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The Effect of Music on Auditory Hallucination and Quality of Life in Schizophrenic Patients: A Randomised Controlled Trial

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ABSTRACT

The study was conducted to determine the effects of music on auditory hallucination and quality of life in schizophrenic patients. The sample of this randomised controlled study consisted of 28 patients (14 experimental and 14 control groups) hospitalised with a diagnosis of schizophrenia (DSM-IV) and auditory hallucination. The study data were collected with the Information Form, The Scale for the Assessment of Positive Symptoms (SAPS), Characteristics of Auditory Hallucinations Questionnaire, and The World Health Organization Quality of Life Scale (WHOQOL-BREF). The hallucination, positive formal thought, and total SAPS scores of the patients in the experimental group obtained during their hospitalisation were determined to be higher than those obtained at discharge and at follow-ups after discharge. The characteristics of auditory hallucination questionnaire scores of the patients in the experimental and control groups decreased. The physical, mental, environmental, and national environmental domain scores of the quality of life in the experimental group increased at sixth month after discharge. Listening to music had positive effects on positive symptoms and the quality of life of patients with auditory hallucination. In line with these results, listening to music may be recommended to cope with auditory hallucinations and to provide positive quality of life.

Introduction

Schizophrenia is a psychiatric disorder which leads to significant changes in feelings, thoughts, perceptions, and behaviours of individuals. Hallucinations occur in psychotic disorders, especially auditory hallucinations are common in schizophrenia (Buccheri et al., 2004; Kanungpairn, Sitthimongkol, Wattanapailin, & Klainin, 2007). Hallucinations are among the positive symptoms of schizophrenia (Buccheri et al., 2004). Auditory hallucinations are experienced by 60–80% of all patients diagnosed with a schizophrenia spectrum disorder (Lim, et al., 2016).

Hearing sounds in auditory hallucinations often cause irritability in individuals, and negatively affects individuals' ability in the job environment, their relationships, self-care, and daily life (Kanungpairn et al., 2007). Auditory hallucinations increase anxiety levels and lead to depression and social isolation in individuals, cause them to harm themselves and others, and deteriorate their lifestyles (Buffum et al., 2009; Kanungpairn et al., 2007; Tsai & Chen, 2006). It is reported that 75% of the people with auditory hallucinations suffer a high level of anxiety and that 60% of them have severe symptoms of depression (Kanungpairn et al., 2007). Auditory hallucinations not only lead to acute situations such as giving harm to self or others but also are an important factor affecting the patient's quality of life (Trygstad et al., 2002).

Quality of life refers to meeting an individual's basic needs and social expectations and benefiting from the opportunities offered by society using his/her abilities. People with schizophrenia have serious problems in adapting to skills such as daily life activities, social relationships, and communication with their parents and environment. Therefore, repeated and prolonged hospitalizations, and lack of social support lead to decrease in an individual's quality of life (Acil, Dogan, & Dogan, 2008). Wiersma, Jenner, Nienhuis, and Willige (2004) determined that schizophrenic patients with auditory hallucinations had rather low levels of quality of life and high levels of anxiety and depression. Functional remission in schizophrenic patients is important because it allows reintegration of patients into the workplace and the society, reducing social burden and health care costs. In this group of patients, functional remission includes symptom control, and the acquisition of all social skills to enable adaptation to social life (Emiroğlu, Karadayı, Aydemir, & Üçok, 2009).

Even if their treatment is completed, 25–50% of the schizophrenic patients continue to experience auditory hallucinations. Insistence of the symptoms in schizophrenic patients despite the continuous use of medication indicates the necessity of a psychosocial intervention in addition to pharmacological treatment (Trygstad et al., 2002). In schizophrenic patients with auditory hallucinations, implementing behavioural symptom management strategies such as

relaxation techniques, hiking, and listening to music together with drug therapy are told to be effective (Buccheri et al., 2004; Peng, Koo, & Kuo, 2010; Silverman, 2006; Talwar et al., 2006; Tsai & Chen, 2006). One of the psychosocial approaches used in patients with auditory hallucinations is music therapy. Music therapy aims to create changes in behaviours and mood and to improve the quality of life by reducing stress, pain, anxiety, and isolation (Ucan & Ovayolu, 2006). Results of studies investigating the effects of music on schizophrenic patients revealed that music had rehabilitative effects on sufferers, and that symptoms of hallucination and other symptoms significantly decreased (Gold, Heldal, Dahle, & Wigram, 2005; Mössler, Chen, Heldal, & Gold, 2011; Peng et al., 2010; Silverman, 2006, 2011; Talwar et al., 2006). The study was conducted to determine the effects of music on auditory hallucination and quality of life in schizophrenic patients.

Use of music in therapy

Music is an art that expresses emotions and thoughts with voices or expresses voices in order and aesthetic understanding. Music has a therapeutic feature when used for a patient who finds a way to express himself/herself through music. Music has the benefits of getting rid of stress, anxiety, and tension, and expressing emotions and thoughts (Ucan & Ovayolu, 2006). The tradition of treating with music has a history of about 6,000 years in Turkish societies. The first serious music therapy treatments in Turks are seen in the Seljuks and the Ottomans. Currently, it is used as music therapy for psychiatric patients. Music therapy has been part of treatment programmes in psychiatry to improve social relationships, restore self-confidence, increase concentration, self-esteem, and self-respect (Gencil, 2006). Music therapy is considered to be a type of psychosocial rehabilitation and, when used in conjunction with medicines, can positively improve the symptoms of chronic schizophrenia. It can also improve the quality of life, increase cognitive functions, improve the skills, strengthen the patient's ego, and provide emotional expression in schizophrenic patients. Thus, it can contribute to the physiological and psychological well-being of the patient (Hayashi et al., 2002; Ulrich, Houtmans, & Gold, 2007). The occurrence in schizophrenia of anxiety can lead to increased hallucinations. For this reason, listening to music can be useful to get rid of negative thoughts and feelings due to the relaxing effect of music (Tsai & Chen, 2006).

In this context, Rast tonality, one of the most important treatment ways in Turkish music, has been used in this study. It is emphasised that Rast tonality, one of the important tonalities in Turkish music, has a significant impact on the health. It affects the body positively, particularly the brain, both physically and mentally, has effects on muscles, provides relaxation, and induces feelings of joy, peace, vitality, comfort, relief, and happiness. It also reduces too much sleep (Group for the Research and Promotion of Turkish Music, 2017). The hypothesis of the study:

H₁: Music has a positive effect on the auditory hallucination scores of patients with schizophrenia at their sixth month.

H₂: Music has a positive effect on the positive symptoms of patients with schizophrenia at their sixth month.

H₃: Music has a positive effect on the quality of life scores of patients with schizophrenia at their sixth month.

H₄: There was a correlation between auditory hallucination and WHOQOL-BREF scores at sixth month in patients treated with music in the experimental group.

Methods

Participants and setting

The study was designed as a randomised controlled study with patients diagnosed with schizophrenia (DSM-IV), having auditory hallucinations, hospitalised in the psychiatry departments of University and State Hospital (Sivas/Turkey) between January 2011 and 2013. The research was initiated by a meeting with the patients who were hospitalised with the diagnosis of schizophrenia on the first day of hospitalisation. Patients who agreed to participate in the study were divided into experimental and control groups by randomisation using simple random sampling method. There are 14 patients in each group. The study was finalised with 28 patients. After the power analysis, the power of the test was found as $p = 0.82$ ($\alpha = 0.05$, $\beta = 0.10$, $1 - \beta = 0.90$).

Inclusion criteria

- Patients who are 18 years old or above;
- Diagnosed with schizophrenia (DSM-IV) and auditory hallucination;
- Living in centre of Sivas province;
- Able to communicate and answer questions;
- Agreed to participate in the study.

Measures

To collect the study data, the personal information form, the scale for the assessment of positive symptoms (SAPS), the characteristics of auditory hallucinations questionnaire, and The World Health Organization Quality of Life Scale (WHOQOL-BREF) were used.

The information form

The form developed through a literature review includes 24 items questioning patients' socio-demographic characteristics, diseases, and auditory hallucinations.

The Scale for the Assessment of Positive Symptoms (SAPS)

SAPS was developed by Andreasen (1990). The six-point Likert-type scale consists of 34 items and 4 subscales. Subscales are related to hallucinations, delusions, bizarre behaviours, and positive formal thought disorder. The possible total score of the scale ranges from 0 to 170 points.

Higher scores indicate that the symptoms are high. The reliability and validity study of the Turkish version of the scale was performed by Erkoç, Arkonaç, Ataklı, and Ozmen (1991).

The characteristics of auditory hallucinations questionnaire

The questionnaire was developed through a literature review. Especially, it was prepared with the aim of evaluating auditory hallucinations. Survey questionnaires were obtained from the researches mentioned in the literature. The questionnaire was prepared by taking the opinion of a specialist statistician. The questionnaire consists of seven items and is used to assess the data related to the characteristics of auditory hallucinations experienced within the last 24 h. Questions were scored between 0 and 5. Higher scores indicate that the intensity and severity of the negative characteristics are high. Three patients who met the sampling criteria were pre-tested. After the pretesting, it was decided to administer the questionnaire without making any revisions (Buccheri, Trygstad, Buffum, Lyttle, & Dowling, 2010; Buccheri, Trygstad, & Dowling, 2007; Buccheri et al., 2004; Buffum et al., 2009; Trygstad et al., 2002).

The World Health Organization Quality of Life Scale (WHOQOL-BREF)

In the study, the Turkish version of WHOQOL-BREF developed by the World Health Organization was used. The scale consists of 26 questions, made up of five types of Likert-type scales. The validity and reliability study of the scale was carried out by Eser et al. (1999). WHOQOL-BREF consists of physical, mental, social, environmental, and national environmental areas. When the scale questions are answered, individuals are asked to take the last two weeks into account. High scores indicate a higher quality of life.

Data collection procedures

The musical genre used in the study was chosen as Rast tonality in accordance with the recommendations of two faculty members of University, Faculty of Fine Arts, Music Department and a member of the Group for the Research and Promotion of Turkish Music. After the patients in both groups who agreed to participate in the study were informed about the auditory hallucinations, they were administered the Information Form, SAPS (to determine hallucinations), characteristics of auditory hallucinations questionnaire, and WHOQOL-BREF. Because the patients in the experimental group listened to music after their symptoms were brought under control, they and the patients in the control group did not affect each other. The patients received their routine care during their stay in the hospital. On the other hand, the patients in the experimental group were asked to listen to music in Rast tonality recorded on an MP3 player for

15 min through headphones when they experienced auditory hallucinations during their stay in the hospital. The patients in the control group did not listen to the music in the hospital setting. They were also told to listen to the same music whenever they had auditory hallucinations after they were discharged from the hospital. The patients in both groups were administered the SAPS and the characteristics of auditory hallucinations questionnaire at discharge and at the first and third month follow-ups. At the sixth month of follow-up, they were administered the WHOQOL-BREF in addition to the SAPS and characteristics of auditory hallucinations questionnaire. The patients' follow-ups were performed when they presented to the psychiatric outpatient clinics after being discharged (Figure 1).

Data analysis

The data were analysed using the Statistical Package for the Social Sciences (SPSS) version 22.0 software (IBM, Chicago, IL). For the analysis of the data, when parametric test assumptions (Kolmogorov–Smirnov) were fulfilled, the paired samples *t*-test was used, and when parametric test assumptions were not fulfilled, Friedman tests were used to compare the values measured at different times. To determine the correlation coefficient between the measurements, Pearson correlation analysis was used. The significance level was 0.05 for all tests and we also calculated 95% confidence intervals.

Ethics

Before the study, the patients who met the sampling criteria of the study were informed about the aim of the study and those who agreed to participate gave their informed consents. The approval of the Ethics Committee of University (decision no: 05/04) and the written permission of the institutions where the study would be conducted were also obtained.

Results

Demographic characteristics

The mean age of the patients was 37.0 ± 10.65 (min-max: 22–58) in the experimental group and 32.78 ± 7.90 in the control group (min-max: 20–52). In both groups, 71.4% of the patients in the experimental group and 64.3% in the control group were ≥ 31 -years-old, 78.6% of the patients in both experimental and control groups were female. A percentage of 57.1 were graduates of high school or higher education. While 42.8% of the patients in the experimental group suffered the disease for 0–5 years, 42.8% of the patients in the control group suffered the disease 11 years or more. A percentage of 85.7 of the patients in the control group and 71.4% of the patients in the experimental group took new generation antipsychotics.

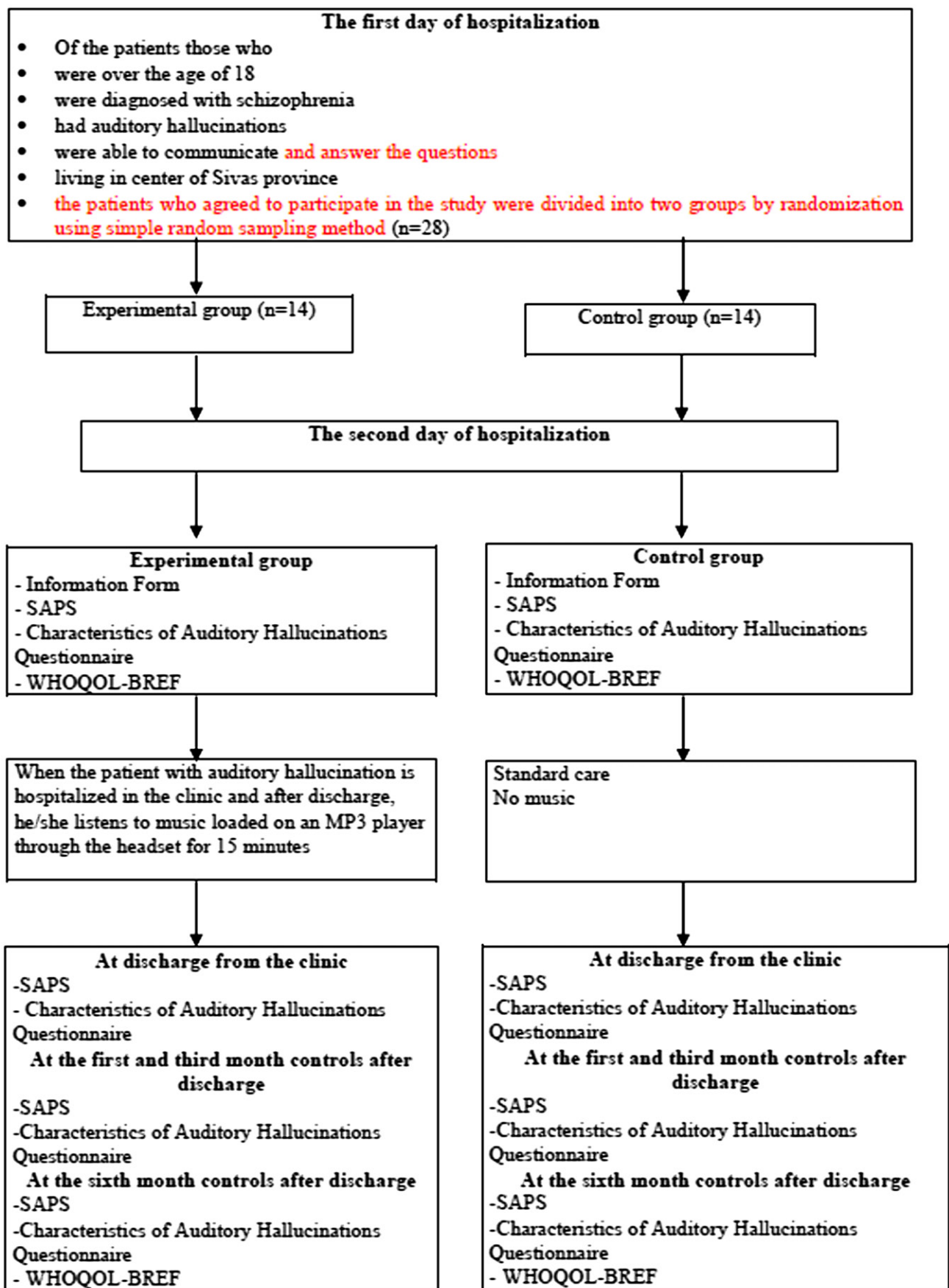


Figure 1. The flow chart of the study.

Characteristics related to auditory hallucination

When the contents of auditory hallucinations during hospitalisation were evaluated, 71.4% of the patients in the experimental group, 78.5% of the patients in the control group heard “criticising voices,” 78.5% of the patients in the experimental group, and 71.4% of the patients in the control group heard “repeating voices.”

It was determined that 78.6% of the patients in the experimental group had auditory hallucinations in the first and third-month follow-ups, and 85.7% in the sixth-month follow-up after discharge. When the frequency of hallucinations in the experimental group was evaluated, it was found that 45.5% in the first month, 100% in the third month, and 50% in the sixth month experienced occasional auditory hallucinations. It was determined that 100% of the patients in the experimental group in the first and sixth months and 64.3% in the third month continued to listen to music when they had auditory hallucinations.

Characteristics of auditory hallucination, the SAPS, and the WHOQOL-BREF

There were statistically significant differences between characteristics of auditory hallucination scores of the experimental and control group patients obtained at their stays in the hospitals, at discharge, and at the first, third, and sixth-month follow-ups after discharge ($p < 0.05$). The scores of the patients in both groups from the characteristics of auditory hallucination questionnaire decreased but remained unchanged after discharge (Table 1).

There were statistically significant differences between hallucination subscale scores of the SAPS of the

experimental and control group patients obtained at their stays in the hospitals, at discharge and at the first, third, and sixth-month follow-ups after discharge ($p < 0.05$). Hallucination subscale scores of the SAPS were high at their stays in the hospitals but decreased at discharge and at the follow-ups after discharge in both groups (Table 2).

The scores of the experimental group patients obtained from the physical, mental, social, environmental, and national environmental subscales of the quality of life at the sixth-month follow-up were statistically higher than those obtained at their stays in the hospitals ($p < 0.05$). On the other hand, there were no statistically significant differences between the scores of the control group patients obtained from the physical, mental, social, environmental, and national environmental subscales of the quality of life at their stays in the hospitals and at the sixth month follow-up ($p < 0.05$) (Table 3).

There were no statistically significant differences between the scores of the experimental group patients obtained from the auditory hallucination and the quality of life at their stays in the hospitals and at the sixth-month follow-up ($p < 0.05$). However, in the control group, there was a statistically significant negative correlation between the scores of the patients obtained from the auditory hallucination and the quality of life at their stays in the hospitals and at the sixth-month follow-up ($p < 0.05$). While their auditory hallucination scores increased during their hospital stays, their physical, mental, and social domain scores decreased. However, at the sixth-month follow-up, while their auditory hallucination scores increased, their mental, environmental, and national environmental domain scores decreased (Table 4).

Table 1. Characteristics of auditory hallucination questionnaire scores of the patients during hospitalisation, at discharge and at the first, third, and sixth months after discharge.

| SAPS scores | During hospitalisation X ± SD | At discharge X ± SD | First month after discharge X ± SD | Third month after discharge X ± SD | Sixth month after discharge X ± SD | χ^2 *, p |
|-----------------------|----------------------------------|------------------------|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------|
| Experimental (n = 14) | 22.50 ± 4.60 | 15.85 ± 7.74 | 7.85 ± 11.81 | 9.35 ± 10.84 | 9.78 ± 9.37 | $\chi^2 = 16.64$ p = 0.002** |
| Control (n = 14) | 24.28 ± 5.71 | 6.50 ± 11.18 | 9.57 ± 13.50 | 8.28 ± 12.30 | 4.21 ± 10.92 | $\chi^2 = 16.64$ p = 0.002** |

*Friedman test; ** $p < 0.05$.

Table 2. The SAPS scores of the patients during hospitalisation, at discharge and at the first, third, and sixth months after discharge.

| SAPS scores | During hospitalisation X ± SD | At discharge X ± SD | First month after discharge X ± SD | Third month after discharge X ± SD | Sixth month after discharge X ± SD | χ^2 *, p |
|----------------------------------|----------------------------------|------------------------|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------|
| Experimental (n = 14) | | | | | | |
| Hallucinations | 17.42 ± 7.60 | 8.50 ± 6.30 | 8.78 ± 9.08 | 8.21 ± 5.76 | 9.28 ± 7.94 | $\chi^2 = 16.20$ p = 0.003** |
| Delusions | 20.50 ± 10.76 | 16.14 ± 8.02 | 17.21 ± 15.29 | 17.85 ± 10.38 | 16.71 ± 11.56 | $\chi^2 = 7.35$ p = 0.118 |
| Bizarre behaviour | 0.57 ± 1.65 | 0.42 ± 0.93 | 0.000 ± 0.000 | 0.000 ± 0.000 | 0.14 ± 0.53 | $\chi^2 = 6.35$ p = 0.174 |
| Positive formal thought disorder | 9.21 ± 6.56 | 4.21 ± 4.44 | 3.64 ± 5.15 | 2.78 ± 5.10 | 3.14 ± 5.23 | $\chi^2 = 31.60$ p = 0.001** |
| Total | 47.78 ± 17.53 | 29.28 ± 10.19 | 27.71 ± 20.65 | 28.85 ± 16.39 | 29.28 ± 21.07 | $\chi^2 = 20.32$ p = 0.001** |
| Control (n = 14) | | | | | | |
| Hallucinations | 13.57 ± 6.95 | 4.42 ± 7.41 | 4.78 ± 7.15 | 6.14 ± 10.43 | 7.50 ± 10.46 | $\chi^2 = 17.91$ p = 0.001** |
| Delusions | 22.28 ± 13.70 | 12.85 ± 10.79 | 13.07 ± 12.36 | 15.35 ± 12.95 | 13.78 ± 12.72 | $\chi^2 = 16.39$ p = 0.003** |
| Bizarre behaviour | 0.85 ± 2.17 | 0.50 ± 1.87 | 0.35 ± 1.33 | 0.42 ± 1.60 | 0.71 ± 1.83 | $\chi^2 = 1.04$ p = 0.902 |
| Positive formal thought disorder | 15.57 ± 14.14 | 8.64 ± 10.33 | 7.64 ± 9.36 | 8.35 ± 8.55 | 8.57 ± 8.15 | $\chi^2 = 9.43$ p = 0.051 |
| Total | 52.64 ± 26.34 | 26.42 ± 26.63 | 24.64 ± 22.90 | 30.28 ± 26.25 | 30.57 ± 24.92 | $\chi^2 = 19.13$ p = 0.001** |

The bold values represent significant findings.

*Friedman test; ** $p < 0.05$.

Table 3. The WHOQOL-BREF scores of the patients during hospitalisation, at discharge and at the first, third, and sixth months after discharge.

| WHOQOL-BREF scores | WHOQOL-BREF scores | | | | | |
|-------------------------------|-------------------------------|------------------------------------|-------------------------|-------------------------------|------------------------------------|-----------------------|
| | Experimental (n = 14) | | | Control (n = 14) | | |
| | During hospitalisation X ± SD | Sixth month after discharge X ± SD | t*, p | During hospitalisation X ± SD | Sixth month after discharge X ± SD | t*, p |
| Physical domain | 12.42 ± 2.73 | 15.35 ± 2.92 | t = 3.35 p = 0.005** | 13.92 ± 3.45 | 14.64 ± 2.84 | t = 1.03 p = 0.320 |
| Mental domain | 10.14 ± 2.82 | 13.07 ± 3.38 | t = 5.33 p = 0.001** | 10.85 ± 3.57 | 11.64 ± 3.12 | t = 1.21 p = 0.247 |
| Social domain | 10.78 ± 4.04 | 11.64 ± 3.49 | t = 0.97 p = 0.349 | 9.50 ± 2.95 | 9.57 ± 4.61 | t = 0.05 p = 0.960 |
| Environmental domain | 13.14 ± 3.00 | 15.21 ± 3.09 | t = 5.83 p = 0.001** | 13.28 ± 2.19 | 13.78 ± 2.88 | t = 0.54 p = 0.595 |
| National environmental domain | 12.85 ± 2.90 | 14.78 ± 2.80 | t = 5.43 p = 0.001** | 13.07 ± 1.89 | 13.85 ± 2.62 | t = 0.90 p = 0.381 |

The bold values represent significant findings.

*Paired samples t-test; **p < 0.05.

Table 4. Relationship between the characteristics of auditory hallucination and whoqol-bref scores of the patients during hospitalisation and at the sixth month after discharge.

| | Physical domain | Mental domain | Social domain | Environmental domain | National environmental domain |
|--|---|--------------------------|--------------------------|--------------------------|-------------------------------|
| Auditory hallucination Experimental (n = 14) | WHOQOL-BREF during hospitalisation | | | | |
| | r = -0.043 p = 0.885 | r = -0.325 p = 0.256 | r = -0.486 p = 0.078 | r = -0.355 p = 0.212 | r = -0.345 p = 0.227 |
| Control (n = 14) | WHOQOL-BREF sixth month after discharge | | | | |
| | r = -0.541 p = 0.046* | r = -0.533 p = 0.050* | r = -0.688 p = 0.007* | r = -0.429 p = 0.126 | r = -0.434 p = 0.121 |
| Experimental (n = 14) | WHOQOL-BREF during hospitalisation | | | | |
| | r = 0.042 p = 0.886 | r = 0.180 p = 0.538 | r = -0.024 p = 0.936 | r = 0.357 p = 0.210 | r = 0.276 p = 0.340 |
| Control (n = 14) | WHOQOL-BREF sixth month after discharge | | | | |
| | r = -0.527 p = 0.053 | r = -0.637 p = 0.014* | r = -0.501 p = 0.068 | r = -0.598 p = 0.024* | r = -0.669 p = 0.009* |

The bold values represent significant findings.

r = Pearson correlation analysis; *p < 0.05.

Discussion

It is positive that 50% of the patients in the experimental group stated that they had an “occasional” auditory hallucination during the sixth month after discharge and that all of them continued to listen to music in the first and sixth months and the majority of them in the third month when they were experiencing auditory hallucinations. The kind of music in Rast tonality gives people joy, peace, vitality, comfort, and refreshment. In the literature, it is stated that listening to music has advantages such as relieving stress, anxiety, and tension, strengthening coping skills and easing expressing emotions and thoughts (Gençel, 2006; Tsai & Chen, 2006; Ucan & Ouyolu, 2006). It is thought that patients continue to listen to music to avoid anxiety and stress when they are experiencing hallucinations. There are studies in the literature showing that positive results are obtained in patients with schizophrenia thanks to music therapy (Hayashi et al., 2002; Mössler et al., 2011; Peng et al., 2010).

The scores of the patients in the experimental group obtained from the characteristics of auditory hallucination questionnaire and the hallucination subscale of the SAPS decreased but remained unchanged after discharge. This finding from the study supports hypothesis H₁ and H₂. It has been reported that music has beneficial effects on individuals since it stimulates emotions, reduces anxiety and tension, enhances social ties and self-esteem, strengthens coping skills, and enables individuals to express their feelings and thoughts. In several studies, it has been found that music positively affects hallucinations in patients with

schizophrenia and reduces the severity of hallucinations (Gallagher, Dinan, & Baker, 1994; Na & Yang, 2009). Zarghami, Moonesi, and Khademloo (2012) determined that music therapy significantly reduced the duration and severity of hallucinations in patients with schizophrenia. It has also been reported that music therapy helps patients with schizophrenia to cope with the symptoms of the disease and that after the music therapy, the symptoms decreased (Bloch et al., 2010; De Sousa & De Sousa, 2010; Gold, 2007; Hayashi et al., 2002; Mohammadi, Minhas, Haidari, & Panah, 2012; Morgan, Bartrop, Telfer, & Tennant, 2011; Na & Yang, 2009; Peng et al., 2010). Müller, Haffelder, Schlotmann, Schaefer, and Teuchert-Noodt (2014) determined that music significantly reduced psychiatric symptoms in patients with a diagnosis of psychotic, anxiety, personality, and mood disorders. The study findings are similar to those of the literature.

The scores of the patients in both groups obtained from the auditory hallucination questionnaire and the hallucination subscale of the SAPS were high at their stays in the hospitals but low at discharge and at follow-ups after discharge. However, 85.7% of the patients in the control group who did not listen to music were determined to take new generation non-antipsychotic drugs. The severity of the symptoms of the disease is usually high in schizophrenic patients when they are admitted to the hospital. Auditory hallucinations are one of the common positive symptoms in these patients (Varcarolis, 1998). New generation antipsychotics used in the treatment of schizophrenia are more effective on disease symptoms, especially on positive

symptoms than conventional antipsychotic drugs. That the scores of the control group patients obtained from the auditory hallucination questionnaire and the hallucination subscale of the SAPS at follow-ups were lower in the majority of these patients suggests that new generation antipsychotic drugs were effective. It was observed that the scores obtained from the auditory hallucination questionnaire and the hallucination subscale of the SAPS decreased but remained unchanged after discharge. These results are important since they indicate the patients' compliance with the therapy. It is reported that most of the symptoms and relapse rates decrease in schizophrenic patients who comply with the treatment and collaborate with the treatment team (Dogan, 2002).

The scores of the experimental group patients obtained from the physical, mental, environmental, and national environmental domains of the quality of life at the sixth-month follow-up were higher than those obtained at discharge from the hospitals. This finding supports hypothesis H₃. Schizophrenia symptoms significantly prevent individuals from fulfilling self-care activities and psychosocial functions and reduce their quality of life (Huppert, Weiss, Lim, Pratt, & Smith, 2001). It is considered that continuation of treatment in schizophrenia helps patients to maintain or even to improve their well-being and quality of life (Dogan, 2002). In studies conducted to assess the effects of music therapy on quality of life in patients with schizophrenia, Grocke, Bloch, and Castle (2009) found that patients' listening to original songs recorded in a professional studio improved their quality of life, Hayashi et al. (2002) determined a significant positive relationship between patients' listening to folk music and popular songs and their quality of life, whereas Ulrich et al. (2007) and Bloch et al. (2010) indicated that music therapy had no effect on the patients' quality of life.

In this study, a significant relationship was determined between the auditory hallucination and quality of life scores obtained at discharge and at the sixth-month follow-up by the patients who did not listen to music. According to this result, hypothesis H₄ is accepted. The more their auditory hallucination scores increased during their hospital stays, the more the scores they obtained from the physical, mental, and social domains of the quality of life decreased. However, at the sixth month after discharge, the more their auditory hallucination scores increased, the more the scores they obtained from the mental, environmental, and national environmental domains of the quality of life decreased. Negative experiences such as hallucinations, cognitive and psychosocial dysfunction, disability, long and frequent hospitalisation, insufficient social support, coping difficulties, economic problems, drug side effects, and stigma decreased schizophrenic patients' quality of life (Huppert et al., 2001). Therefore, various psychosocial approaches including music therapy are implemented in order to increase schizophrenic patients' compliance with the treatment, to prevent repeated hospitalisations, and to improve social functioning and quality of life. In several studies, psychosocial interventions have been determined to play an important role in improving

quality of life of schizophrenic individuals (Acil, Dogan, & Dogan, 2008; Huppert et al., 2001; Wiersma et al., 2004; Yildiz, Veznedaroglu, Eryavuz, & Kayahan, 2004).

Study limitations

The results of this present study are related to the subjects in the sample of this study and thus they cannot be generalised.

Conclusion

In this study, it was observed that listening to music in the Rast tonality had positive effects on the positive symptoms and quality of life of the patients having auditory hallucinations. In line with these results, it is recommended that individuals with schizophrenia should be encouraged to listen to music in the Rast tonality to cope with auditory hallucinations and to maintain their quality of life. It is recommended to conduct researches on the use of different music genres or other tonalities of Turkish music and to evaluate the effect of music in the wider sample groups with the groups of patients with schizophrenia and other psychiatric disorders. Also, in psychiatry departments, necessary equipments (iPads, etc.), should be provided for patients experiencing auditory hallucinations so that they can listen to music.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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