Medical - Surgical Nursing Journal 2016; 5(2):27-34.

Published online 2016 September 29 Original Article

Evaluation of the effects of patient-selected music therapy on the sleep quality and pain intensity of burn patients

Fatemeh Muhaddith Ardabili[1], Samira Abdi[2], Tahereh Najafi Ghezeljeh[3], Agha Fatemeh Hosseini[4], Aref Teymoori[5]

1. Instructor, Department of Internal Medicine and Surgery, Nursing and Midwifery School, Iran University of Medical Sciences, Tehran, Iran
2. MSc Student, Department of Internal Medicine and Surgery, Nursing and Midwifery School, Iran University of Medical Sciences, Tehran, Iran
3. Assistant professor, Department of Critical Care Nurse and Circulation Technology, Nursing and Midwifery School, Iran University of Medical Sciences, Tehran, Iran
4. Instructor, Department of Biostatistics, School of Public Health, Iran University of Medical Sciences, Tehran, Iran
5. MSc in statistics, Faculty of Science, University of Zanjan, Zanjan, Iran

***Correspondence:** Samira Abdi Nursing and Midwifery School, Iran University of Medical Sciences, Tehran, Iran. Email: abdizanjan92@gmail.com

ARTICLE INFO

Article history:

Received: 17 May 2016
Revised: 01 August 2016
Accepted: 03 August 2016

Key words:

Music
Sleep quality
Pain
Burn

ABSTRACT

Background: Sleep disturbances and pain are some of the most common problems among burn patients, which have adverse effects on recovery process and patient comfort. Given the use of music as a non-pharmacological approach to alleviate pain and provide comfort, this study aimed to evaluate the effect of patient-selected music on sleep quality and pain intensity in burn patients.

Methods: This clinical trial was conducted on burn patients hospitalized in one of the hospitals of Tehran, Iran in 2015. In total, 50 patients were selected using randomized convenience sampling and divided into two intervention (n=25) and control (n=25) groups. Intervention was carried out for the intervention group through playing instrumental music, selected by the patients, in three consecutive 45-minute sessions before sleep. Severity of pain in the participants was evaluated for three nights (before and five minutes after the intervention) using visual analog scale (VAS). In addition, sleep quality of the samples was assessed three days before the intervention using Pittsburgh sleep quality index (PSQI) and during the post-intervention days through interviews. The mentioned scales were applied for the control group as well. Data analysis was performed in SPSS version 18 using Chi-square, as well as paired and independent t-tests.

Results: In this study, a significant improvement was observed in sleep quality (P<0.001) and pain intensity (P=0.012) in the participants of intervention group after listening to music. Moreover, a significant difference was observed between the study groups after the intervention in terms of mean sleep quality score (P<0.001) and pain intensity (P=0.046).

Conclusion: According to the results of this study, application of patient-selected music therapy could be associated with a significant improve in sleep quality and decrease in pain intensity in burn patients. Therefore, it is recommended that this intervention approach be applied by healthcare providers and nurses.

1. Introduction

Burn injuries are the fourth leading cause of trauma and the most common cause of disability and mortality across the world. Burn injuries are associated with physical, psychological and economic complications in different societies.[1] Annual incidence of burn injuries has been estimated at approximately 2.4 million cases in different countries, 650,000 and 75,000 of which require immediate treatment and hospitalization, respectively. Moreover, 8,000-12,000 cases are reported to lose their lives due to the complications of burn injuries.[2] Statistics suggest that in Iran, 1,129 patient referrals to Shahid Motahari Burns Hospital in Tehran accounted for burn injuries during April-November 2009, which is a significant number.[3]

Burn injuries may cause irreversible, chronic complications; such examples are pain, anxiety, disfigurement, depression, sleep disturbances, and nightmares.[1] Severe pain is a major complication

associated with burn injuries, which might continue until complete wound healing and recovery.[4] Pain management in burn patients is possible through the administration of narcotic drugs at high doses, while drug resistance might occur in some cases.[3] Lack of effective pain relief may lead to physiological and psychosocial disorders and adversely affect the adherence of patients to treatment.[5] In addition, it could give rise to depression, poor quality of life, delayed wound healing, and sleep deprivation.[2] Adequate rest and proper sleep are major contributing factors for pain relief and accelerating wound healing.[6] As such, lack of pain relief and untreated sleep deprivation intensify the pain of burn injuries in the patients.[5]

In a study, Protacio (2010) claimed that over 50% of burn patients suffer from sleep disorders during the treatment process, which have been shown to prevail throughout life in some cases. Some indications of the sleep disorders associated with burn injuries are late sleep onset, early wake-up, disrupted sleep, poor sleep quality, nightmares, and insomnia.[7]

Various pharmaceutical treatments are available to reduce pain intensity and improve sleep disturbances in burn patients. However, use of medications is associated with numerous side effects, including nausea and vomiting, drug dependency, impaired memory and performance, increased risk of falls, and respiratory arrest.[8] Therefore, use of non-pharmacological pain management therapies could be more beneficial in this regard.[6, 9] With few side effects, these interventions are easily applied without any risk. In addition, they do not require a specific time for implementation or advanced equipment, and patients are willing to receive these interventions as well.[10] Several studies have indicated that complementary treatment methods, especially cognitive behavioral therapies, are as effective as pharmaceutical treatments and more likely to yield long-term effects. Furthermore, non-pharmacological pain management therapies are associated with no drug-related complications (e.g., drug resistance or dependency).[11] Although complete pain relief might not be possible in patients with burn injuries, available therapies in this regard primarily aim to alleviate pain as much as possible.[12]

Music therapy is a common non-pharmacological approach used to reduce pain in different patients.[13]

According to the literature, musical interventions involve the regular use of music in the provision, maintenance and improvement of physical and mental health, so that it would effectively alter the emotions and behaviors of individuals even in the most disturbing environments.[14, 15] Listening to one's favorite music results in muscle relaxation, distraction, and pain relief through reducing the transfer of pain messages to the central nervous system.[16] In this regard, Mandel et al. (2013) proposed the use of music therapy for pain management to be a safe, simple and inexpensive method in different hospital wards, which could be incorporated into routine hospital care.[17] Furthermore, Ajori et al. (2012) reported that listening to music could effectively alleviate labor pain.[18] With respect to the positive effects of music therapy on sleep quality, Alami et al. (2012) claimed that music could remarkably enhance sleep quality in elderly individuals.[6] Moreover, cancer patients could benefit from the combination of music therapy and progressive muscle relaxation for better sleep quality.[19] On the other hand, findings of Besel (2006) suggested that music therapy had no significant effect on the pain intensity of the patients receiving mechanical ventilation.[20] This is similar to the results obtained by Ghiyasvandian et al. (2014)[21] and Amrollahi et al. (2014), which denoted no significant effect on the sleep quality of patients following music therapy.[13]

It is noteworthy that effective music therapy requires the selection of familiar, favorite tunes that are fitting to the cultural values of individuals, which has been commonly disregarded in previous studies.[22] In a systematic review focusing on the type of relaxing music, Chi and Young (2011) claimed that in order to maximize the effectiveness of music therapy, type of the music must be selected based on the preference and interest of the patients.[23] Considering the demanding condition of burn patients, importance of pain management and sleep quality in these patients and conflicting findings in this regard, this study aimed to evaluate the effects of patient-selected music therapy on the sleep quality and pain intensity of burn patients.

2. Methods

2.1. Design

This clinical trial was conducted using a quasi-experimental design with a control group. Sample population consisted of all the patients admitted in the burn unit of a hospital in Tehran, Iran in 2015.

2.2. Participants and setting

In this study, Based on the findings of Alami et al. (2012)[6] and using the sample size formula ($S=2.1$, $\mu_1-\mu_2=2$, $1-\beta=0.8$, $Z_{1-\beta}=0.84$, $Z_{1-\alpha.2}=1.96$), sample size of the study was determined at 25 subjects per each group (total: 50). Patients were selected via non-randomized convenience sampling and equally divided into two

groups of intervention and control (n=25). In the process of sampling, control subjects were selected first, and after attaining the sufficient sample size in this group, convenience sampling was used to select the patients for the intervention group.

Inclusion criteria were as follows: 1) impaired sleep quality after burn injuries based on the self-report of patients; 2) scores of >5 in the Pittsburgh Sleep Quality Index; 3) age range of 18-75 years; 4) no history of drug addiction; 5) avoidance of sleep and anti-anxiety medications; 6) absence of mental disorders; 7) second-/third-degree burns, 8-45% burn injuries or both; 8) no burn injuries in the head and ears; 9) no hearing impairment and 10) minimum hospital stay of three nights. Exclusion criteria of the study were as follows: 1) discharge from hospital at the time of study; 2) patients with critical or fatal conditions; 3) death of patients and 4) candidates for skin graft surgery.

2.3. Instruments

Required data of patients were collected through the review of medical records. Data collection tools included demographic questionnaires, visual analog scale (VAS), and Pittsburgh Sleep Quality Index (PSQI).

Demographic data included age, gender, marital status, history of hospitalization due to burn injuries, and degree and cause of burn injury. Questionnaires were completed by the patients with the assistance of the researcher (based on medical records) during the first meeting with the patients.

VAS was designed by Lowe and Wewers in 1998 for the assessment of pain.[24] This scale is composed of a 10-cm horizontal continuum, which is marked within a range of 0-10 (zero: no pain, 10: highest pain intensity). Patients were asked to rate their pain intensity by ticking a box on this continuum. Afterwards, the researcher measured and recorded the level marked by the patients in millimeters.[25]

PSQI was designed by Buysse et al. in 1989.[26] This questionnaire consists of 19 items to measure the quality of sleep in patients within a score range of 0-3 based on a four-point Likert scale. Options in PSQI are as follows: never (score zero), once (score one), and 2-3 times (score three). Moreover, PSQI has seven subscales, including subjective sleep quality (one item), delayed sleep onset (two items), duration of sleep (three items), sleep adequacy (one item), sleep disturbances (nine items), use of sedative drugs (one item), and impaired daily function (two items).[6] Total score of PSQI is calculated by summing up the scores of each subscale within a range of 0-21. Scores of >5 represent poor sleep quality, and the total score is interpreted at four levels of favorable (0-5), moderate (6-10), relatively poor (11-15) and poor quality of sleep (16-21).[9, 21] Validity and reliability of PSQI have been confirmed in various studies.[21, 27] Reliability of this instrument has been reported to be 0.93-0.98 based on the retest method by Izadi Avanji et al. (2012).[28] In our research, reliability of PSQI was determined in 15 participants, with the Cronbach's alpha coefficient estimated at 0.80.

2.4. Data Collection

Subjects in the control group received routine hospital care. In addition to routine care, patients in the intervention group received music therapy for three consecutive nights using soft, instrumental tunes, which were selected based on their personal interest.

To select the favorite music of the patients, 20 instrumental, authorized tracks (composers: Naser Cheshm Azar and Mark Stein) were chosen, such that they would not be highly simulative or rhythmic to prevent the arousal of depressive or agitated feelings in the patients. Therefore, soft, melodic tunes were made available to the patients.[21]

To conduct the intervention, we used a music player device and earphones (Sony, Japan). In order to prevent the possible transmission of infections through earphones, they were disinfected with alcohol and the pads were changed after each use.

For pretest, pain intensity and sleep quality of patients in the intervention and control groups were measured during three nights before the intervention using VAS and PSQI. Following that, patients in the intervention group received music therapy for three consecutive nights for 45 minutes before sleep.[29] After five minutes of listening to the selected instrumental tunes of their preference, pain intensity and sleep quality of the patients were measured for posttest using the mentioned tools.

In this study, subjects of the control group received no treatment. However, pain intensity and sleep quality of these patients were assessed similar to the intervention group for posttest.

2.5. Ethical considerations

After obtaining the required permit from the Ethics Committee of the university and officials of the selected hospital, data collection was carried out. In order to start sampling, the researcher introduced himself to the director of the burns unit of the hospital and identified the eligible subjects. Objectives and procedures of the study were explained to the participants, and informed consent was obtained from all the patients prior to participation. Moreover, participants were allowed

to withdraw from the study at any time with no impact on their treatment process.

2.6. Statistical analysis

Data analysis was performed in SPSS version 18 using descriptive statistics, and independent t-test was applied to compare the study groups in terms of sleep quality, pain intensity and age. Moreover, paired t-test was conducted to compare sleep quality and pain intensity before and after the intervention. Evaluation of the differences between the groups in terms of demographic characteristics (gender, marital status, history of hospitalization, cause of burn injuries, and degree of burn) was performed using Chi-square.

3. Results

None of our participants were excluded from the study. Demographic characteristics of the patients are presented in Table 1. According to the information in this table, no significant differences were observed between the demographic variables of the two groups.

According to the information in Table 2, after music therapy, patients of the intervention group showed a significant improvement in the general description of sleep (P=0.004), delayed sleep onset (P<0.001), duration of sleep (P=0.002), sleep adequacy (P=1), waking up at night (P=0.032), soporific drug use (P<0.001), morning performance (P<0.001), and PSQI score (P<0.001).

According to the results of independent t-test after the intervention, scores of duration of sleep (P=0.04), morning performance (P=0.003) and sleep quality of all the patients in both groups had a statistically significant difference (P<0.001) (Table 2).

According to our findings, none of the participants experienced mild pain due to burn injuries. Furthermore, pain intensity in the intervention group significantly decreased after music therapy (P=0.012), and the difference was statistically significant with the control group (P=0.046) (Table 3).

Table 1. Demographic characteristics of participants

Variable	Group	Intervention	Control	P-value
		N (%)	N (%)	
Gender	Male	11 (44)	11 (44)	*1
	Female	14 (56)	14 (56)	
Marital status	Single	9 (36)	2 (8)	*0.046
	Married	15 (60)	20 (80)	
	Divorced	1 (5.4)	3 (12)	
History of hospitalization due to burn injury	Yes	11 (44)	14 (56)	*0.572
	No	14 (56)	11 (44)	
Cause of burn injury	Boiling water and steam	13 (52)	6 (24)	*0.068
	Flame	8 (32)	16 (64)	
	Electricity	4 (16)	3 (12)	
Degree of burn injury	II	20 (80)	18 (80)	*0.68
	III	2 (8)	4 (16)	
	II and III	3 (12)	3 (12)	
Percentage of burn	<10	2 (8)	1 (4)	*0.769
	10-40	14 (56)	16 (64)	
	>40	9 (36)	8 (32)	
Age (year)	M±SD	39.96±13	42.08±15.85	**0.95

*Chi-square; **independent t-test

Table 2. Comparison of sleep quality scores between intervention and control groups

Group / Quality of sleep	Intervention		Control		*P-value
	Before intervention	After intervention	Before intervention	After intervention	
	M±SD	M±SD	M±SD	M±SD	
General description of sleep	1.88±0.90	1.52±0.79	1.48±0.67	1.56±0.83	0.359
**P-value	0.004		0.538		
Delayed sleep onset	2.28±0.71	1.6±0.85	1.96±0.50	2.12±0.78	0.036
**P-value	<0.001		0.223		
Duration of sleep	2±0.81	1.24±0.86	1.44±0.84	1.56±0.66	0.11
**P-value	0.002		0.157		
Sleep adequacy	3±0	3±0	3±0	3±0	1
**P-value	1		1		
Waking up at night	1.84±0.76	1.44±0.48	1.4±0.84	1.52±0.87	0.451
**P-value	0.041		0.032		
Soporific drug use	2.24±0.48	1.48±0.64	1.8±0.53	2.12±0.78	0.005
**P-value	<0.001		0.008		
Morning performance	2.64±0.76	1.44±0.59	1.68±0.61	1.88±0.58	0.064
**P-value	<0.001		0.076		
Total	88±24.1	73.11±23.1	76.12±4.2	77.13±55.1	<0.001
**P-value	<0.001		0.004		

*Independent t-test; **paired t-test

Table 3. Comparison of pain intensity in intervention and control groups

Group / Pain intensity	Intervention		*P-value	Control		*P-value
	Before intervention	After intervention		Before intervention	After intervention	
	N (%)	N (%)		N (%)	N (%)	
Moderate	13 (52)	14 (56)	0.012	19 (76)	14 (56)	0.817
Severe	12 (48)	11 (44)		6 (24)	11 (44)	
Total	25 (100)	25 (100)		25 (100)	25 (100)	
M±SD	6.13±0.98	6.05±1.14		6.06±0.99	5.6±0.83	

*Paired t-test

4. Discussion

According to the results of the present study, patient-selected music therapy could effectively improve the quality of sleep and reduce pain intensity in burn patients. In a study in this regard, Abolhasani et al. (2005) assessed the effects of music therapy on the sleep quality of cardiovascular patients, reporting that monotonous, repetitive music with a slow rhythm could induce sleep or relaxation in these patients.[30] This is consistent with the results of the present research, while in the mentioned study, Abolhasani et al. evaluated the effects of music therapy on various sleep deprivation indices (e.g., anxiety and fatigue), which might have affected the results.

In a meta-analysis, De Niet et al. (2009) proposed that music therapy could potentially reduce anxiety and distress before sleep in patients with chronic sleep disorders.[31] In this respect, findings of Alami et al. (2012) indicated that music therapy could enhance the sleep quality of elderly men.[6] Although these findings are in line with the results of the present study, subjects in the study by Alami et al. did not have burn injuries. Moreover, intervention in their research was conducted for a longer period compared to our study, which might have affected the results.

According to the results obtained by Su et al. (2013), use of noncommercial music positively influenced the quality of sleep in patients admitted in the intensive care unit.[32] In the mentioned research, quality of sleep was assessed using standard questionnaires and polysomnography, which might have added to the accuracy of the findings.

On the other hand, findings of some studies in this regard have been inconsistent with the results of the current research. For instance, Chang et al. (2012) reported that music therapy had no effect on the sleep quality of adult patients with chronic insomnia.[33] This discrepancy could be due to the differences in study conditions since the research by Chang et al. was conducted in a highly controlled environment, while in the present study, patients were evaluated under normal conditions.

Another study was performed by Chan et al. (2010) to assess the impact of music therapy on the sleep quality of the elderly, and no significant difference was observed between the intervention and control groups,[34] which is inconsistent with the results of the present study. In the mentioned research, patient-selected music therapy was implemented only for 30 minutes per week during four weeks, which differs from the duration of intervention in our study.

Similarly, findings of a study by Amrollahi et al. (2014) were indicative of no statistically significant difference in the mean score of sleep quality between patients of the intervention and control groups before and after the intervention.[13] This inconsistency could be attributed to the duration of music therapy in the mentioned study since the minimum standard duration for effective therapeutic music playback has been determined at 30 minutes by various studies.[29]

Findings of Koenig et al. (2013) regarding the positive and negative effects of music therapy on the quality of sleep in patients with normal sleep quality were suggestive of no significant difference between the intervention and control groups.[35] Similarly, Ghiasvandian et al. (2014) denoted that patient-selected music therapy could not improve sleep quality in patients undergoing coronary artery bypass grafting.[21] This discrepancy could be attributed to factors such as the evaluation of patients with normal sleep quality, small sample size and method of intervention. In the present study, effects of music therapy were assessed by increasing the duration of intervention, evaluation of patients with poor sleep quality, and enlarging the sample size. With respect to the effects of music therapy on pain relief, Abolhasani et al. (2005) claimed that through distracting the senses and reducing negative stimuli, music therapy resulted in pain relief.[30] Furthermore, researchers believe that by affecting the brain and stimulating alpha waves, listening to music causes the secretion of endorphins, thereby leading to tranquility and relaxation.[36]

Consistent with our findings, some studies have shown that the most important factor in comforting patients through music therapy is the patients' interest in the selected music, emphasizing on the remarkable impact of patient-selected music on the reduction of pain intensity.[22, 23, 37] Therefore, perception of individuals toward music is largely involved in the effectiveness of music therapy.[38]

In another research in this regard, Huang et al. (2010) concluded that use of music therapy could significantly decrease pain in patients admitted in the gastrointestinal ward compared to control subjects.[22] Furthermore, a significant reduction in the pain intensity of cancer patients was observed following patient-selected music therapy in the study by Jassemi et al. (2013).[39] Despite the differences in the disease, type of music, and measurement tools, these findings are in line with the results of the present study, confirming the positive effects of music therapy on the alleviation of pain.

According to a study by Cole et al. (2014), music therapy played a critical role in the pain relief of patients after radical mastectomy.[40] Although the sample population in the mentioned study consisted of breast cancer patients, and McGill pain questionnaire was the main instrument to measure pain intensity, the findings are in congruence with the results of the present study.

Conflicting results have been proposed regarding the effects of music therapy on the intensity and severity of pain. For instance, in a study by Besel (2006) performed on patients with mechanical ventilation, no significant differences were observed in the pain scores of patients before and after music therapy.[20] This discrepancy with the current study might be due to the differences in pain assessment tools.

One of the limitations of the present study was patient selection via non-random sampling, which might have affected the generalizability of the findings.

5. Conclusion

According to the results of this study, music therapy is an easy, cost-efficient and practical method to improve sleep quality and reduce pain intensity in burn patients. Therefore, it is recommended that healthcare managers, policy makers and team members incorporate this approach into sleep quality management and pain relief procedures through providing the required facilities and appropriate training for healthcare staff.

Conflicts of interest

The authors declare no conflicts of interest.

Authors' contributions

Fatemeh Muhaddith Ardabili: study design, drafting and final approval of the manuscript. Samira Abdi: study design, data collection, participation in the drafting of the manuscript. Tahereh Najafi Ghezeljeh: study design, drafting and final approval of the manuscript, participation in the drafting of the manuscript. Agha Fatemeh Hosseini: study design, data analysis, participation in the drafting of the manuscript. Aref Teymoori: data analysis, participation in the drafting of the manuscript.

Acknowledgments

This article was extracted from a master's thesis in nursing conducted at Iran Faculty of Nursing & Midwifery (ethical code: 1394.9211196226.IR.IUMS .REC) and registered in the Iranian Registry of Clinical Trials (IRCT2015111525054N1). Hereby, we extend our gratitude to the Vice Chancellor of Research at Iran University of Medical Sciences, authorities of Shahid Motahari Hospital of Tehran, and all the patients for assisting us in this research project.

References

1. Peck MD. Epidemiology of burns throughout the world. part I: distribution and risk factors. Burns 2011; 37(7): 1087-100.
2. Lalegani H, Esmaeeli S, Karimi M, Moghani M, Jivad N. The effect of deep-slow and regular breathing on pain intensity of burn dressing. Journal of Critical Care Nursing 2014; 6(4): 223-8.
3. Hashemi F, Dolatabad FR, Yektatalab S, Ayaz M, Zare N, Mansouri P. Effect of orem self-care program on the life quality of burn patients referred to ghotb-al-din-e-shirazi burn center, shiraz, iran: a randomized controlled trial. International Journal of Community Based Nursing and Midwifery 2014; 2(1): 40-50.
4. Smeltzer SC, Bare BG, Hinkle JL, Cheever KH, editors. Brunner & Suddarth's textbook of medical surgical nursing: pain, electrolyte, shock, cancer and end of life. 1th ed, Translated by: Shariat E, Namadi Vosough M, Movahedpour A. Tehran: Salemi; 2011.p. 14-28. [Persian]
5. Naderi F, Aghayi A, Mohammadzadeh M, Nazemi S, Salmani F, Rashvand M. Comparing the effect of music on pain threshold, anxiety, behavioral responses to pain and the hemodynamic parameters during dressing change in burn patients. Quarterly of the Horizon of Medical Sciences 2014; 20(1): 63-8. [Persian]
6. Allami Z, khankeh H, Dalvandi A, Zademohammadi M, Rezasoltani P. Effect of music- therapy on quality of sleep among elderly male of the Isfahan city petroleum's retirement association 2012. Nursing Journal of Geriatric 2014; (1)1: 55-63. [Persian].
7. Protacio J. Patient-directed music therapy as an adjunct during burn wound care. Critical Care Nurse 2010; 30(2): 74-6.
8. Zeraati F, Seif M, Araghchian F, Saburi T. Investigation of sleep quality and sleep-inducing drugs in adults hospitalized Hospital wards in Ekbatan. Journal of Hamadan University of Medical Sciences 2010; 4(54): 31-6. [Persian]
9. Arab Z, Shariati A , Bahrami H, Asayesh H, Vakili M. The effect of acupressure on sleep quality in patients undergoing hemodialysis. Journal of Nursing and Midwifery Urmia University of Medical Sciences 2012; 10(2): 237-45. [Persian]
10. Maleki M, Ghaderi M, Ashktorab T, Jabbari Nooghabi H, Zadehmohammadi A. Effect of light music on physiological parameters of patients with traumatic brain injuries at intensive care units. The Horizon of Medical Sciences (Ofogh-e-Danesh) 2012; 18(1): 66-75. [Persian]
11. Ahmadi S, Mohammadi F, Fallahi M, Rezasoltani P. The effect of sleep restriction treatment on quality of sleep in the elders. Iranian Journal of Ageing (Salmand) 2010; 5(2): 7-15. [Persian]
12. Smeltzer CS, Bare BG, Hinkle JL, Cheever KH. Brunner & Suddarth's Textbook of Medical-Surgical Nursing 12th ed, United States of America: Philadelphia, Lippincott Williams & Wilkins. 2014.
13. Amrollahi A, Salimi T, Farnai F. The effect of aromatherapy and music therapy on quality of sleep in patients suffering from burns. The Fourth Congress of Strategies to Promote Nursing and Midwifery Services Yazd 2014. [Persian]
14. Wang CF, Sun YL, Zang HX. Music therapy improves sleep quality in acute and chronic sleep disorders: a meta-analysis of 10 randomized studies. International Journal of Nursing Studies 2014; 51(1): 51-62.
15. Bruscia KE. Defining music therapy. 1th ed, Australia: Barcelona Pub; 2014.
16. Comeaux T, Steele-Moses S. The effect of complementary music therapy on the patient's postoperative state anxiety, pain control, and environmental noise satisfaction. Medsurg Nursing 2013; 22(5): 313-8.
17. Mandel S, Davis B, Secic M. Effects of music therapy and music-assisted relaxation and imagery on health-related outcomes in diabetes education: a feasibility study. The Diabetes Educator 2013; 39(4): 568-81.
18. Ajori L, Nazari L, Marefat Sh, Amiri Z. Effect of music on pain and duration of labor. Journal of Shahid Sadoughi University of Medical Sciences and Health Services 2012; 20(5): 555-61. [Persian]
19. Atadokht A, Narimani M, Senobar L, Basharpoor S. The comparison of the effectiveness of progressive muscular relaxation and music therapy on the sleep quality of patients with breast cancer. Journal Research Behavioural Science 2015; 13(2): 215-25. [Persain]
20. Besel JM. The effects of music therapy on comfort in the mechanically ventilated patient in the intensive care unit. [MSc thesis]. Montana: Montana state university Bozeman 2006.
21. Ghiasvandian SH, Haghverdi R, Zakerimoghadam M, Kazemnezhad A, Mousavi M, Saeid Y. The effect of preferred music on sleep quality among patients after coronary artery bypass surgery. Cardiovascular Nursing Journal 2014; 3(3): 14-21. [Persian].
22. Huang ST, Good M, Zauszniewski JA. The effectiveness of music in relieving pain in cancer patients: a randomized controlled trial. International Journal of Nursing Studies 2010; 47(11): 1354-62.
23. Chi GC, Young A. Selection of music for inducing relaxation and alleviating pain: literature review. Holistic Nursing Practice 2011; 25(3): 127-35.
24. Wewers ME, Lowe NK. A critical review of visual analogue scales in the measurement of clinical phenomena. Research in nursing & health. 1990; 13(4):227-36.
25. Cutshall SM, Wentworth LJ, Engen D, Sundt TM, Kelly RF, Bauer BA. Effect of massage therapy on pain, anxiety, and tension in cardiac surgical patients: a pilot study. Complementary Therapies in Clinical Practice 2010; 16(2): 92-5.
26. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The pittsburgh sleep quality index: a new instrument for psychiatric practice and research. Psychiatry Research 1989; 28(2): 193-213.
27. Ajri M. The effect of preferred music on physiological and behavioral parameters of pain in unconscious patients admitted to the Intensive care unit. [MSc thesis]. Tehran, Iran:. Tehran University of Medical Sciences 2012.
28. Izadi Avanji F, Adib Hajbaghery M, Kafai Atri M. Determining disturbing factors of sleep quality among hospitalized elderly patients in Kashan hospitals, Iran 2009. The Journal of Shahid Sadoughi University of Medical Sciences Yazd 2013; 20(6): 688-98. [Persian]
29. Nilsson U. The anxiety-and pain-reducing effects of music interventions: a systematic review. AORN Journal 2008; 87(4): 780-807.
30. Abolhasani S. Investigation of the effect of sensory stimulations on sleep deprivation symptoms in patients hospitalized in coronary care unit. Koomesh 2006; 7(1): 71-6. [Persian]
31. De Niet G, Tiemens B, Lendemeijer B, Hutschemaekers G. Music-assisted relaxation to improve sleep quality: meta-analysis. Journal of Advanced Nursing 2009; 65(7): 1356-64.

32. Su CP, Lai HL, Chang ET, Yiin LM, Perng SJ, Chen PW. A randomized controlled trial of the effects of listening to non-commercial music on quality of nocturnal sleep and relaxation indices in patients in medical intensive care unit. Journal of Advanced Nursing 2013; 69(6): 1377-89.
33. Chang ET, Lai HL, Chen PW, Hsieh YM, Lee LH. The effects of music on the sleep quality of adults with chronic insomnia using evidence from polysomnographic and self-reported analysis: a randomized control trial. International Journal of Nursing Studies 2012; 49(8): 921-30.
34. Chan MF, Chan EA, Mok E. Effects of music on depression and sleep quality in elderly people: a randomised controlled trial. Complementary Therapies in Medicine 2010; 18(3): 150-9.
35. Koenig J, Jarczok MN, Warth M, Harmat L, Hesse N, Jespersen KV, et al. Music listening has no positive or negative effects on sleep quality of normal sleepers: results of a randomized controlled trial. Nordic Journal of Music Therapy 2013; 22(3): 233-42.
36. Seyyedrasooli A, miri Mr, zamanzade V, Parvan K, Aghakeshizade M. The effect of music and aromatherapy on anxiety and pain of patients undergoing cholecystectomy: [MSc Thesis]. Tabriz University of medical sciences Nursing and Midwifery Faculty; 2015.
37. Karimi R, Shabani F, Nayeri N, Zareii Kh, Khalili Gh, Chehrazi M. Effect of music therapy on physiological pain responses of blood sampling in premature infants. Journal oh Hayat 2012; 18(2):76-86. [Persian]
38. Esmaeili K, Sadeghy S, Iranfar S, Abbasi P, Afkary B. The comparison of the effect of music and rhythmic breathing techniques on pain severity of intravenous cannulation during blood transfusion. Journal of Kermanshah University of Medical Sciences 2008; 12(2). 129-38. [Persian]
39. Jasemi M, Eghtedar S, Aghakhani N, Khodabandeh F, Sayadi L. Music therapy reduces the intensity of pain among patients with cancer. Thrita 2013; 2(4): 76-9.
40. Cole LC, LoBiondo-Wood G. Music as an adjuvant therapy in control of pain and symptoms in hospitalized adults: a systematic review. Pain Management Nursing 2014; 15(1): 406-25.

How to cite: Muhaddith Ardabili F, Abdi S, Najafi Ghezeljeh T, Hosseini AF, Teymoori A. Evaluation of the effects of patient-selected music therapy on the sleep quality and pain intensity of burn patients. Medical - Surgical Nursing Journal 2016; 5(2): 27-34.