Original Article

The Effect of Music Therapy on Nurses' Comfort Levels: A Randomized Controlled Study

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Abstract
Background: There are evidence-based interventions to make a difference in a nurse's life quality and comfort. Among these practices is music therapy. However, there is a lack of evidence supporting the effectiveness of music intervention in improving comfort in nurses.
Objective: This study aims to investigate the effects of music therapy on nurses' comfort levels.
Methodology: The study had a prospective, two-arm, parallel randomized design and included 96 nurses from various units of a hospital in Türkiye. The data were collected with the Descriptive Data Form and the Nurse Comfort Questionnaire (NCQ). Each nurse in the music group listened to Ussak Tonality for twenty minutes/session, three days a week for 5 weeks. The nurses listened to the music at the time and volume they wanted.
Results: The sociocultural, psycho-spiritual, and physical comfort sub-scores and total comfort scores of the nurses in the music group increased statistically and significantly following five weeks of the music intervention ($p<.05$).
Conclusions: It may be a preferred solution to enhance the comfort of nurses to listen to music at the resting times and volume levels they want.

Keywords: comfort, music, music therapy, nurse

Introduction

The World Health Organization (WHO) reports that there are approximately 27 million nurses and midwives on a global scale (WHO, 2022). Nurses serve patients in hospitals, clinics, home healthcare agencies, rehabilitation centers, nursing homes, schools, and countless other settings (National Academies of Sciences, Engineering, and Medicine; National Academy of Medicine; Committee on the Future of Nursing 2020–2030 et al., 2021). Most nurses see serving patients as more than a duty. Nurses around the world care for patients in clinical settings that are often fast-paced and full of challenges. The nature of this work affects nurses' comfort levels in physical and mental healthcare related to stress and burnout (Melnyk, 2020).

Comfort is an occupational phenomenon with a holistic structure and was conceptualized by Kolcaba as "an expected outcome with a complex structure within the physical, social, psychospiritual and environmental integrity related to the individual's needs for relief, ease and transcendence" (Kolcaba & Kolcaba, 1991). Comfort has

multidimensional aspects and is referred to as meeting material and spiritual needs, sometimes as physical well-being, encouragement, assistance, and empowerment. Sometimes comfort can be "a favorite blanket or sweater" in daily life, sometimes "hugging family members", "touching people", "taking medicine to relieve pain" and sometimes "listening to a favorite type of music" (Terzi & Kaya, 2017). As individuals' holistic needs for comfort are met, their level of overcoming problems increases (Kolcaba & Kolcaba, 1991).

However, the protection and promotion of nurses' health have been overlooked. The International Council of Nurses (ICN) 2023 theme emphasized "Our Nurses, Our Future". This highlights the importance of enhancing nurses' health and well-being and recognizing, acknowledging, and supporting their needs (ICN, 2023). An association exists between improving the comfort levels of nurses who work under stressful conditions and having a healthy work-life balance, willingness to go to work, and job satisfaction (Camci & Kavuran, 2021; Yilmazer & Buldukoglu, 2021). Protecting and promoting nurse's health both improves their life quality and the quality of care. There are evidence-based interventions to make a difference in a nurse's life quality and comfort. Recommendations made by researchers include working < 40 hours/week in clinical settings, working for certain hours in a day without rotation, expressing emotions, taking time to exercise, joining a support group, preparing healthy meals before the shift, sleeping regularly, participating in cognitive behavioral therapy awareness training, and applying stress reduction techniques (Williams et al., 2022). Among these practices is music therapy (Inchingolo et al., 2025).

Music therapy is inexpensive and non-invasive, does not necessitate special equipment, and can be easily applied to help improve nurses' comfort levels (Zamanifar et al., 2020). In history, people such as Aesculape and Homera are mentioned who benefited from music in treatment. In addition, Plato, a student of Socrates in 400 BC, stated that music affects the depths of the soul and gives tolerance and comfort as an initiative to provide relaxation, healing, and comfort for individuals, decreases pain, anxiety, depression, fatigue, nausea, and vomiting, and increases the life quality and comfort (Ocebe, Kolcu & Uzun, 2019). Previous studies examined the impacts of music on symptoms such as sleep, comfort, anxiety, pain, stress, stress and depression in different patient groups (Sanli et al., 2022; Karakul et al., 2022). Regarding the effects of music on nurses, some studies speculate that it reduces anxiety, stress, fatigue, work tension, psychological well-being, and burnout. Some studies investigated music on the comfort level of nurses (Zamanifar et al., 2020; Matthew et al., 2022). The mechanisms by which music can decrease these distresses are not yet fully understood. Neurological scientific research has shown that music can decrease physiological arousal, which is often increased during stress. Another hypothesis is that music can alter activities in brain structures involved in emotional processes to manage stress and other emotional states. For example, music can have a depressing effect on the sympathetic nervous system and decrease adrenergic activity and neuromuscular excitation (McCrary & Altenmuller, 2021). Some studies also reported that Ussak (Ushshak) Tonality decreases anxiety factors such as sleep, fear, and anxiety, and some others reported that it helps comfort levels and relaxation (Dogan, 2022; Sanli et al., 2022).

Nowadays, the importance of raising awareness about improving nurses' comfort levels and encouraging nurses to do so remains a priority (Phiri et al., 2014). Practices that consist of behaviors that support and maintain physical-psychological well-being might be key to helping nurses develop self-efficacy and manage their health despite the stressors and barriers they face (Melnyk, 2020). At the same time, improving nurses' comfort levels is important because it will enhance the satisfaction of patients and the quality of care (Ocebe, Kolcu & Uzun, 2019).

Although studies supports the effectiveness of music intervention in improving comfort in other populations, there is a lack of evidence supporting the effectiveness in improving comfort in nurses. Therefore, researchers need to develop and evaluate effective

methods for comfort. Music intervention can be practically applied to alleviate work-related psychospiritual, sociocultural, and physical problems among nurses. We believe that the present study will support nurses to improve their comfort levels, strengthen and reward themselves, and contribute to the literature data.

Hypotheses: The study hypothesized that nurses receiving music intervention would experience a greater increase in comfort levels compared to control group nurses.

Methods

Design: The study had a prospective, two-arm, parallel randomized design, was reported in line with CONSORT Guidelines (Schulz, Altman & Moher, 2010), and was prospectively registered on ClinicalTrial.gov.

Participants and Setting: Participants were recruited from several units of a hospital in Turkey. The data were collected between August and September 2023. Participating nurses were randomly assigned to the music and control groups. Inclusion criteria were (1) having at least one year of working experience; (2) having not participated in any music therapy session before; (3) having no hearing problems; (4) absence of neurological/psychiatric disorders; (5) and being a volunteer. Nurses who employed other relaxation methods and those who did not volunteer were not included.

The sample size was calculated in the G-Power 3.1.9.4 statistical analysis program. The minimum sample size was calculated to be 70 (35 for each group) for Power = 0.95 (beta = 0.05), alpha = 0.05, and effect size = 0.8. A total of 186 nurses were interviewed for the study, 84 of whom did not meet the inclusion criteria. Therefore, 102 nurses were randomly assigned to the control and music groups. Since a total of 6 nurses in the groups could not complete the study, the study was completed with a total of 96 nurses, 48 in each group. The sample diagram is shown in Figure 1. A post-hoc power analysis was performed. Accordingly, alpha = 0.05 and effect size = 1.06 (comfort) for 48 nurses in each group, and the power was found to be = 0.99.

Instruments for Data Collection: The data were collected using the Descriptive Data Form and the Nurse Comfort Questionnaire (NCQ).

Descriptive Data Form: This form consists of items questioning the demographic and professional data of the nurses. The form developed by the researchers consisted of items on age, gender, educational status, marital status, presence of chronic disease, medication use, voluntary choice of profession, years of employment, and overtime work (Yucel et al., 2019; Camci & Kavuran, 2021; Yilmazer & Buldukoglu, 2021).

Nurse Comfort Questionnaire (NCQ): The validity-reliability of the NCQ was conducted by Ferrandiz and Martin Baena by taking into account the taxonomic structure of the comfort concept proposed by Kolcaba in his study and Yucel et al. (2019) conducted the Turkish adaptation (Ferrandiz & Martín-Baena, 2015; Yucel et al., 2019). The scale consists of 39 items in total. Each statement in the scale has a Likert-type scoring ranging from 1-4 from “I strongly disagree” to “I strongly agree”. The scale has positive-negative items with mixed response patterns. A total of 24 of the statements are positive, 15 are negative, and negative items are reversed in scoring. As the scale score increases, comfort increases, and as the score decreases, comfort decreases. The minimum score is 39 and the maximum score is 156. Cronbach alpha coefficient of the scale was 0.915 in the validity and reliability and it was 0.889 in the pre-test and 0.917 in the post-test in this study (Yucel et al., 2019). In the validity and reliability study, the Cronbach alpha coefficient of the total scale was found to be 0.915 (Yücel et al., 2019). In this study, the Cronbach alpha coefficient of the scale was 0.889 in the pretest and 0.917 in the posttest.

Data Collection: The nurses who met the inclusion criteria and gave written informed consent completed the Descriptive Data Form and the NCQ. The phone number of each participant was obtained by the researcher. Then, nurses were randomized into music and control groups by a statistician. Considering that the perception of comfort might vary according to gender, age, and the presence of chronic disease, stratified randomization was performed according to these factors. Then, blocks created according to gender, age, and chronic disease were assigned to music and control groups by simple randomization.

Other procedures performed by the nurses in the music and control groups are given below.

Music Group: The communication was performed via WhatsApp with the nurses in the music group. Music composed in Ussak Tonality was sent to each participant's phone. Participants returned to the researcher three times a week by texting 'I listened'. Each message sent by the participants was marked and recorded on the application schedule. The NCQ was filled in again in the fifth week (Figure 2).

Music group nurses listened to musical pieces composed in Ussak (Ushshak) Tonality, which is among the Traditional Turkish Music (Sufi Music). These musical works were performed by TUMATA (Yilmaz & Can, 2019). Ussak Tonality is said to induce feelings of laughter, happiness, power, and heroism, and is a means of expression of deep love and mystical feelings among the oldest tonalities. It means "lovers". It is useful for sleeping and resting and gives a feeling of relaxation (https://tumata.com/en/turkish-music-therapy/turkish-tonalities-and-their-impacts/). Ussak Tonality was listened to for twenty minutes/session, three days a week for five weeks by each participant. The music sessions were conducted at rest times that suited the participants' schedules and at the volume level they desired. Therefore, the intervention was referred to as personalized music in terms of music hour and volume. Since the nurses' working hours were constantly changing, there was no restriction on their listening time, they were only asked to complete twenty minutes in each session. To minimize environmental stressors, nurses closed their eyes and listened to music in a quiet environment (Zamanifar et al., 2020; Matthew et al., 2022)

Control Group: The nurses in the control group did not undergo any intervention. The Descriptive Data Form and the NCQ were filled in by the nurses in the hospital room. Then, the NCQ was administered again in the fifth week following the start of the study (Figure 2).

Data Analysis: The IBM SPSS version 25.0 (IBM Corp., NY: USA) was used for analyses. Results obtained in the analysis were evaluated at a $p<0.05$ significance level. Descriptive data are expressed with number (n), percentages (%), and mean ± standard deviation values. Normality was tested by the Shapiro-Wilk test and Q-Q charts. The Chi-Square Analysis was employed for comparing the categorical data in binary groups. To compare the scale averages between the groups, the Independent Samples T-test was used and the Paired-Samples T-test was used to compare pre-test and post-test scale scores within groups.

Ethical Considerations: Before the study, the Non-Interventional Clinical Research Ethics Committee of the university gave ethical approval (Date: March 27, 2023, Issue: 03.2023/05) and the hospital gave permission (Date: June 23, 2023, Issue: 774.99-218566946). Information was given to participants on the research procedures and written informed consent was received. Both groups were aware of the interventions and the right to quit. Data confidentiality was ensured and all information was coded. Permission was obtained for the use of copyrighted music.

Results

In the music group, 77.1% of the nurses were female, 50.7% were university graduates, 68.8% were married, 66.7% had children, 50.0% found their income lower than their expenses, 75% did not have any chronic disease and 79.2% did not use any medication. In the control group, 79.2% were female, 70.8% were university graduates, 48.4% were married, 56.3% had children, 56.3% found their income lower than their expenses, 75% did not have any chronic disease and 79.2% did not use any medication. The average age was similar and the participants were similar in terms of descriptive characteristics ($p>.05$) (Table 1).

In the music group, 66.7% of the nurses chose the nursing department willingly at university, they had 12.68±9.22 years of experience in nursing, 68.8% worked in day-night shifts, 75% worked overtime and 83.3% worked overtime with the requirement of the institution. In the control group, it was found that 70.8% chose the nursing department willingly, had 10.24±7.98 years of experience in nursing, 85.4% worked in day-night shifts, 79.2% worked overtime and 60.5% worked overtime with the requirement of the institution. The nurses had similar characteristics in groups in terms of professional and working characteristics ($p>.05$) (Table 2).

The pre-test and post-test comfort scores of nurses in the music and control groups were compared in terms of the scores of the subscales and the total scale scores. No significant changes were detected in the comfort levels in the control group ($p>.05$) and the sociocultural, psycho-spiritual, and physical comfort sub-

scores and total comfort scores of the nurses in the music group increased statistically and significantly following the music intervention ($p<.05$) (Table 3). The comfort levels of the nurses were similar in the pre-test in music and control groups and there were no statistically significant differences ($p>.05$). In the post-test, the sociocultural, psycho-spiritual, physical comfort, and total comfort levels of the nurses increased at a significant level in the music group compared to the control group ($p<.05$) (Table 4).

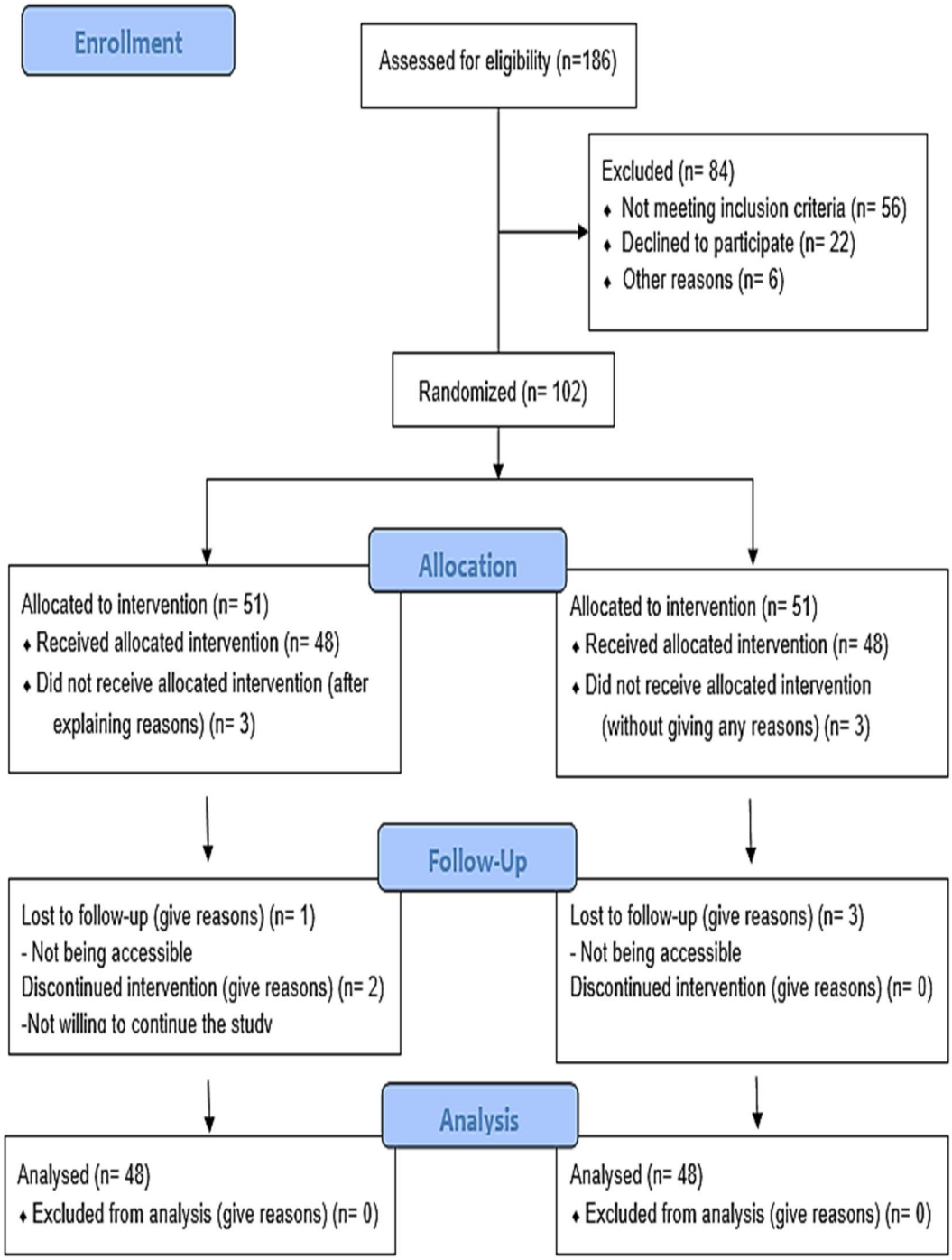

Figure 1. CONSORT flow diagram of nurses who participated in the study

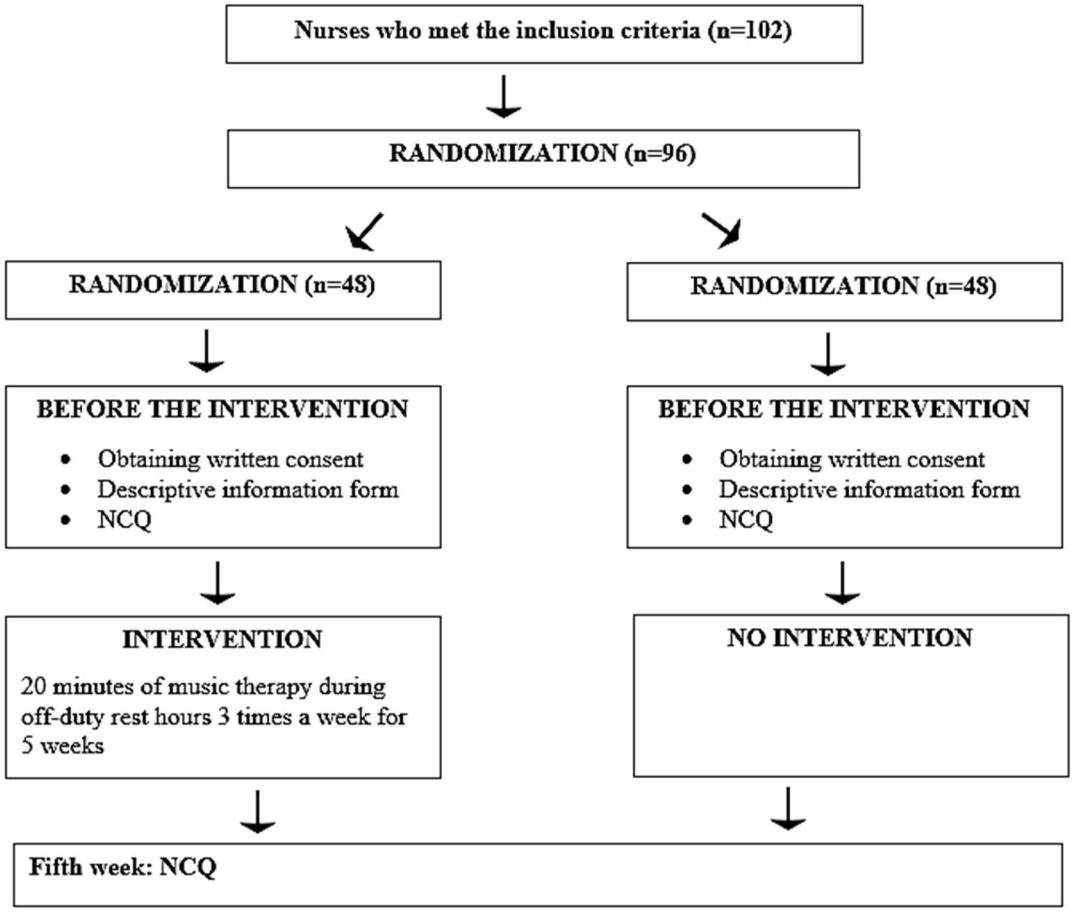

Figure 2. The procedure of the study

Table 1. Comparison of descriptive characteristics of nurses in the music and control groups

Characteristic	Music Group *(n=48)*	Control Group *(n=48)*	*p*
Age			
18-23	-	1(2.1)	.617*
24-29	16(33.3)	19(39.6)	
30-35	15(31.3)	15(31.3)	
36 and over	17(35.4)	13(27.1)	
Gender			
Female	37(77.1)	38(79.2)	.500*
Male	11(22.9)	10(20.8)	
Education status			
Vocational School of Health Services	-	1(2.1)	.757*
Associate degree	8(16.7)	9(18.8)	
Bachelor's degree	35(50.7)	34(70.8)	
Master degree	5(55.6)	4(8.3)	

Marital status			
Married	33(68.8)	31(48.4)	.414*
Single	15(31.3)	17(53.1)	
Having children			
Yes	30(66.7)	27(56.3)	.207*
No	15(33.3)	21(43.8)	
Number of children	1.87±0.776	1.81±0.736	.797**
Income status			
Low	24(50.0)	27(56.3)	.828*
Middle	17(35.4)	15(31.3)	
High	7(14.6)	6(12.5)	
The presence of chronic disease			
Yes	12(25.0)	12(25.0)	.593*
No	36(75.0)	36(75.0)	
Type of chronic disease			
Asthma	3(20.0)	1(7.7)	.373*
Cardiovascular disease	3(20.0)	1(7.7)	
Rheumatological disease	1(6.7)	3(23.1)	
Endocrine disease	8(53.3)	7(53.8)	
Gastroenterological disease	-	1(7.7)	
Continuous medication use			
Yes	10(20.8)	10(20.8)	.599*
No	38(79.2)	38(79.2)	

*Chi-Square **Independent Samples T-Test

Table 2. Comparison of professional characteristics of nurses in music and control groups

Characteristic	Music Group *(n=48)*	Control Group *(n=48)*	*p*
Choosing a profession willingly			
Yes	32(66.7)	34(70.8)	.413*
No	16(33.3)	14(29.2)	
Professional experience (year)	12.68±9.22	10.24±7.98	.168**
Shifts			
Day	12(25.0)	7(14.6)	.075*
Night	3(6.3)	-	
Day and night	33(68.8)	41(85.4)	
Overtime working status			
Yes	36(75.0)	38(79.2)	.576*
No	12(25.0)	10(20.8)	

Reason for working overtime			
Institution requirement	30(83.3)	23(60.5)	
Economic necessity	4(11.1)	9(23.7)	.091*
Willingly	2(5.6)	6(15.8)	

*Chi-Square **Independent Samples T-Test

Table 3. Comparison of comfort levels of nurses in the pre-intervention and post-intervention

Group	Measurement time	Sociocultural Comfort (Mean±SD)	Psycho-Spiritual Comfort (Mean±SD)	Physical Comfort (Mean± SD)	Scale total (Mean±SD)
Music Group	Pre-Intervention	36.27±7.21	36.47±5.57	30.87±4.95	103.62±13.77
	Post-Intervention	41.16±8.11	39.66±6.13	33.79±4.73	114.62±16.04
	*p**	*<.001*	*.004*	*<.001*	*<.001*
Control Group	Pre-Intervention	34.14±7.26	35.77±7.45	30.08±5.01	100.0±17.12
	Post-Intervention	34.37±6.20	34.66±6.57	29.41±4.77	98.45±14.32
	*p**	.730	.198	.288	.286

*Paired-Samples T-Test

Table 4. Comparison of comfort levels of nurses in the music and control groups

	Characteristic	Music Group (Mean±SD)	Control Group (Mean±SD)	*p**
Pre-Intervention	Sociocultural Comfort	36.27±7.21	34.14±7.26	.037
	Psycho-Spiritual Comfort	36.47±5.57	35.77±7.45	.599
	Physical Comfort	30.87±4.95	30.08±5.01	.439
	Comfort Total Scale Score	103.62±13.77	100.0±17.12	.256
Post- Intervention	Sociocultural Comfort	41.16±8.11	34.37±6.20	*<.001*
	Psycho-Spiritual Comfort	39.66±6.13	34.66±6.57	*<.001*
	Physical Comfort	33.79±4.73	29.41±4.77	*<.001*
	Comfort Total Scale Score	114.62±16.04	98.45±14.32	*<.001*

***Independent Samples T-Test

Discussion

In the existing literature, no studies were found conducted on this topic that directly evaluated the effects of music interventions on nurses' comfort levels. The results revealed that the music intervention significantly benefited participants in terms of comfort. The results obtained support the hypothesis that music intervention is a feasible and effective intervention for nurses to increase the sociocultural, psycho-spiritual, and physical sub-dimensions of comfort.

The music therapy has been employed to decrease stress on many occasions with its positive impacts on physiological aspects (heart rates, blood pressure, hormone levels) and psychological experiences of stress (restlessness, anxiety, and irritability). It was also reported that music decreases burnout levels of nurses (de Witte et al., 2020; Finnerty et al., 2022; Matthew et al., 2022) In a qualitative study conducted on nurses' subjective well-being and subjective experiences of mental health problems, nurses stated that spending time in nature, mindfulness practices, physical exercise, and listening to music were among the activities outside of work that increased their well-being (Oates, 2018). Although some studies reported that the use of music intervention improved and maintained health (Viola et al., 2023), no study was conducted directly to examine whether music can be employed to increase nurses' comfort levels. In the study, the researchers tried to fill this gap in the literature and the results show that music can increase the comfort of nurses.

It was found that the sociocultural comfort sub-scores increased significantly in the music group following the music intervention. From a sociocultural perspective, many studies indicate that nurses may experience difficulties related to working night shifts, perceived lack of recognition of job performance, working in an extremely challenging environment, workload, multiple employment, and low wages (Vidotti et al., 2018; De la Fuente-Solana et al., 2020). It is also known all over the world that nurses underwent the devastating impacts of the COVID-19 pandemic for a long time (Jarden et al., 2019). Some scholars investigating themes closely related to music have found that music education improves subjective well-being, such as social happiness and life satisfaction (Weinberg & Joseph, 2017). In a previous study that was conducted by Lee et al. among nurses working shifts, it was reported that music therapy (alone or in combination with aromatherapy) was effective in reducing stress and improving quality of life and happiness (Lee et al., 2024). Also, it is said that Ussak Tonality arouses feelings of laughter, happiness, power and heroism that regulate social emotions, gives the feeling of laughter and is a means of expressing deep love and mystical feelings (Sahin et al., 2022; Bolat, 2023). Therefore, it is probable that the sociocultural levels of nurses, who are the main life force for health, may be affected by music intervention.

It was also determined that the psychospiritual comfort sub-scores of nurses who listened to music increased significantly following the intervention. An important aspect of music therapy is its ability to modulate the emotional-mental state (Feneberg et al., 2023), which can subsequently improve well-being (Weinberg & Joseph, 2017). Indeed, previous studies reported the important roles of music in mood regulation and management by stimulating positive emotions and reducing stress (de Witte et al., 2020; Feneberg et al., 2023). Similarly, it was also reported that Ussak Tonality is beneficial for sleeping and resting and gives a feeling of relaxation (https://tumata.com/en/turkish-music-therapy/turkish-tonalities-and-their-impacts/). The Ussak Tonality has also been reported to decrease fear and anxiety, and some studies report that it helps comfort levels and relaxation (Dogan, 2022; Sanli et al., 2022).

According to a previous study conducted by Wang et al., music therapy for nurses experiencing sleep disturbances because of circadian rhythm disorders can improve sleep quality and reduce negative emotions by supporting mental health (Wang et al., 2024). Similarly, a randomized controlled trial by Zamanifar et al. reported that music therapy significantly reduced anxiety levels among clinical nurses (Zamanifar et al., 2020). Considering the harmful mental, emotional, and/or psychological consequences of the workforce because of the nature of nursing (de Witte et al., 2020; De la Fuente-Solana et

al., 2020), listening to music can be considered an effective intervention (Inchingolo et al., 2025).

Significant increases were detected in the physical comfort sub-scores in the intervention group following the music intervention. When looking at the literature, Ji and Jo confirmed with their study that listening to the music that nurses like in intensive care units is an effective and objective attempt to relieve work stress and fatigue (Ji & Jo., 2017). Nurses may experience biological or physical changes such as personal life changes, daytime fatigue, eating, and sleep disturbances, often associated with night shifts and various work environment factors (Vidotti et al., 2018; Norful et al., 2023). In addition, global health challenges, the COVID-19 pandemic, and the response to the pandemic have placed unique demands and heavy workloads on nurses.

Over time, this has led to fatigue and burnout in many nurses who provide direct patient care. Apart from these, many nurses also stated other reasons such as violence in the healthcare environment, poor organizational culture, heavy workload, inadequate staffing, feeling undervalued by managers and the organization, limited job options, and inadequate wages (ICN, 2024). Today, listening to music is recommended as a method to enhance various domains of well-being, including mental, social, life quality, and physical domains in clinical and healthy populations (Fancourt & Finn, 2019). Our hypothesis was supported by the fact that music therapy applied to nurses who can be exposed to many such factors related to physical health increased their physical comfort levels.

Limitations: The study was conducted with the nurses who worked in a hospital in only one province. In addition, the fact that the different impacts of listening to music on nurses for longer than five weeks could not be evaluated was another limitation.

Conclusions: As a result, music therapy at the desired rest times and volume levels of nurses may be an effective solution to enhance the comfort of nurses. For future research, it is recommended to compare the effects of music played at certain hours with the effects of music played at appropriate times of the participants' choice. It may also be recommended to evaluate the effects of music on long-term comfort and to evaluate the impacts of different music types on comfort.

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