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ORIGINAL RESEARCH

Effect of Music Therapy on Sleep Quality

Mehtap Kavurmaci, PhD; Nuray Dayapoğlu, PhD; Mehtap Tan, PhD

ABSTRACT

Context • One of the important functions of nurses is to prepare a relaxing environment for patients, for whom they look after and fulfill sleep needs. Today, music therapy, one of nonpharmacological treatment approaches, can be used for enhancing the sleep quality of individuals. The increase of individuals' sleep quality by using music therapy will enable nurses to intervene in problems associated with sleep disorders and prevent insomnia and other relevant problems.

Objectives • This study was conducted to determine the effect of music therapy on sleep quality of the students.

Design • The research was an experimental pretest-posttest control group design.

Setting • The research was conducted among the students studying in the nursing department at a university in the east of Turkey in the spring term of the academic year of 2015–2016.

Participant • Students who (1) got a total score of 5 and higher according to the Pittsburgh Sleep Quality Index (PSQI), (2) had no neurological/psychiatric disorder, (3) had no hearing problem, (4) received no medical treatment regarding sleep, and (5) volunteered to participate in the study were included in the study. The students who were included in the study were divided into experimental and control groups.

Invention • Students in the experimental group were instructed to keep the volume of the personal MP3 player to be used for listening to the music therapy below 70% and to use it for 1 h/d at most. No intervention was applied to students in the control group. They were asked to sustain their normal sleeping habits.

Outcome Measure • To collect the data, a questionnaire prepared by the researchers for determining sociodemographic characteristics of the students and PSQI were used.

Results • As a result of the study, it was found that the posttest PSQI mean scores of students in the experimental group, listening to music therapy, were lower than the mean scores of the students in the control group, and the difference between the groups was statistically significant.

Conclusions • As a result of this study, it was determined that music therapy increased the sleep quality of students. Being one of the nonpharmacological treatment approaches intended for solving sleep problems, music therapy is a pain-free, safe, and affordable treatment method without any side effect that could be used in every area of health. (*Altern Ther Health Med.* 2020;26(4):22-26).

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Humans are complex beings with social, intellectual, mental, spiritual, and physical needs. They need to have all these needs fulfilled in a balanced manner to be healthy. Sleep is one of the basic human needs to be fulfilled. Human beings spend approximately one third of their lives asleep.[1]

Today, studies on sleep have been overemphasized. This is associated with common complaints about sleep in society and the presence of a strong correlation between sleep health and physical and psychological well-being. In a study, it was determined that there was an impairment in sleep quality at the rate of 21.8%. and difficulty in falling asleep and problems with waking up early at the rate of 34% in Turkish society.[2]

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One of the groups experiencing frequently sleep problems in society is university students. In studies, it is reported that students go to bed at irregular times for sleeping and do not receive enough sleep, have poor sleep quality, and take stimuli for keeping awake.[3,4] Because the curricula of health professions, such as these in departments of medicine, nursing, and pharmacy, are more intense and tiring, students who study in the departments of medicine, nursing, and pharmacy experience sleep problems more frequently.[5,6] Individuals who do not receive enough sleep have physical, cognitive, and affective depression. They may also experience problems such as fatigue, weariness, attention deficit, higher sensitivity toward pain, confusion, irritability, nervousness, nonlogical thoughts, hallucinations, lack of appetite, and difficulty in urinating.[7]

Nursing is a profession that has sleep needs and provides necessary aid to individuals in meeting basic human needs. Defined as a condition that causes a disturbance in the quality and quantity of resting patterns or affects the mode of living, "Disturbance in sleep pattern" is an important nursing diagnosis that also affects the quality of life and is involved among nursing diagnoses specified by the North American Nursing Diagnosis Association.[8] Knowing and evaluating the sleep quality of individuals will enable nurses to prevent insomnia and other relevant problems by intervening in problems that may appear based on sleep disorders. A nursing theoretician expressed the function of nurses regarding sleep need as "helping the patient to sleep and rest."[9]

Background

Musical sounds and melodies have been used to treat insomnia by obtaining physiological and psychological effects since ancient times. Music therapy started to be used in the hospital environment in the first half of the 20th century. After Thomas Edison invented the phonograph in 1877 and developed the disc recorder in 1886, the effect of music on patients has been examined.[10] Music therapy decreases the heart rate, body temperature, blood pressure, and breath rate, and it relieves the body and enables falling into sleep. Music therapy increases the sleep quality of individuals by decreasing the circulation concentration of norepinephrine at the beginning of sleep.[11-15]

Musical sounds and melodies have been used as a common method in treating diseases in many civilizations of the world and especially in Turkish societies.[16] String instruments were used as an important therapeutic musical instrument in the Central Asia period for calling good spirits and expelling bad ones. The great Islamic scholar and philosopher İbn-i Sina expressed the role of music in medicine as follows: "One of the best and the most efficient ways of treatment is to increase the rational and spiritual power of patients, encourage them for struggling with the disease better, make their environment nice and likable, gather them together with their loved ones, and make them listen to the best music."[17] In his work titled "musiki-ul-kebir," which makes great contributions to today's musical therapy, the great Turkish scholar Farabi classified the effects of tunes on the human spirit. According to this classification, the tune Hejaz has an effect on sleep from the isha prayer until morning and enables sleeping.[18]

Aim

This study, a with pretest-posttest control group, was conducted to examine the effect of music therapy on sleep quality.

METHODS

Design and Sample

The research is a experimental clinical trial conducted as pretest-posttest with a control group, and it was conducted among students studying in the nursing department at a university in the east of Turkey in the spring term of the academic year of 2015–2016. The population of the study consisted of 110 nursing students. In the selection of the sample group, the following criteria were taken into consideration. Students who met the following inclusion criteria were included in the study:

1. Received a total score of 5 and higher on the PSQI.
2. Had no neurological/psychiatric disorders.
3. Had no hearing problems.
4. Received no medical treatment for sleep and volunteered to participate in the study.

The research sample consisted of 50 students who met these criteria. The students who were taken in the sample of the research were numbered. The students with a single number were included in the experimental group (n = 25) and the students with a double number were included in the control group (n = 25). Five of the students in the experimental group were excluded from the study because they disrupted listening to music.

Instruments

The data were collected by using a questionnaire, which was prepared by the researchers to determine the sociodemographic characteristics of students and the PSQI.

Pittsburgh Sleep Quality Index. The PSQI is a scale that provides information about the type and severity of sleep quality and sleep disorder within the last month. In the scale consisting of 24 questions, 19 questions are answered by the person, and 5 questions are filled by the bed-mate of that person. Questions answered by the person are evaluated, whereas, questions answered by the bed-mate are not. Nineteen questions answered by the person allow us to evaluate 7 subscales as subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The sum of the scores of 7 subscales gives the total score of the PSQI. The score of each subscale varies between 0 and 3. On the other hand, the total PSQI score varies from 0 to 21. The sleep quality of individuals who have a total score of 5 and

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below is considered as "good."[19] The Turkish validity and reliability study of the scale was conducted by Ağargün et al,[20] and the internal consistency coefficient was reported as 0.80.

Intervention

In this study, the music to be applied to students as an audial stimulus was determined as the tune Hejaz due to its soothing and tranquilizing effect on sleep from the night until morning according to literature.[21]

Students in the experimental group (n = 20) were given MP3 players loaded with the music therapy. They were asked to listen to the music therapy using supra-aural earphones approximately 1 hour before going to bed for 1 week. The students were instructed to keep the volume of the personal MP3 player to be used for listening to the music therapy below 70% and use it for 1 hour per day at most.[18,22,23]

Before starting to listen to music, the students were instructed to:

1. Go to a silent, quiet, and dim-lit room with optimum temperature.
2. Wear casual dress or pajamas.
3. Lie on a comfortable couch in a comfortable lying position.
4. Close their eyes and mentally focus on the music rather than external factors.
5. Breathe regularly while listening to the music.
6. No intervention was applied to students in the control group (n = 25). They were asked to sustain their normal sleeping habits.

Data Collection

At the beginning of the study, the questionnaire prepared for determining the sociodemographic characteristics and the PSQI tests were applied to students as a pretest. One week after applying the pretests, the PSQI test was applied to students as posttests, and their sleep quality was evaluated. The questionnaire and the PSQI test were filled out by the students and delivered to the researchers.

Data Analysis

The data were analyzed on computers using SPSS version 15.00 (IBM, Armonk, NY, USA). χ^2 analysis and a *t* test were used for the data analysis.

Ethical Consideration

The study was conducted by considering informed consent, autonomy, confidentiality and protection of privacy, and nonmaleficence/beneficence principles. Before starting the study, at the institution where the study was conducted, the ethical committee and students who were included in the sample were informed about the objective of the study. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

RESULTS

Age average of the students who were included in the study was determined as 21.77 ± 1.14. A total of 71.1% of the students were women and 28.9% were men. While examining the residences of the students, it was determined that 57.8% were staying at state student dormitories, and 42.2% were staying at private dormitories. The average number of individuals in the room was 2.26 ± 1.30.

Table 1 shows the comparison of the experimental and control groups according to the descriptive characteristics of the students included in the study. It was determined that there was no statistically significant difference between the groups in terms of gender, age, residence of the students in the experimental and control groups, and the number of individuals in the room, and both groups were similar (Table 1).

PSQI pretest mean scores of the students were determined as 10.25 ± 3.59 in the experimental group and 8.56 ± 2.73 in the control group. When comparing the PSQI pretest mean scores of the students in the experimental and control groups, it was determined that there was no statistically significant difference between the groups and both groups were similar ($P > .05$, Table 2).

As a result of the study, it was determined that PSQI posttest mean scores of students in the experimental group who listened to music therapy decreased to 5.05 ± 3.03. On the other hand, PSQI posttest mean scores of the students in the control group increased to 9.08 ± 2.91 (Figure 1). When comparing the PSQI posttest mean scores of the students in the experimental and control groups, it was determined that mean scores of the students in the experimental group were lower than mean scores of the students in the control group and the difference between the groups was statistically significant ($P < .001$, Table 2).

DISCUSSION

Musical therapy and melodies have been used in treatment of many psychological problems such as stress, depression, anxiety, anger, sorrow, insomnia, pain, and nausea for time immemorial.[11,24,25] As a result of this study, it was determined that the tune Hejaz increased the sleep quality of students as an audial stimulus.

In numerous studies conducted among different patient and age groups for the purpose of determining the effect of music on sleep, it was determined that sedative music listened tp for approximately 3 to 10 days had positive effects on sleep by increasing muscle relaxation, distraction from negative thoughts, personal control, and sense of trust.[11,12,15,24,26-29] In the study conducted by Bloch et al[30] among patients with schizophrenia, they determined that the state anxiety levels and insomnia complaints of patients listening to music decreased. In the study conducted by Lafçı and Öztunç[23] among patients with breast cancer, the authors determined that music in relaxing tunes such as Hejaz and Zirefkend enhanced the sleep quality of patients.

In the study by Hui-Ling et al,[12] older individuals listened to relaxing music that they preferred. At the end of

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Table 1. Comparison of the Experimental and Control Groups According to the Descriptive Characteristics of the Students

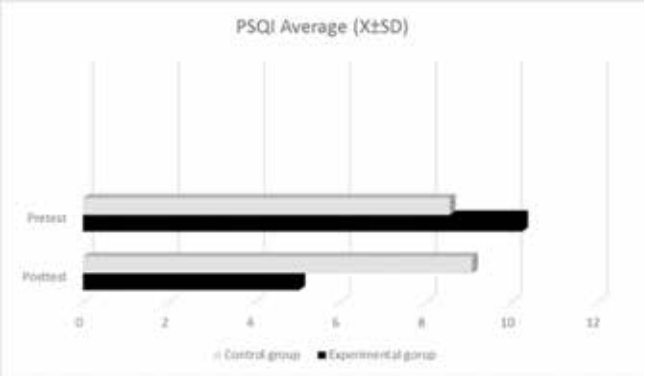
Descriptive Characteristics	Control Group		Experimental Group		Significance
	n	%	n	%	
Gender					
Female	17	68.0	15	75.0	$\chi^2 = 0.265$ $P = .607$
Male	8	32.0	5	25.0	
Residence					
State dormitory	14	56.0	12	60.0	$\chi^2 = 0.073$ $P = .787$
Private dormitory	11	44.0	8	40.0	
	X ± SD		X ± SD		
Age (y)	21.44 ± 0.86		22.20 ± 1.32		$t = 0.615$ $P = .437$
Number of Individuals in the Room	1.41 ± 0.28		1.16 ± 0.26		$t = 0.583$ $P = .449$

Table 2. Comparison of PSQI Pretest-Posttest Mean Scores of the Students in the Experimental and Control Groups

Groups	PSQI	
	Pretest X ± SD	Posttest XvSD
Experimental	10.25 ± 3.59	5.05 ± 3.03
Control	8.56 ± 2.73	9.08 ± 2.91
t	1.790	-4.526
P	.081	.000

Abbreviation: PSQI, Pittsburgh Quality of Sleep Index.

Figure 1. PSQI Pretest-Posttest Mean Scores of the Students in the Experimental and Control Groups



Abbreviation: PSQI, Pittsburgh Quality of Sleep Index.

the study, they observed that music had positive changes in the sleep quality, sleep duration, and sleep efficiency of the older adults. Lai and Good[31] also determined that music listened to by older adults increased the sleep quality and decreased the daytime dysfunction of older individuals and provided a longer sleep duration and higher sleep efficiency. Sarıkaya and Oğuz[32] determined that the relaxing tune Uşak positively affected the sleep quality of older individuals residing at nursing homes.

In a study of Tan,[15] primary school students listened to sedative music. At the end of the study, Tan determined that sedative music had a positive effect on the bedtime and sleep quality of children. Harmat et al,[11] on the other hand, had university students with lower sleep quality listen to sedative classical music. As a result of their study, they determined that sedative classical music increased the sleep quality and decreased the depressive symptoms of the students.

De Niet et al[24] determined that music-aided relaxation had a positive effect on sleep quality in their meta-analysis study on 5 studies and 170 participants. In their study, de Niet et al[24] recommended nurses to use the music-aided relaxation method for individuals suffering from sleep problems. In their meta-analysis study conducted on 10 studies and 557 participants, Wang et al[29] determined that music enhanced sleep quality. Wang et al[29] also indicated that music therapy could help to enhance the sleep quality of patients suffering from acute and chronic sleep disorder.[29] The results of the study showed that relaxing music enhanced the sleep quality, which is compatible with findings in the literature.

CONCLUSION

Sleep is a complex, physiological, and essential life need affected by pathophysiological, physical, psychological, and environmental factors. One of the important functions of nurses is to prepare a relaxing environment for individuals, to whom they provide care and fulfill sleep needs. As a result of this study, it was determined that music therapy increased the sleep quality of students. Being one of the nonpharmacological treatment approaches intended for solving sleep problems, music therapy is a pain-free, safe, and affordable treatment method without any side effects that could be used in every area of health. According to these results, it is recommended to spread the use of the tune Hejaz in individuals suffering from sleep problems and plan studies for investigating the effects of the tune Hejaz on sleep among different age groups.

AUTHOR DISLCOSURE STATEMENT

The sponsors had no role in the design or conduct of this research. All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript. Informed consent was obtained from all individual participants included in this study.

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