categories: social utility, happiness/affect, satisfaction, achievement of personal goals and normal life<sup>12</sup>.

This research, which used music therapy as a therapeutic approach, prioritized the improvement of the whole person and his/her quality of life, which includes biological and psychosocial aspects.

The aim of this study was to evaluate the influence of music therapy in the treatment of hypertensive patients with respect to their quality of life and blood pressure control.

## Methods

This was a controlled clinical trial, and the object of the study was "the insertion of music therapy as a possibility for the treatment of hypertension in a multidisciplinary team".

The fieldwork was conducted in the League of Hypertension of the Hospital of the UFG, being formed by the hypertensive population enrolled in that service.

As to the number of patients enrolled in the service, we determined a minimum sample size of 23 patients for each group, in order to detect a difference of 25 points between groups in the scores assessed by the SF-36 questionnaire, according to the reference values described by Ciconelli et al<sup>13</sup> considering an  $\alpha$  of 5% and the power of 80%.

The inclusion criteria were: patients of both genders; age above 50 years; diastolic blood pressure (DBP)  $\geq$  90mmHg and  $<$ 100mmHg; and systolic blood pressure (SBP)  $\geq$  140mmHg and  $<$ 160mmHg (both measured in the last visit before the original interview); the use of stable doses of anti-hypertensive medication; patients living in Goiânia; being submitted to regular monitoring in the LHA for at least one year. The exclusion criteria were: decompensated diabetes; sequelae of stroke; decompensated heart failure (CHF); chronic renal failure (CRF); hepatic failure; myocardial infarction within the last six months; other disabling chronic diseases; use of psychotropic drugs; being treated in a psychotherapeutic process; being a participant in a research of another project developed by the team of LHA / HC / UFG.

The number of registered patients attending the LHA was 1400, of which about 200 met the research pre-requisites. The experimental (EG) and control (CG) groups were formed by random draw. The EG patients were submitted to music therapy sessions, and the CG group did not receive this intervention. Both groups continued with the standard treatment of the League of Hypertension, with regular consultations with doctors, nurses and dietitians, in addition to their participation in the educational group meetings.

Only those patients who, after an initial interview, expressed a desire to voluntarily participate in the study, which was duly documented in the ICF - Informed Consent Form, were included in the groups. The research project was reviewed and approved by the Ethics Committee in Human and Animal Medical Research of the UFG Hospital.

The music therapy consultations were held weekly for a period of twelve weeks. Each session had a duration of sixty minutes, with the participation of all members of the GE. We used the following music therapy methods described by Bruscia<sup>14</sup>: Music Re-creation, Music Improvisation, Music Composition and Music Listening or Receptive Experience. According to the author, re-creation is a broader term that includes performing, reproducing, processing and interpreting the whole or any part of a musical existing model, with or without an audience. In improvisation, the subject sings or plays music, creating a melody, a rhythm, a song or a piece of musical improvisation. "In the experiences of composition the therapist helps the client to write songs, lyrics or instrumental parts, or to create any type of musical products such as music videos or audio tapes." In the receptive experiments, "the client listens to the music and responds to the experience quietly, verbally or through other modalities. The music used can be live or recorded."

Other activities during music therapy sessions included exercises in breathing and relaxation, and exercises for the development of body awareness, as major components for the physical and mental well being of mankind. The voice, as a powerful element of human communication and as a reflection of the physical, mental and emotional state, was the main resource used in the music therapy setting. In some sessions we used a guitar and/or a hand drum, to lead the harmony or rhythmic support for the group's sound-musical production. The music therapist researcher had as a co-therapist a student of the last academic year of the Music Therapy Course of UFG.

As control parameters of the quantitative measurements of blood pressure levels, we used the recorded notes of the last visit before the beginning of the music therapy sessions and the first consultation after the intervention. The measurements were performed with a properly calibrated semi-automatic digital OMRON - HEM 711. In the same period, adherence to treatment was also evaluated. These data were obtained from the patient's medical chart. In the service, a patient who follows the proper treatment and attends regularly scheduled consultations is considered as adherent. The patient may be considered as adherent, non-adherent and partially adherent.

To evaluate the effect of music therapy on the quality of life, the SF-36 generic questionnaire (The Medical Outcomes Study 36 - item Short Health Survey) was applied in both groups, according to the recommendations given in its original version, before (moment 1 - M1) and after (moment 2 - M2) the intervention period. This questionnaire was validated in Brazil, and it is divided into eight topics that relate to the following dimensions of living: CF - functional capacity (limitations in the performance of any physical activity due to health problems); AF - physical aspects (problems in work or daily life activities due to health problems); D - pain (limitations due to pain); EGS

- general state of health (perceived health: poor - excellent); V - vitality (perception of the level of vitality); AS - social aspects (interference of physical or emotional problems on social activities); AE - emotional aspects (interference of emotional problems on work or other activities); and SM - mental health (mental health perception). The questionnaire provides a score from 0 to 100 points, and a higher score is more indicative of a better quality of life<sup>13</sup>.

### Statistical Analysis

For the preparation of the database and the statistical analysis, we used the SPSS program (version 10.0, SPSS, Chicago, IL, USA). The scores of the applied questionnaire were compared between groups (EG and CG), at moments 1 and 2 (beginning and end of the intervention), using the T-Student test for two independent samples (normal distribution of data) and the Mann - Whitney test (non-normal distribution of data). For intra-group comparisons, at M1 and M2, we used the Student T-test for paired samples (normal distribution of data) and the Wilcoxon test (non-normal distribution of data). To compare categorical variables we used the chi-square test. P-values <0.05 were considered significant for all analysis.

There was no source of funding for the completion of this study.

### Results

As we see in Table 1, the two groups were similar with respect to age, gender and education, with no significant differences among these parameters ( $p > 0.05$ ). The overall mean age was  $67.1 \pm 9.28$  years. Each group consisted of 23 individuals. The CG was initially composed of 11 female (45.5%) and 12 male patients, while the EG was composed of 16 hypertensive female (69.6%) and 7 male patients. One patient in the control group was not considered for analysis because she died during the study period. Of the 45 study patients, 69.6% were aged  $\geq 60$  (sixty) years. Over 80% were illiterate or had attended primary school. Only 3 subjects

completed high school, and one completed a higher education course (Table 1).

Table 2 presents EG and CG results, for the several dimensions of living, making a comparison between the groups of the average scores of the SF-36 questionnaire before and after the process of music therapy intervention (moments 1 and 2 - M1 and M2).

It was observed that before the intervention (M1) the groups had no significant difference in any of the dimensions assessed (Table 2) and at M2, after intervention, there were differences in favor of the EG on most dimensions. There were no significant differences only in Functional Capacity (FC) and Physical Aspects (AF), although the scores were rising in the EG at the end of the intervention.

Table 3 listed the values for the average of scores of the participants of each group (EG and CG) in the SF-36 Questionnaire. This is an intra-group comparison between the initial time, before the music therapy intervention, and the final moment, after the intervention period. Must be note that the

Table 1 - Sample characterization

Characterization	CG	EG	P
Age (mean $\pm$ sd)	67,2 $\pm$ 9,6	66,5 $\pm$ 9,1	0,765
Gender	Male	12	07
	Female	10	16
Education	Illiterate	04	09
	Incomplete Primary School	15	09
	Complete Primary School	02	01
	High School	01	03
Education College	00	01	0,220

Table 2 - Comparison between the scores of the SF-36, applied in both groups at M1 (Home) and M2 (Final), on the assessed dimensions of life.

Dimension	EG (M1)	CG (M1)	p (M1)	EG (M2)	CG (M2)	p (M2)
CF*	60,0 $\pm$ 28,1	65,5 $\pm$ 28,1	0,515	70,6 $\pm$ 19,5	61,6 $\pm$ 31,3	0,247
D*	51,5 $\pm$ 34,8	46,8 $\pm$ 30,6	0,630	77,2 $\pm$ 23,0	52,2 $\pm$ 31,6	0,004
V*	57,3 $\pm$ 27,2	49,6 $\pm$ 32,0	0,393	72,2 $\pm$ 23,4	52,0 $\pm$ 29,8	0,015
SM*	68,5 $\pm$ 24,1	64,4 $\pm$ 24,8	0,572	83,8 $\pm$ 11,3	59,3 $\pm$ 27,4	0,001
EGS*	64,4 $\pm$ 19,6	64,9 $\pm$ 22,4	0,940	84,1 $\pm$ 12,6	67,0 $\pm$ 24,4	0,005
AF**	54,3 $\pm$ 43,7	52,3 $\pm$ 48,1	0,904	76,1 $\pm$ 37,3	54,5 $\pm$ 44,7	0,082
AS**	74,5 $\pm$ 35,2	68,2 $\pm$ 34,9	0,331	89,9 $\pm$ 21,4	71,0 $\pm$ 32,4	0,026
AE**	66,3 $\pm$ 41,8	60,6 $\pm$ 46,7	0,784	95,6 $\pm$ 15,3	59,1 $\pm$ 39,7	0,001

Values expressed as mean  $\pm$  standard deviation; \* T-Student Test; \*\* Mann-Whitney Test. FC - functional capacity; AF - physical aspects; D - pain; EGS - general state of health; V - vitality; AS - social aspects; AE - emotional aspects; SM - mental health

elevation of numerical values indicates positive developments in the dimensions assessed, whereas the lower values shows “worsening” in the parameters evaluated for the quality of life.

In the CG there was no statistical significance in all evaluated parameters ( $p > 0.05$ ), and the EG increased significantly in all assessed dimensions ( $p < 0.05$ ).

Results of Blood Pressure at the beginning and at the end of the protocol are presented in Table 4. We see that in the group that participated in the music therapy activities (EG) there was a significant decrease in both the SBP and the DBP between the beginning and end of the intervention. The control group did not show significant changes.

In accordance with the proposed parameters there were no changes regarding adherence between the two groups .

## Discussion

The results of this study indicated that music therapy had a beneficial effect on the quality of life and the control of blood pressure in individuals with stage 1 hypertension, and this leads us to indicate that this therapeutic approach may be suggested as an adjuvant non-medical treatment for these patients.

The music therapy sessions were held under the Public Health program, through attendance at an out-patient service for hypertensive patients, with the presence of 20 (twenty) patients per session. During the music therapy process, we used active musical experiences, such as improvisation,

composition and re-creation of songs, and also receptive or passive musical experiences, and activities that included calisthenics and breathing exercises.

In Brazil, there are few studies on music therapy related to cardiology. The first published article, in 2001, in Arquivos Brasileiros de Cardiologia, was about a research on the application of receptive music therapy in clinical medicine and cardiology, through music listening. The musictherapist individually treated ten patients, including five steps in her procedures: musical stimulation, sensation, situation, reflection and change of behavior. She used the questionnaire for the Evaluation of Risks to Health (University of Michigan), which was applied before and after the process of sixteen music therapy sessions. The results showed improvement in the levels of stress, personal satisfaction, consumption of fiber-rich foods and higher motivation to live<sup>15</sup>.

Two years later, Marconato et al<sup>16</sup> emphasized that the insertion of music therapy in a Chest Pain Unit (CPU) provided the medical team with “the opportunity to become acquainted with a new approach to cardiac patient by understanding that clinical instability is due to a holographic and simultaneous imbalance of the immune, nervous and endocrine systems.” The author, after a prospective study, in which she conducted individual sessions of Receptive Music Therapy, through music listening, with duration of sixty minutes, with the participation of twelve patients under observation for clinical stabilization or risk stratification in a Chest Pain Unit, observed results such as a reduction in the systolic blood pressure by 0.8% to 22.4%, and a reduction in the diastolic pressure by 2.5% to 38%.

In a clinical trial, eighty-four children and adolescents aged from one to sixteen years were evaluated in the first 24 postoperative hours. They were submitted to 30-minute sessions of music therapy, listening to classical music. At the beginning and the end of sessions, heart rate, breathing rate, blood pressure, temperature and other variables were measured, besides the facial pain scale. There were statistically significant differences between the two groups after the intervention, on the objective evaluations of cardiac and respiratory frequency ( $p = 0.04$  and  $p = 0.02$ ) and on the subjective evaluation of facial pain scale ( $p < 0.001$ ), with the conclusion that music had exerted a beneficial influence<sup>5</sup>.

In another study, the objective was to evaluate whether the daily hearing of a type of music could help in reducing the blood pressure of elderly patients in an institution. Two homogeneous groups were evaluated on the values of blood pressure, age and medication, and the experimental group listened to selected songs for 25 minutes every day, for four weeks. The blood pressure was measured twice a week. In the Experimental Group

**Table 3 - Comparison of intra-group scores of the dimensions of life assessed by SF-36 at M1 and M2**

Assessed Dimension	CG (M1 and M2)	EG (M1 and M2)
	<i>p</i>	<i>p</i>
CF*	0,141	0,032
D*	0,312	<0,001
V*	0,587	0,005
SM*	0,242	0,002
EGS*	0,612	<0,001
AF**	0,887	0,017
AS**	0,521	0,040
AE**	0,502	0,004

\**Teste T-Student*; \*\**Teste Mann-Whitney*

**Table 4 - Values of the averages of the SBP (systolic BP) and DBP (diastolic BP) in EG and CG before and after music therapy intervention**

Group	SBP 1	SBP 2	<i>p</i> *	DBP 1	DBP2	<i>p</i> *
	(mmHg)	(mmHg)		(mmHg)	(mmHg)	
EG	149,7 ± 6,4	133,8 ± 13,4	<0,001	89,1 ± 9,1	80,1 ± 10,6	<0,001
CG	145,4 ± 5,6	141,0 ± 19,8	0,278	86,9 ± 11,3	83,9 ± 12,4	0,160

Values expressed as mean ± standard deviation; \* *T-Student Test*



(n = 12) there was a significant decrease in the mean blood pressure: 11.8 mmHg in the systolic pressure (p = 0.008) and 4.7 mmHg in the diastolic pressure (p = 0.218). In the control group there were no significant changes. The results suggest that listening to music can lower blood pressure, and that music therapy can be used in the treatment of hypertension<sup>17</sup>.

All the above interventions have an important role in the process of adaptation to treatment and integral care to the patient, thus interfering in the dimensions that comprise the quality of life of heart disease patients.

In our study, there was an elevation of scores on all variables of the SF-36 in patients of the EG, indicating an improvement in the quality of life of those who participated in the music therapy sessions after three months of intervention. It is worth noting that these results were seen both in the analysis of each group (intra-group) and between groups (inter-group).

In intra-group evaluations there were also positive changes in almost all dimensions. Only in the functional and physical aspects there was no statistical significance, despite the improvement in absolute values. We emphasize that the dimensions of living — pain, general health status, vitality, social, emotional, and mental health aspects — are subjective aspects of living, and these should be considered important in the treatment of a chronic disease, since patients have to live with their symptoms through their lives.

Regarding the control of blood pressure there were also significant differences in PA, both systolic and diastolic, when comparing the values before and after the twelve music therapy sessions held with the EG, while in the CG there was no significant difference.

In an exploratory study on attitudes, beliefs, perceptions, thoughts and practices of hypertensive patients, Peres et al<sup>18</sup> stressed that the psychosocial aspects and health beliefs seem to affect directly the patients' awareness of hypertension and the health practices they adopt. Among the factors that hinder the control of blood pressure, 75% of patients indicated the emotional aspects (nervousness, irritation, anxiety and concern), whereas only 30% of them referred an attempt to control emotions and work out the stressful situation.

To Gusmão<sup>19</sup>, in the last decade, the interest for quality of life of hypertensive patients increased significantly, and several studies have been developed. The author argues that the methods that are used to reduce the pressure should not adversely affect the quality of life, and this is an important factor for good adherence to treatment.

In our research, the instrument that we used, the SF-36 questionnaire, allowed an assessment of the health profile of the patients, highlighting their clinical, social and emotional aspects. The category that showed the greatest difference between the initial and final scores was related to the emotional aspects. This fact can be understood as we consider that music therapy is a therapeutic activity that through the musical elements and music making, provides the reception of any form of expression, giving the patients an opportunity to express their internal contents and to be heard by the group and by the music therapist, sharing joys, sorrows, anxieties, fears and victories against the disease. The emotional aspects are reflected in the social aspects, which involves the patient's

interpersonal relationships and social activities, and also in mental health and the perception that the patients have of it. Other dimensions that were positively evaluated, such as pain and vitality, are also related to the emotional/mental state and will influence how patients view their overall health status.

The insertion of music therapy as a therapeutic option in the treatment of hypertension is consistent with a holistic approach to the relationship with the patient, since "human beings constitute a set of integrated and totally interdependent systems, and it is important that the specialist become familiar with diseases that may be associated with heart disease"<sup>20</sup>.

It is pertinent to emphasize that in the specific case of hypertension, the maintenance of well being during the drug therapy is of utmost importance, since most patients are asymptomatic, and the benefits of treatment are predominantly of long term<sup>21</sup>.

Moreover, the insertion of music therapy, which uses as key features the voice and the body—tools that all individuals possess—enables the deployment of this form of assistance in other projects in the area of Public Health, serving the community and, particularly, a group of patients that would not have access to this treatment modality through outpatient care services.

As limitations of the study, we consider that the research was conducted with a relatively small number of patients and for a short period of time, although these were in accordance with the criteria stipulated in the methodology. Another point is that the hypertensive patients in stage 2 or 3 of HA did not participate in our study. However, our results stimulate the continuity of this type of evaluation with a larger group, for a longer time, and with more detailed measurement criteria for participation, for a possible confirmation of our preliminary results.

The data presented indicate that music therapy, which provides group activities to promote healthy habits and lower stress,<sup>3</sup> may be an adjuvant therapy in the treatment of hypertension, and the music therapist can be inserted into multidisciplinary care programs to hypertensive patients, since it helps control blood pressure and improves the quality of life of these patients.

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## Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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## Study Association

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