



The Effect of Music on the Comfort and Anxiety of Older Adults Living in a Nursing Home in Turkey

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Abstract

The study was designed as a randomized controlled experimental study with a pretest/posttest and a control group. The study sample comprised 56 seniors who resided in a nursing home. The study data were collected using the “Mini-Mental State Examination,” “Identification Form,” “General Comfort Questionnaire,” and “Beck Anxiety Inventory.” While the mean scores obtained from the General Comfort Questionnaire by the participants in the experimental group demonstrated significant differences ($p < 0.05$), those obtained by the participants in the control group did not ($p > 0.05$). The mean scores obtained from the Beck Anxiety Inventory by the participants in the experimental group after a 3-week music intervention were significantly higher than their pre-study scores ($p < 0.05$); however, no significant increase was observed in the control group ($p < 0.05$). It was determined that music reduced anxiety experienced by the older adults since it improved their comfort.

Keywords Anxiety · Comfort · Music · Nursing

Introduction

The number of older adults is increasing both in Turkey and in other countries in the world. The ratio of elderly population to the total population in Turkey which was 8% in 2014 is estimated to be 10.2% in 2023 and 27.7% in 2075 (TSI 2018). Due to

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the factors such as increases in the population of older adults, changing socio-economic conditions in cities which force families to transform from extended patriarchal structure to nuclear structure (Güler et al. 2012), downsizing of housing which makes it unsuitable for older adults to stay with their children in the same home, changes in young people's perception of old people, intergenerational communication problems, and deterioration of old people's health and their dependence on others which complicates their having care at home, older adults are expected to stay in institutions such as nursing homes whose atmosphere is very different from that of the family environment (Güler et al. 2012). Although the sociocultural structure in Turkey is very different from that in most European countries, the aforementioned changes are now forcing Turkish people to have a lifestyle similar to that in European countries (Güler et al. 2012). In Turkey, most of the older adults perceive nursing homes as the last stop of their lives, and see themselves excluded from the family and thus lonely (Dereli et al. 2010). The most important thing that will help older adults with such psychology to survive and to cling on to life is the interest and love of individuals around them and their own spiritual well-being (Yılmaz 2013).

Problems such as increases in chronic diseases and pain, worsened sleep quality, loneliness and deterioration in body image due to advancing age are among the factors affecting the comfort level of older adults adversely (Yücel 2011). Developing anxiety due to the losses in old age (e.g., loss of spouse, working capacity, and/or physical well-being) is considered as a normal process. In older adults suffering anxiety, their comfort level decreases due to deterioration in functionality (Kızıllı and Turan 2007). Comfort, an important need throughout life, is an integral part of nursing care (Kolcaba et al. 2006). Zengin (2010) and Erdemir and Çırlak (2013) in their theory of caring emphasizing the caregiving dimension and themes of nursing defines comfort as a variable of care which affects both the internal and external environment. In order to strengthen the harmony between the internal and external environment of a person and to comfort him/her, a nurse should take measures that ensure the person's comfort and provide a supportive, protective, and/or corrective mental, physical, sociocultural, and spiritual environment.

According to the holistic view of nursing theory based on the satisfaction of basic human needs, comfort is defined as the feeling of relief once a person's physical, psychospiritual, social, and environmental needs are met (Karabacak and Acaroğlu 2011; Khorshid and Akin 2007). Physical comfort refers to factors affecting a person's physical conditions such as rest and relaxation, nutrition, and hydration (Kolcaba 2003). Psycho-spiritual comfort is of emotional and spiritual components. Anxiety, fear, deterioration in body image, reduced self-esteem, disruption of privacy, and changes in health experienced particularly by adults affect their psychospiritual comfort adversely (Yücel 2011). Sociocultural comfort is related to traditions, rules, and religious and legal features that regulate societal and interpersonal relationships (Yücel 2011; Erdemir and Çırlak 2013). External factors such as light, temperature, noise, odors, and bed comfort and the effects of these factors on the human constitute the environmental comfort (Yücel 2011).

Nursing interventions that improve the level of comfort mostly include holistic treatments such as music, massage, and aromatherapy that can affect an individual psychically and psycho-spiritually (Çiftçi and Öztunç 2015). Music intervention, one of these

interventions, is defined as controlled form of listening to music which affects patients both physiologically and psychologically (Bilgiç and Acaroğlu 2017). Seniors living in nursing homes may be faced with physical and psychological disorders such as distress, social isolation, and sadness. To improve mental performance, use of music in nursing homes as a healthcare activity is important (Çiftçi and Öztunç 2015; Bilgiç and Acaroğlu 2017). Although considerable research has been devoted to the effects of music on patients treated in intensive care (Çiftçi and Öztunç 2015; Bekiroğlu et al. 2013), on reducing pain (Çiftçi and Öztunç 2015; Wang et al. 2014), and blood pressure (Bilgiç and Acaroğlu 2017; Wang et al. 2014; Gök Ugur et al. 2016) and on the treatment of anxiety (Çiftçi and Öztunç 2015; Bilgiç and Acaroğlu 2017; Toker and Kömürçü 2017), our search for studies conducted on the effects of music on the comfort and anxiety of older adults living in nursing homes demonstrated a gap in the Turkish literature. These studies were conducted mostly by playing pieces of Western classical music. Western classical music is not the kind of music enjoyed by Turkish people particularly by older adults. Therefore, in this present study, a preliminary study (Yücel et al. 2013) was conducted to find out what kind of music is preferred by older adults more, and then it was decided to play Classical Turkish Music because it was preferred by older adults more. In this present study, the Nihavend mode of Turkish classical music played for older adults is one of the oldest modes effective in the treatment of mental disorders (TUMATA 2018) and reducing blood pressure (Bekiroğlu et al. 2013). Considering this fact, it was thought that use of music, an independent nursing intervention that can be easily incorporated to nursing practices, would have a positive effect on comfort of older adults living in nursing homes by reducing their anxiety. There is evidence that the Nihavend mode affects psycho-spirituality, the sub-dimension of comfort (TUMATA 2018). Therefore, it was decided to carry out the present study to find out how music, in particular, Nihavend mode, affects psycho-spirituality.

Materials and Methods

Aim of the Study

The principal aim of the present study was to evaluate the effect of listening to music on comfort and anxiety in older adults living in nursing homes. The study was designed as a randomized controlled experimental study with a pretest/posttest and a control group.

Research Hypotheses are as follows:

1. H1: Music affects anxiety of older adults living in nursing homes
2. H1: Music affects comfort of older adults living in nursing homes

Research Sample

The study population included older adults above 60 years of age, literate, Turkish-speaking, without a hearing problem, with normal cognitive functions according to the Mini-Mental State Examination, staying in a room with three or more people not

exposed to environmental factors such as heat, light, noise likely to affect the comfort of the older adults, with no recent history of exacerbation of a chronic disease, with no history of an acute illness such as influenza in the last 3 days, with normal vital signs, and with no diagnosis of Parkinson's disease, Alzheimer's disease, dementia, and major depression. Of the residents of the nursing home, 208 were excluded from the study, because, of these 208 people, 180 stayed in rooms exposed to environmental factors, five did not want to be included in the study, three had a hearing impairment, five did not have normal cognitive functions, five were diagnosed with Parkinson's, Alzheimer's disease, asthma, stroke, primary sleep disorders, dementia and/or major depression, eight decided not to participate in the study because they had difficulty keeping records, and two had a recent exacerbation of an acute disease. The study sample comprised 56 seniors who resided in the nursing home between December 15, 2013, and May 15, 2014, and met the sample selection criteria. In the present study, adults were matched by gender. At the start of the study, when an adult was selected for the experimental group, a participant of the same sex was assigned to the control group. Thus, the groups were selected by gender by using the random group assignment method and simple randomization technique (Akgül 2003). Each group included 28 older adults.

Instruments

The study data were collected using the Mini-Mental State Examination (MMSE), Identification Form (IF), General Comfort Questionnaire (GCQ), and Beck Anxiety Inventory (BAI). The MMSE was developed by Folstein et al. The validity and reliability study of the Turkish version of the MMSE was conducted by Güngen et al. (2002). The instrument was developed to assess cognition impairment during the examination of older adults to screen them for delirium or dementia (Güngen et al. 2002). The Identification Form prepared by the researchers by reviewing the pertinent literature (Wang et al. 2014; Çinar et al. 2009) has four items questioning age, gender, the presence of any diagnosed disease and constantly used medication among individuals living in nursing homes. The GCQ was developed by Kolcaba. The validity and reliability study of the Turkish version of the questionnaire was performed by Kuşuoğlu and Karabacak (2008). The 48-item questionnaire is a four-point Likert-type scale (Kuşuoğlu and Karabacak 2008). The Cronbach's alpha value of the Turkish version of the questionnaire was 0.88 (Kuşuoğlu and Karabacak 2008). The Cronbach's alpha value of the present study was 0.71. The BAI was developed by Beck et al. (1998). The validity and reliability study of the Turkish version of the BAI was performed by Ulusoy et al. (1998). The inventory which has 21 items is a four-point Likert-type scale. The Cronbach's alpha value of the Turkish version of the inventory was 0.93 (Ulusoy et al. 1998). The Cronbach's alpha value was 0.83 in the present study.

Application of Music

To find out what kind of music to play for older adults, a faculty member working in the Department of Music, Fine Arts Faculty of Ege University was consulted. He was a violin and oud (a stringed musical instrument commonly used in Egyptian,

Syrian, Palestinian, Lebanese, Iraqi, Arabian, Jewish, Persian, Greek, Armenian, Turkish music) player and the founding member and the second chief conductor of the Turkish Music Chorus in the same faculty. On his recommendation, it was decided to play Nihavend mode of Classical Turkish Music due to its relaxing effect (TUMATA 2018). Nihavend mode has had a very significant place in the history of Turkish music. It has been one of the two most common modes of Turkish music for more than a century. Because the Nihavend mode scale has a minor structure corresponding to the D minor scale in Western music, it has soft sounds, and it does not wear down the human musical ear. While choosing songs, the structure, type, and rhythm were taken into account. While combining the melodies, popular tempos mainly Nim Sofyan (once), Sofyan (twice), and Aksak Semai (five times) that are widely used in Turkish music were preferred. In selecting the melodies, rhythm diversity was achieved by following a slow–fast–slow motion. The chosen pieces consisted of instrumental works (Korhan et al. 2014). The music CD prepared by the researcher started with an improvised cello performance containing the sounds of Nihavend mode followed by Nihavend prelude and Nihavend longa, and ended with Nihavend saz semai. The review of the pertinent literature to find out how long music should be played for older individuals in this age-group showed that it should be played 25 to 30 min (Cole and Lobiondo-Wood 2012). In line with this information, the participating older adults listened to the music recorded on an MP3 player on headphones for 30 min. The headphone foam pads were replaced for each person. The music was played between 8 and 10 p.m. because, in the literature, these hours are indicated as the most appropriate time to listen to music after the activities of daily living are completed (Ueda et al. 2013). In order to motivate the seniors to listen to music and to remind them on which days and at what hours they were to listen to music, daily monitoring schemes checked by them daily were prepared.

Procedure

Of the older adults living in the nursing home, those who were not exposed to environmental stimuli were administered the MMSE. The seniors who met the inclusion criteria of the study and agreed to participate in the study were randomly assigned to the experimental and control groups. The researchers informed the participating seniors in the two groups about the procedures to be applied, and their informed consent was obtained. The seniors participating in the study were monitored for 22 days (Ueda et al. 2013). The older adults in the control group were not played any music. They were administered the IF, GCQ, and BAI on the first day of the study and only GCQ and BAI on the 8th, 15th, and 22nd days. The older adults in the experimental group were administered the IF, GCQ, and BAI on the first day of the study before they were played music. They listened to music for 30 min on headphones between 8 and 10 p.m. for 21 days. In order to motivate the seniors to listen to music and to remind them on which days and at what hours they were to listen to music, daily monitoring schemes were prepared. The participants in the experimental group were administered the GCQ and BAI on the 8th, 15th, and 22nd days. Before they listened to music, to find out whether it would lead to unwanted effects, their hemodynamic

values such as heart rate and respiratory rate were measured when they were first visited (Fig. 1).

Data Analysis

The analysis of the data obtained from the study was carried out using the SPSS 21.0 (IBM 2012). Sociodemographic characteristics were analyzed with percentages and number distribution, the difference between the groups was analyzed with the Mann–Whitney *U* test, and the difference between the weeks was analyzed with the least significant difference (LSD) analysis and Friedman test.

Ethical Approval

The study conformed to the principles outlined in the Declaration of Helsinki. To conduct the study, written permissions were obtained from the Faculty of Nursing Research Ethics Committee (Decision date and No. 2013-55), and from the administration of the nursing home. While the verbal consent was obtained from the participants in the control group, the written informed consent was obtained from the participants in the experimental group.

Results

Of the participants in the experimental group, 17.9% ($n=5$) were married and 82.1% ($n=23$) were widow/widower/single. Of the participants in the control group, 10.7% ($n=3$) were married and 89.3% ($n=25$) were widow/widower/single.

While there was a significant difference between the total GCQ mean scores of the participants in the experimental group by weeks ($\chi^2=30.558$, $p=0.000$), there was no significant difference between those of the participants in the control group ($\chi^2=5.033$, $p=0.169$) (Table 1, Fig. 2).

While there was a significant difference between the total BAI mean scores of the participants in the experimental group by weeks ($\chi^2=42.416$, $p=0.000$), there was no significant difference between those of the participants in the control group ($\chi^2=4.601$, $p=0.203$) (Table 2).

The distribution of the total BAI mean scores of the participants in the experimental and control groups by weeks is shown in Fig. 3.

The distribution of the differences between the total BAI and GCQ mean scores of the participants in the experimental and control groups by weeks is shown in Table 3. The difference between the total GCQ mean scores obtained at the initial and first week measurements by the participants in the experimental group was not significant ($p>0.05$). However, their scores obtained at the second and third weeks were significantly different from those obtained at the initial measurements ($p<0.05$). In the control group, the scores obtained at the initial measurements were not significantly different from those obtained at the first, second, and third weeks ($p<0.05$). While the difference between the total BAI mean scores obtained at the

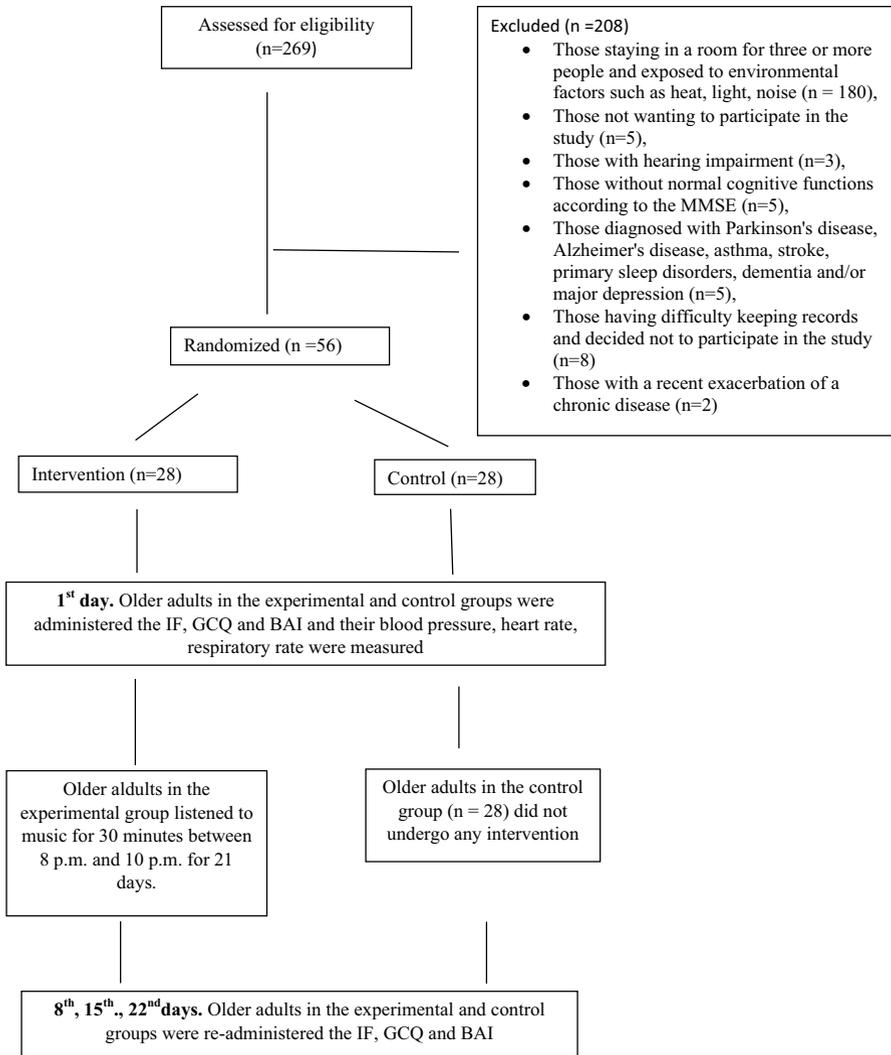


Fig. 1 CONSORT flowchart

Table 1 Distribution of the mean scores obtained from the overall GCQ by the participants in the experimental and control groups by weeks

Weeks	Experimental group X ± SD	Control group X ± SD	U	Z	p
First measurement	3.19 ± 0.38	2.97 ± 0.30	255.500	-2.238	0.025
First week	3.23 ± 0.32	3.01 ± 0.33	263.000	-2.115	0.034
Second week	3.40 ± 0.27	3.08 ± 0.32	182.000	-3.442	0.001
Third week	3.58 ± 0.25	3.09 ± 0.43	137.500	-4.172	0.000
	$\chi^2 = 30.558, p = 0.000$	$\chi^2 = 5.033, p = 0.169$			

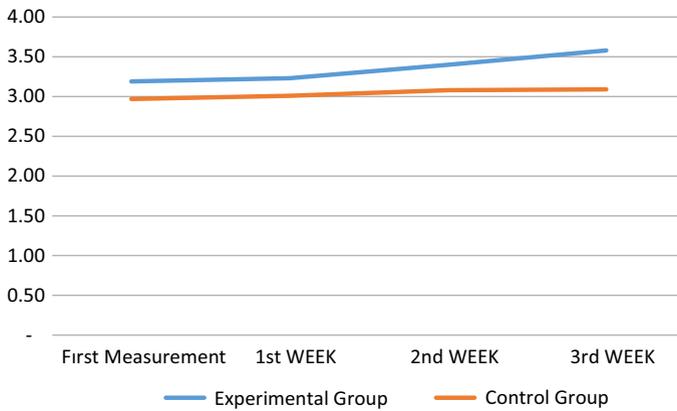


Fig. 2 Total mean scores obtained from the GCQ by the participants in the experimental and control groups by weeks

Table 2 Distribution of the mean scores obtained from the overall BAI by the participants in the experimental and control groups by weeks

Weeks	Experimental group X ± SD	Control group X ± SD	U	Z	p
First measurement	14.60 ± 12.23	13.67 ± 8.91	359.000	-0.541	0.588
First week	11.42 ± 9.98	12.64 ± 7.84	326.500	-1.075	0.282
Second week	6.78 ± 5.19	13.32 ± 9.53	227.500	-2.702	0.007
Third week	3.57 ± 4.59	11.32 ± 8.13	148.500	-4.021	0.000
	$\chi^2 = 42.416, p = 0.000$	$\chi^2 = 4.601, p = 0.203$			

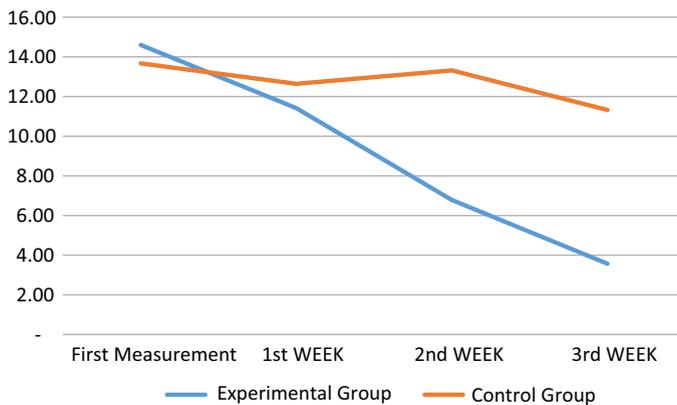


Fig. 3 Total mean scores obtained from the BAI by the participants in the experimental and control groups by weeks

initial measurement by the participants in the experimental group and at the first-, second-, and third-week measurements was significant ($p < 0.05$), the difference in the control group was not significant ($p > 0.05$).

Discussion

An important point that should be emphasized in relation to music listening is that people are more influenced by their own music culture and that depending on the type of the disease, they benefit from different modes and instruments (Gençel 2006). The Nihavend mode of Classical Turkish Music played with a low pitch and slow tempo affects the brain's limbic system, the center which deals with emotions and excitements, by decreasing neuronal migration capabilities in order to affect feelings which cause discomfort, and thus increases the endorphin secretion by stimulating the hypothesis (Bilgiç and Acaroğlu 2017). The secretion of endorphin, the body's natural painkiller and mood-stabilizing agent, reduces pain and anxiety and has a positive effect on cognition (Bilgiç and Acaroğlu 2017). In the present study, the results of the repeated measurements conducted on the participants by weeks demonstrated a significant difference between the total GCQ mean scores of the experimental group ($p < 0.05$), but that there was no difference between the total GCQ mean scores of the control group ($p > 0.05$) (Table 1). The total GCQ mean scores obtained in the experimental group at the second and third weeks were significantly higher than those obtained at the initial measurements (Table 3), which indicates that music listening increases the comfort of an individual. Of the studies with similar results in the literature, the one by Çiftçi and Öztunç (2015) investigated the effects of music on the pain, comfort, and anxiety of patients staying in an intensive care unit due to cerebrovascular pain and found that music improved patients' comfort level by reducing their systolic arterial blood pressure, pain, and anxiety

Table 3 Distribution of the differences between the total BAI and GCQ mean scores obtained by the participants in the experimental and control groups by weeks

	Differences between the mean scores obtained by the experimental group	p	Differences between the mean scores obtained by the control group	p
TBAI				
First measurement				
First week	-2.863	0.004	-1.084	0.278
Second week	-3.578	0.000	-0.293	0.770
Third week	-4.200	0.000	-1.531	0.126
GCQ				
First measurement				
First week	-0.592	0.554	-0.601	0.548
Second week	-2.379	0.017	-2.296	0.217
Third week	-3.821	0.000	-1.816	0.069

levels. In another study conducted by Chen et al. (2013) to investigate the effects of music on patients undergoing radiotherapy, anxiety levels and systolic blood pressure values of the patients in the experimental group who were played music before radiotherapy were determined to be lower than those of the patients in the control group who were not played music. In Bilgiç and Acaroğlu's (2017) study, the result was similar too. They found that music reduced the severity of the symptoms of chemotherapy in patients and increased their comfort level. In many studies, listening to music increased the comfort levels of individuals; however, the study method, sample selection method, and music genre differed from one study to another (Çiftçi and Öztunç 2015; Bilgiç and Acaroğlu 2017; Chen et al. 2013).

Comfort, a concept commonly used in holistic nursing practices, is a positive and multidimensional phenomenon and refers to relief, tranquility, transcendence, and the satisfaction of basic human needs to overcome problems (Altay and Emiroğlu 2005). According to the holistic view of the nursing theory based on the satisfaction of basic human needs, comfort is defined as the feeling of relief once the person's physical, psychospiritual, social, and environmental needs are met (Bilgiç and Acaroğlu 2017; Krinsky et al. 2014; Tosun et al. 2015; Egger-Rainer et al. 2017). Physical comfort refers to factors affecting a person's physical condition such as rest and relaxation, nutrition and hydration, treatment of medical conditions and excretory functions. The first issue in meeting comfort requirements is pain which is related to the disease process and the most common determinant of comfort (Krinsky et al. 2014; Tosun et al. 2015; Egger-Rainer et al. 2017). Kolcaba states that physical comfort stems from an individual's response to the disease whether it creates a stimulus or not (Krinsky et al. 2014; Tosun et al. 2015; Chaput-McGovern and Silverman 2012). In the present study, the difference between the total GCQ mean scores measured prior to the study and after the 3-week music listening was 0.385 in the experimental group and 0.124 in the control group. Although this increase was significant in both groups, the increase in the comfort level was low ($p=0.023$) (Table 3, Fig. 2). Older adults' physical comfort level is negatively affected due to problems such as chronic diseases, pain and poor quality sleep experienced by older adults. The low level of increase in comfort level in older adults is probably due to the fact that many of older adults generally experience such problems. In the literature, it is reported that music listening improves people's coping ability, makes them feel relaxed in an uncomfortable environment, and ensures that they stay away from stressors (Altay and Emiroğlu 2005).

According to Kolcaba, psycho-spiritual mental comfort is of emotional and spiritual components. Among the requirements of psycho-spiritual comfort in old age are being able to express anxiety and fear, being respected, valued, trusted, and appreciated, being encouraged, being able to worship in line with one's beliefs, and participating in decision-making (Albers 2007). Among the interventions which meet psycho-spiritual comfort needs are massage, special guests, visits, and touch (Kolcaba and Dimarco 2005). In the present study, the difference between the comfort levels measured prior to the study and after the 3-week music listening was statistically significant but low, which was probably due to the fact that variables affecting psycho-spiritual comfort of older adults were many. In their study (2007), Kim and Kwo investigated comfort and quality of life, determined that the patients had the

lowest comfort level in the environmental comfort followed by the psycho-spiritual comfort and recommended that older adults' comfort should be improved by providing psycho-spiritual support for them. Requirements of psycho-spiritual comfort consisting of mental, spiritual, and spiritual components cannot be immediately met; it takes time to meet them (Kolcaba 2003).

Environmental conditions play a very important role in ensuring a person's health and well-being (Krinsky et al. 2014; Tosun et al. 2015; Egger-Rainer et al. 2017). External factors such as light, temperature, noise, odors, and bed comfort and the effects of these factors on the human constitute the environmental comfort (Chaput-McGovern and Silverman 2012). Several studies have reported that adverse environmental factors would lead to an increase in the severity of symptoms of insomnia and fatigue experienced by people, and that music listening would improve those people's perception of environmental comfort by easing the severity of these symptoms (Çiftçi and Öztunç 2015). In this present study, no matter how much attention was paid to the elimination of the adverse environmental factors, it was considered that noise, lack of appropriate temperature, and inappropriate lighting in the rooms of the older adults living in nursing homes away from their homes adversely affected the environmental comfort of the older adults, and therefore the increase in their comfort level was less than it should be. However, creating a more comfortable environment for seniors and using music intervention to reduce their anxiety and to distract their attention from adverse environmental conditions may help them to have more positive life experiences (Chaput-McGovern and Silverman 2012).

Old age is a stressful situation for people. Anxiety is an emotional state in which a person perceives something as life-threatening, dangerous, or possibly dangerous due to internal or external sources (Güler et al. 2012). It can occur for many reasons such as being away from loved ones and the family atmosphere, living in an unfamiliar unusual environment, immobility and being unable to communicate verbally (Bahar et al. 2005). In this present study conducted with the older adults living away from their homes in a nursing home, the BAI total scores in the experimental group obtained after a 3-week music listening were significantly higher than the pre-study scores ($p < 0.05$), but the difference was in the control group was not significant ($p < 0.05$) (Table 2). The difference between the total BAI mean scores obtained at the initial measurement by the participants in the experimental group and the scores they obtained at the first-, second-, and third-week measurements was significant, which suggests that music listening showed its effect from the very first day it was implemented and reduced the anxiety levels of the older adults. In Bekiroglu et al.'s (2013) study, whose results were similar to the results of the present study, hypertensive old people were played "Buselik and Nihavend" modes of Turkish classical music for 25 min for 28 days. While the anxiety levels of the patients in the experimental group decreased, those of the control group did not. In Parlar Kilic et al.'s (2015) study, the Acemaşiran mode of Turkish Classical Music played for the patients who presented with the complaints of nausea/vomiting, diarrhea, abdominal pain, and headache reduced the severity of their pain and anxiety levels. In Chen et al.'s (2013) study investigating the effects of music played prior to radiotherapy on anxiety levels of oncology patients, the music played for 15 min before radiotherapy decreased the patients' state and trait anxiety levels. In Bilgiç and Acaroglu's

(Bilgiç and Acaroglu 2017) study conducted with patients undergoing chemotherapy, anxiety levels decreased in the experimental group, but increased in the control group, and the difference between the groups' mean scores was significant, which indicated that music was a useful and effective method in reducing patients' anxiety. Although there were differences between methods used, sample groups, and types of music played in this present study and other studies in the literature, music was determined to be effective in reducing anxiety levels of the patients in all the studies. In this present study conducted with older adults, their comfort levels increased after a 3-week music listening, and their anxiety levels decreased from the very first day they were played the music.

Limitations

The present study has a number of limitations. First, a quasi-experimental design with random assignment was used; because of the nature of music, blinding was not possible. Second, the participants were chosen from a single nursing home. Therefore, the results cannot be generalized to other older adults who live in other nursing homes. Third, only one type of music was played to the participants. Perhaps the positive effect would have been enhanced if they had listened to music of their own choosing. Finally, the results of this single-center study may affect the external validity and applicability of the findings in other centers.

Conclusion

In the present study, based on its findings which supported findings of other current studies regarding music, it was found that music improved comfort and reduced anxiety in older adults. In conclusion, music is an easy-to-apply, nonpharmacological intervention with no side effects. It not only increases the comfort levels of older adults living in nursing homes but also reduces their anxiety levels. It can be easily incorporated into the nursing care activities, and can be applied by nurses independently. In line with the findings of the present study, it is recommended that further studies should be conducted with the older adults who have health problems, stay in multi-bed rooms, live at home and have different cultural characteristics by playing different kinds of music for more than 3 weeks.

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Compliance with Ethical Standards

Conflict of interest The authors declare they have no potential conflict of interest.

References

- Akgül, A. (2003). *Tıbbi Araştırmalarda İstatistiksel Analiz Teknikleri “SPSS Uygulamaları”*, Emek Ofset Ltd. Şti., 64–66, ISBN: 975-96359-2-5, İstanbul.
- Albers, L. L. (2007). The evidence for physiologic management of the active phase of the first stage of labor. *The Journal of Midwifery and Women's Health*, 52(3), 207–215. <https://doi.org/10.1016/j.jmwh.2006.12.009>.
- Altay, B., & Emiroglu, O. N. (2005). Services for the elderly. *OMU Med Ji*, 22, 165–170.
- Bahar, A., Tutkun, H., & Sertbaş, G. (2005). The determination of the level of anxiety and depression of old people who live in the nursing home. *Anatolian Journal of Psychiatry*, 6(4), 227–239.
- Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1998). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56(6), 893–897.
- Bekiroğlu, T., Ovaryolu, N., Ergün, Y., & Ekerbiçer, H. Ç. (2013). Effect of Turkish classical music on blood pressure: A randomized controlled trial in hypertensive elderly patients. *Complementary Therapies in Medicine*, 21(3), 147–154. <https://doi.org/10.1016/j.ctim.2013.03.005>.
- Bilgiç, Ş., & Acaroğlu, R. (2017). Effects of listening to music on the comfort of chemotherapy patients. *Western Journal of Nursing Research*, 39(6), 745–762. <https://doi.org/10.1177/0193945916660527>.
- Chaput-McGovern, J., & Silverman, M. J. (2012). Effects of music therapy with patients on a post-surgical oncology unit: A pilot study determining maintenance of immediate gains. *The Arts in Psychotherapy*, 39, 417–422. <https://doi.org/10.1016/j.aip.2012.06.008>.
- Chen, L. C., Wang, T. F., Shih, Y. N., & Wu, L. J. (2013). Fifteen-minute music intervention reduces pre-radiotherapy anxiety in oncology patients. *European Journal of Oncology Nursing*, 17(4), 436–441. <https://doi.org/10.1016/j.ejon.2012.11.002>.
- Çiftçi, H., & Öztunç, G. (2015). The effect of music on comfort, anxiety and pain in the intensive care unit: A case in Turkey. *International Journal of Caring Sciences*, 8(3), 594–602.
- Çinar, Ş., Eşer, İ., & Khorshid, L. (2009). The effects of back massage on the vital signs and anxiety level of elderly staying in a rest home. *Hacettepe University Faculty of Health Sciences Nursing Journal*, 16(2), 14–21.
- Cole, L., & Lobiondo-Wood, G. (2012). Music as an adjuvant therapy in control of pain and symptoms in hospitalized adults: A systematic review. *Pain Management Nursing*, 15(1), 1–20. <https://doi.org/10.1016/j.pmn.2012.08.010>.
- Dereli, F., Koca, B., Demircan, S., & Tor, N. (2010). Bir huzurevinde kalan yaşlıların yalnızlık düzeylerinin incelenmesi. *Yeni Tıp Dergisi*, 27, 93–97.
- Egger-Rainer, A., Trinka, E., Höfler, J., & Dieplinger, A. M. (2017). Epilepsy monitoring—The patients' views: A qualitative study based on Kolcaba's Comfort Theory. *Epilepsy and Behavior*, 68, 208–215. <https://doi.org/10.1016/j.yebeh.2016.11.005>.
- Erdemir, F., & Çırlak, A. (2013). The concept of comfort and its utilization in nursing. *DEUHYO ED*, 6(4), 224–230.
- Gençel, Ö. (2006). Music therapy. *Kastamonu Education Journal*, 14(2), 697–706.
- Gök Ugur, H., Yaman Aktaş, Y., Orak, O. S., Sağlambilen, O., & Aydın Avci, I. (2016). The effect of music therapy on depression and physiological parameters in elderly people living in a Turkish nursing home: A randomized-controlled trial. *Aging and Mental Health*. <https://doi.org/10.1080/13607863.2016.1222348>.
- Güler, K. E., Eşer, İ., Khorshid, L., & Yücel, Ç. Ş. (2012). Nursing diagnoses in elderly residents of a nursing home: A case in Turkey. *Nursing Outlook*, 60(1), 21–28. <https://doi.org/10.1016/j.outlook.2011.03.007>.
- Güngör, C., Ertan, T., Eker, E., Yaşar, R., & Engin, F. (2002). Reliability and validity of the standardized Mini Mental State Examination in the diagnosis of mild dementia in Turkish population. *Turkish Journal of Psychiatry*, 13(4), 273–281.
- IBM Corp. Released. (2012). *IBM SPSS Statistics for Windows, Version 21.0*. Armonk, NY: IBM Corp.
- Karabacak, Ü., & Acaroğlu, R. (2011). Theory of comfort. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi*, 4(1), 197–202.
- Khorshid, L., & Akın, E. (2007). Music therapy in anxiety management of mechanical ventilator dependent patients. *Journal of the Turkish Society of Critical Care Nurse*, 11(2), 83–88.
- Kim, K. S., & Kwo, S. H. (2007). Comfort and quality of life of cancer patients. *Asian Nursing Research*, 1(2), 125–135. [https://doi.org/10.1016/S1976-1317\(08\)60015-8](https://doi.org/10.1016/S1976-1317(08)60015-8).

- Kızıllı, E. T., & Turan, E. (2007). Anxiety disorders in elderly people. *Turkish Journal of Geriatrics*, *10*, 150–155.
- Kolcaba, K. (2003). *Comfort theory and practice: A vision for holistic health care and research*. New York: Springer Publishing Company.
- Kolcaba, K., & Dimarco, M. (2005). Comfort theory and its application to pediatric nursing. *Pediatric Nursing*, *31*(3), 187–194.
- Kolcaba, K., Schirm, V., & Steiner, R. (2006). Effects of hand massage on comfort of nursing home residents. *Geriatric Nursing*, *27*(2), 85–91. <https://doi.org/10.1016/j.gerinurse.2006.02.006>.
- Korhan, E. A., Uyar, M., Eyigör, C., Yönt, G., Çelik, H. S., & Khorshid, L. (2014). The effects of music therapy on pain in patients with neuropathic pain. *Pain Management Nursing*, *15*(1), 306–314. <https://doi.org/10.1016/j.pmn.2012.10.006>.
- Krinsky, R., Murillo, I., & Johnson, J. (2014). A practical application of Katharine Kolcaba's comfort theory to cardiac patients. *Applied Nursing Research*, *27*(2), 147–150. <https://doi.org/10.1016/j.apnr.2014.02.004>.
- Kuğuoğlu, S., & Karabacak, Ü. (2008). Turkish version of the General Comfort Questionnaire. *İ.Ü. Florence Nightingale Journal of Nursing*, *16*(61), 6–23.
- Parlar Kilic, S., Karadağ, G., Oyucu, S., et al. (2015). Effect of music on pain, anxiety, and patient satisfaction in patients who present to the emergency department in Turkey. *Japan Journal of Nursing Science*, *12*(1), 44–53. <https://doi.org/10.1111/jjns.12047>.
- The Group for the Research and Promotion of Turkish Music (TUMATA). (2018). Turkish Music Tonalties (Maqam) and their effects on human beings. Retrieved November 12, 2018 from <http://www.tumata.com/ContentDetail.aspx?cid=5&SM=2>.
- Toker, E., & Kömürçü, N. (2017). Effect of Turkish classical music on prenatal anxiety and satisfaction: A randomized controlled trial in pregnant women with pre-eclampsia. *Complementary Therapies in Medicine*, *30*, 1–9. <https://doi.org/10.1016/j.ctim.2016.11.005>.
- Tosun, B., Aslan, Ö., Tunay, S., Akyüz, Aİ, et al. (2015). Turkish Version OF Kolcaba's immobilization comfort Questionnaire: A validity and reliability study. *Asian Nursing Research*, *9*(4), 278–284. <https://doi.org/10.1016/j.anr.2015.07.003>.
- Turkish Statistical Institute (TSI). (2018). Homepage on the internet. Retrieved November 12, 2018 from <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=18620>.
- Ueda, T., Suzukamo, Y., Sato, M., & Izumi, S. I. (2013). Effects of music therapy on behavioral and psychological symptoms of dementia: A systematic review and meta-analysis. *Ageing Research Reviews*, *12*(2), 628–641. <https://doi.org/10.1016/j.arr.2013.02.003>.
- Ulusoy, M., Sahin, N. H., & Erkmen, H. (1998). Turkish version of the Beck Anxiety Inventory: Psychometric properties. *Journal of Cognitive Psychotherapy*, *12*, 163–172.
- Wang, Y., Dong, Y., & Li, Y. (2014). Perioperative psychological and music interventions in elderly patients undergoing spinal anesthesia: Effect on anxiety, heart rate variability, and postoperative pain. *Yonsei Medical Journal*, *55*(4), 1101–1105. <https://doi.org/10.3349/ymj.2014.55.4.1101>.
- Yılmaz, M. (2013). The importance of moral support and religious education in old age. *Journal of İlahiyat Researches*, *39*, 241–264.
- Yücel, Ş. Ç. (2011). Kolcaba's comfort theory. *Journal of Ege University School of Nursing*, *27*(2), 79–88.
- Yücel, Ş. Ç., Eşer, İ., & Khorshid, L. (2013). The effect of two different types of music on sleep quality in the elderly living in nursing homes, 14. National Nursing Congress. October 25–27, Bodrum/ Muğla, Turkey (Poster Presentation).
- Zengin, N. (2010). Comfort theory and the effect of intensive care unit on patient comfort. *Journal of the Critical Care Nurses Society*, *14*(2), 61–66.

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