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The effect of music therapy counseling on sleep quality in pregnant women

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ABSTRACT

Poor sleep quality is one of the most common complaints in pregnancy, which can lead to adverse maternal and fetal outcomes. Therefore, counseling with pregnant women to use non-pharmacological methods such as music therapy appears to be helpful. The aim of this study was to assess the effectiveness of music therapy counseling on sleep quality in pregnancy. This quasi-experimental study was conducted among 88 pregnant women, which were allocated randomly into two forty four-member groups of intervention and control in Hamadan city, Iran, 2015. The questionnaire used in this study was Pittsburgh Sleep Quality Index (PSQI). Two counseling sessions for using music therapy were held for experimental group. They were asked to listen to a calm music CD for 4 weeks, every night for 45 minutes. Then both groups were evaluated after 4 weeks. Data were analyzed with SPSS 16, by using chi-square, paired t-test and independent t-test. Data analysis showed that no significant differences had been found in component's scores of sleep quality in the control group before and after the intervention ($P > 0.05$) except the fifth component; the fifth component score significantly increased ($P = 0.03$). In the experimental group, there was a significant decrease in component scores of sleep quality (except fifth component) and total sleep quality score after the intervention. But the fifth component did not change significantly after the intervention. Also the comparison of the two groups by using Independent t-test showed a statistically significant difference between the total sleep quality score, first component (subjective sleep quality), second component (sleep latency), and seventh component (daily function disorder) after intervention between two groups ($P < 0.001$). Counseling with pregnant women to use music therapy can have an effective role in improving their sleep quality in pregnancy.

Keywords: Counseling, Music therapy, Sleep quality, Pregnancy

INTRODUCTION

Pregnancy is one of the most important and sensitive period in a woman's life [1, 2]. During pregnancy women are more likely to experience sleep disorders. Most of pregnant women's complaints during this period indicate poor sleep quality and reduced sleep duration [3], that is mostly due to the impacts of hormonal changes [4], back pain, frequent urination, and other factors during pregnancy [5, 6]. It has been revealed that hormones are partially responsible for sleep-wake pattern. Changes in estrogen and progesterone level during pregnancy can caused to sleep disorders [7].

Although all pregnant women do not show clinical sleep disorders [8], sleep patterns during pregnancy indicate that about 28-38% of pregnant women experience sleep disturbances at least once early in the pregnancy[9]. In another study in 2016, Neri reported that 60.76% of pregnant women in the third trimester of pregnancy had moderate to

severe sleep disorder (PSQI= 7-21)[10]. Hung found that 65.5% of pregnant women had reached PSQI score more than 5[11].

In Western countries, psychological health disorder in pregnant women is a major public health problem[12]. Any sleep disturbances and deprivation has several side effects on the human body and psychological health[13]. Reduced psychological comfort because of poor sleep quality can lead to postpartum blues[8]. In this regard, a review of studies conducted about sleep disorders in pregnancy shows that these women are more susceptible to preeclampsia, intrauterine growth retardation[9], preterm delivery, low birth weight[8], glucose intolerance[9]. Also there is a hypothesis suggesting an increased risk of diabetes and cardiovascular dysfunction[2].

Food and Drug Administration of Italy recommends that sleep medications such as Mefloquine, Flurazepam, and Temazepam (Group X) which are believed to be highly teratogenic, and zolpidem (Group C) that does not have teratogenic effects, but fetal adverse maternal-fetal outcomes such as preterm delivery, should not be used during pregnancy[9]. In addition, pregnant women are cautious about using drugs. In fact in the past 10 years, there has been a growing interest in non-drug methods to treat a variety of disorders in pregnancy, including sleep disorders[14].

In recent years, there has been an increasing tendency to use non-drug methods in improving sleep quality[15]. Interventions that improve sleep quality, and be cost-effective and without side effects, can be very useful[16]. The use of non-pharmaceutical interventions such as music therapy has increased because of its ease of use in everyday life[17]. The American National Association for Music Therapy (1997), defines music therapy as use of music for therapeutic purposes includes reestablishing and strengthening the physical and psychological health[18]. Based on a psychological theory relaxing and calming music induces a relaxation response that can reduce activity in the neuroendocrine and sympathetic nervous system, which may lead to decreased stress, anxiety and improving sleep quality[19].

Midwives are in a unique position that can be useful in counseling[20]. As defined by the International Confederation of Midwives (2005), a midwife as a responsible person, has an important role in counseling, support, care and education during pregnancy, labor and postpartum period[21]. Consultation is an important part of the midwife's role. This process provides appropriate information and helps mothers make choices knowingly. Counseling with pregnant women needs consulting skills such as active listening and empathy to increase women's confidence and sense of control[22]. One of the counseling methods that has been used on issues related to reproductive health from a decade ago, is GATHER¹ counseling method[23]. This method is started with respectful and appropriate way to deal with client, and asking him about his reference. Counselor answers to client's concerns, and helps them to make the best decision; clarifies and explains the issue, and determines how to return to consultant if needed[24]. In order to improve the sleep quality in pregnancy and due to the importance of psychological problems during pregnancy[25], we used this method in this study.

MATERIALS AND METHODS

Study sample

This paper was a quasi experimental study with two groups (experimental and control group) with a pre-test and post-test. The health centers were chosen randomly from four regions of the city (based on the division of the municipality) and two clinics were randomly selected from each region. First 385 pregnant women referred to health centers were selected by convenience sampling method in Hamadan city, Iran, 2015 by using the following formula:

$$n = \frac{z^2 pq}{d^2} \quad (d=0.05, p=0.5)$$

Afterwards 297 women excluded (did not meet inclusion criteria). Sample size was estimated based on a previous study by Allami *et al.*[26]. The number of samples required to participate in the intervention was calculated by using the following formula:

¹ G (Greeting)
A (Ask)
T (Tell)
H (Help)
E (Explain)
R (Return)

$$n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 (\sigma_1^2 + \sigma_2^2)}{d^2} \quad (\sigma_1^2 = 3.1, \sigma_2^2 = 2.5, d = 1.8)$$

These 88 pregnant women who met inclusion criteria enrolled the study and divided to intervention group (n= 44) and control group (n= 44) randomly. Due to attrition in the experimental group, study was carried out on 86 patients (42 patients in the intervention group and 44 patients in the control group) (Fig. 1). The questionnaire used in this study was Pittsburgh Sleep Quality Index. Inclusion criteria were: pregnant women in 30-34th weeks of pregnancy, age ranging from 18-35 years old, singleton pregnancy, no drug addiction, not taking drugs affecting the sleep quality, avoiding the use of antidepressants, not having mental and physical disorders, access to an audio player at home, having sleep disorder (PSQI score higher than 5). Exclusion criteria were: any problems during pregnancy (placental abruption, abnormal position of the fetus, umbilical cord prolapse, bleeding, diabetes, hypertension, preterm labor, etc.), and important mental and emotional changes (such as the death of close relatives or major disputes).

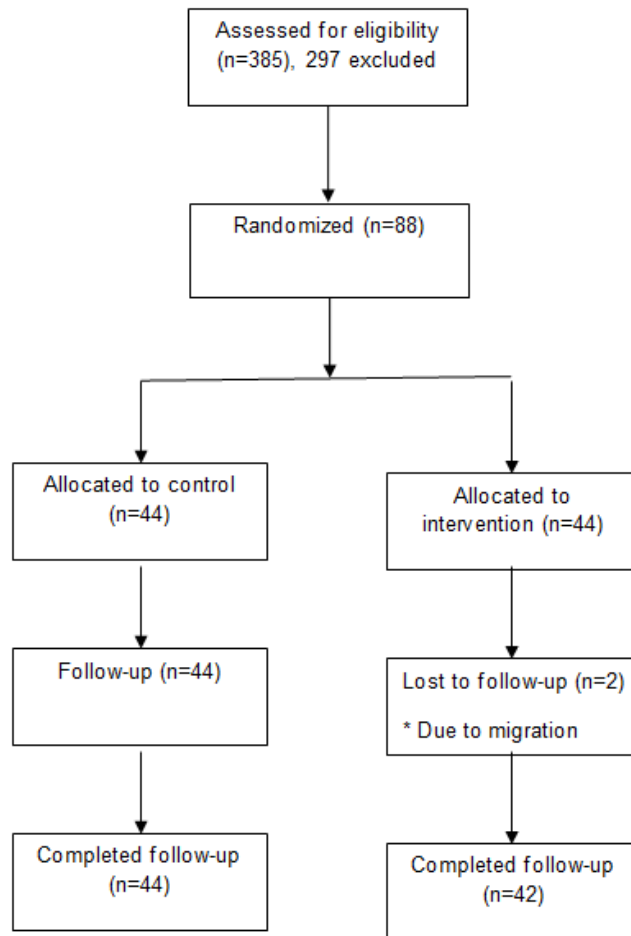


Figure 1: Flow of participants through the trial

Pittsburgh Sleep Quality Index is a 19-item questionnaire that is used to check sleep quality in last month. This questionnaire has 7 dimensions which include subjective sleep quality (personal perception of sleep), sleep onset latency (representing difficulty in falling asleep), sleep duration (representing nocturnal awakening), sleep efficiency (the real time which a person spends in sleep and not the total time spending in bed), sleep disturbance (representing frequent arm or leg movements), taking sleeping medication, and daytime dysfunction (representing difficulties encountered during the day due to poor sleep quality)[10, 19, 27]. Each dimension represented a score ranging from 0 to 3, which a score of 3 showed the highest level of dysfunction. The total of the individual dimension scores (range 0 to 21) formed a global sleep quality score. Higher scores indicated poorer sleep quality during the last month. Usually a global score more than 5 is classified as poor sleep quality, and a score of 5 or less were classified as good sleep quality[10, 28].

Procedure

Music therapy counseling was provided in two sessions weekly, each sessions lasting 60 minutes in groups of 5-7 persons. Standley has reported seven major methods in music therapy for patients by studying and analyzing different medical_ musical methods in 55 studies: First, passive listening to music; second, active participating in music programs; the third method, discussion and counseling on music; fourth method, music and topics related to the development and training; the fifth method, stimulant music; sixth method, music with biofeedback; seventh method, music and group activities. In this study, the first method of Standley classification of music therapy was used for experimental group. Passive listening to music was listening to Kitaro instrumental music, Japanese composer and performer.

Ethical considerations

The importance of research and its objectives were explained to the participants. They were allowed to leave the study whenever they wanted. Informed consent was obtained from all subjects who were enrolled the study and they were ensured that the information obtained from the subjects remain private. Participants were respected and ethical discrimination was avoided. This study was approved by the Ethical Committee of Hamadan University of Medical Sciences. Trial registration code of project was IR.UMSHA.REC.1394.189.

Statistical analysis

Data analysis was reported as mean \pm SD for the quantitative variables and percentages for the qualitative variables. We compared two groups by using the student's *t*-test for the quantitative variables and the *Chi*-square test for qualitative variables. Checking the normality distribution of quantitative data was conducted by using the Kolmogorov-Smirnov test and they were normal ($P > 0.05$). In all the tests using in this study, a significant level more than 0.05 was considered. Statistical analysis was done by using SPSS version 16.0.

RESULTS

A total of 88 pregnant women participated in this study. Because of attrition in the experimental group, study was carried out on 86 patients (42 patients in the intervention group and 44 patients in the control group), with the average age of 26.08 ± 4.61 . The average of PSQI score was 8.63 ± 2.77 . Results showed that both groups were similar in terms of variables and the differences were not statistically significant (Table 1 and Table 2). None of the participants had different work shifts.

The *t*-test statistical analysis showed that there was no significant difference in total sleep quality score and different domains of sleep quality between two groups before intervention. Also we found that there was no statistical significant difference in domains of sleep quality and total sleep quality scores in the control group after the intervention except the fifth domain ($P > 0.05$), but fifth component score had significantly increased ($P = 0.03$). In the experimental group, there was found a significant decrease in total sleep quality score and scores of different domains of sleep quality (except fifth domain), but the fifth domain did not change significantly after the intervention. The results of comparing two groups by using Independent *t*-test showed a statistically significant difference in total sleep quality, first domain (subjective sleep quality), second domain (sleep latency), and the seventh component (daily function disorder) after intervention ($P < 0.001$) (Table 3). Since taking hypnotic drugs (sixth domain) in pregnancy is forbidden and avoiding take these drugs was one the study's inclusion criteria, the score of this domain was considered zero.

DISCUSSION

As we expected, our findings showed that music therapy counseling can be effective in improving sleep quality during pregnancy. In a similar study, Liu *et al.* showed that music has a significant impact on sleep quality in pregnant women who were in 30-34th weeks of pregnancy[29]. Results showed that levels of sleep quality were not significantly different before the intervention between two groups. Also it was revealed that different dimensions of sleep quality had no significant statistical difference in the control group before and after the intervention except the fifth dimension. The fifth dimension significantly increased in control group after 4 weeks that is supposed to be due to physical change with increasing gestational age, because frequent physical and mechanical changes like frequent urination, back pain, fetal movements, uterine contractions and leg cramps increases with the progress of pregnancy and can exacerbate sleep disorders in pregnancy[30]; and these physical changes affect the fifth dimension of sleep quality.

Table 1. Comparing qualitative variables between two groups

Characteristic		Control Group N= 44	Intervention Group N= 42	χ^2	df	P-value
Education	Elementary	-	1(2.4)	4.96	3	0.17
	Guidance school	3(6.8)	1(2.4)			
	High school & diploma	20(45.5)	12(28.6)			
	College	21(47.7)	28(66.7)			
Job	Housewife	43(97.7)	38(90.5)	2.06	1	0.15
	employed	1(2.3)	4(9.5)			
Husband's Job	Practitioner	44(100.0)	40(95.2)	2.14	1	0.14
	Workless	-	2(4.8)			
Husband's education	Elementary	1(2.3)	-	1.9	3	0.59
	Guidance school	7(15.9)	4(9.5)			
	High school & diploma	21(47.7)	21(50.0)			
	College	15(34.7)	17(40.5)			
BMI ² (Kg/m ²)	<18.5	1(2.3)	2(4.8)	3.28	3	0.35
	18.5-24.9	21(47.7)	24(57.1)			
	25-29.9	17(38.6)	15(35.7)			
	≥30	5(11.4)	1(2.4)			
Prenatal care	Yes	43(97.7)	42(100.0)	0.97	1	0.33
	No	1(2.3)	-			
How to get prenatal care	Regular	42(95.5)	41(97.6)	0.30	1	0.58
	Irregular	2(4.5)	1(2.4)			
Pregnancy	Wanted	40(90.9)	34(81.0)	1.77	1	0.18
	Unwanted	4(9.1)	8(19.0)			
Family income(Toman)	<500000	1(2.3)	4(9.5)	2.18	2	0.34
	500000-1000000	21(47.7)	20(47.6)			
	>1000000	22(50.0)	18(42.9)			
House	Personal	24(54.5)	22(52.4)	0.04	1	0.84
	Leased	20(45.5)	20(47.6)			
Satisfaction of fetus's sex	Yes	42(95.5)	42(100.0)	1.95	1	0.16
	No	2(4.5)	-			
Active Smoking	Yes	-	-	-	-	-
	No	44(100.0)	42(100.0)			
Sexual satisfaction	Satisfied	33(75.0)	27(64.3)	1.17	2	0.56
	No idea	8(18.2)	11(26.2)			
	Unsatisfied	3(6.8)	4(9.5)			
Being satisfied with husband's support	Satisfied	37(84.1)	38(90.5)	0.80	2	0.67
	No idea	5(11.4)	3(7.1)			
	Unsatisfied	2(4.5)	1(2.4)			
Being satisfied with getting support from her family	Satisfied	40(90.9)	39(92.9)	1.65	2	0.44
	No idea	4(9.1)	2(4.8)			
	Unsatisfied	-	1(2.4)			
Satisfaction of husband's family support	Satisfied	32(72.7)	30(71.4)	0.77	2	0.68
	No idea	9(20.5)	7(16.7)			
	Unsatisfied	3(6.8)	5(11.9)			
Satisfaction of sleep quality before pregnancy	Satisfied	37(84.1)	34(81.0)	0.72	2	0.70
	No idea	3(6.8)	5(11.9)			
	Unsatisfied	4(9.1)	3(7.1)			

*P<0.05

Table 2. Comparing quantitative variables between two groups

Characteristic	Control Group N= 44		Intervention Group N= 42		P-value t df
	M	SD	M	SD	
Age (Year)	26.31	4.96	25.78	4.21	P= 0.69 t= 0.41 df= 50
BMI (Kg/m ²)	25.53	3.86	23.97	3.13	P= 0.05 t= 1.95 df= 76
Gestational Age (Week)	31.50	1.63	30.95	1.38	P= 0.10 t= 1.67 df= 84

*P<0.05

² Body Mass Index

Table 3. Comparing total PSQI score and different components of sleep quality between control group and intervention group

Variable	Group	Pretest	Post test	Paired t test
Total PSQI Score	Control	8.07±2.81	8.25±2.61	P=0.38 t=-0.88
	Case	9.21±2.65	5.67±1.78	P<0.001 t=13.42
	Independent t test	P=0.05 t= -1.95	P<0.001 t=5.34	
First component (Subjective Sleep Quality)	Control	1.27±0.69	1.25±0.65	P=0.74 t=0.33
	Case	1.45±0.70	0.81±0.40	P<0.001 t=6.02
	Independent t test	P=0.24 t=-1.19	P<0.001 t=3.76	
Second component (Sleep Onset Latency)	Control	1.59±0.90	1.77±0.74	P=0.13 t=-1.53
	Case	1.88±0.89	0.86±0.72	P<0.001 t=9.75
	Independent t test	P=0.14 t=-1.50	P<0.001 t=5.81	
Third component (Sleep Duration)	Control	1.20±0.98	1.09±0.96	P=0.52 t=-0.65
	Case	1.50±0.94	0.83±0.85	P<0.001 t=4.79
	Independent t test	P=0.05 t=-2.30	P=0.19 t=1.31	
Forth component (Sleep Efficiency)	Control	1.18±1.06	1.02±1.09	P=0.18 t=1.36
	Case	1.40±1.06	0.93±0.92	P=0.001 t=3.70
	Independent t test	P=0.33 t=-0.97	P=0.67 t=0.43	
Fifth component (Sleep Disturbance)	Control	1.73±0.58	1.91±0.52	P=0.03 t=-2.23
	Case	1.76±0.53	1.83±0.44	P=0.41 t=-0.83
	Independent t test	P=0.77 t=-0.29	P=0.47 t=0.73	
Seventh component (Daytime Dysfunction)	Control	1.27±0.76	1.20±0.85	P=0.54 t=0.62
	Case	1.14±0.72	0.45±0.55	P<0.001 t=5.98
	Independent t test	P=0.42 t=0.81	P<0.001 t=4.84	

*P<0.05

In the experimental group, a significant decrease in total sleep quality score and sleep quality dimensions' scores (except the fifth dimension) was found after the intervention, but the fifth dimension had no significant difference. Therefore a significant decrease in total sleep quality score and sleep quality dimensions' scores (except the fifth dimension) and also no increase in the fifth dimension score can indicate the effectiveness of the intervention. The importance of this issue appears when Jahdi reported that the fifth dimension of sleep quality as the most common sleep disorder in the second half of pregnancy[1]. This finding is consistent with the results of a study that was carried out by Liu et al (2016). They found that listening to music for two weeks can improve the quality of sleep in pregnancy[29]. Another study also showed the effectiveness of music on sleep quality[5].

In our study, there was found no significant differences in total sleep quality score and sleep quality dimensions' scores (except the fifth dimension) in the control group after the intervention. Fifth dimension was increased, which is supposed to be due to physical and physiological changes of pregnancy, but Malekzadegan et al. found a significant increase in the severity of the sleep disorder in the control group after the end of 4 weeks[31]. In line with this study, Jokar et al. found no significant differences in sleep quality scores in the control group after 4 weeks[32].

In our study, there was no difference in total sleep quality and sleep quality dimensions between two groups before the intervention. In other studies in this issue, there was no statistically significant difference between two groups before the intervention that is consistent with the findings of this study[29, 33].

Results of statistical analysis showed that there was a significant difference in sleep quality between experimental and control groups after the intervention. This finding is consistent with results of some other studies. However, due to small number of studies in this topic on pregnant women, the samples in some of these studies had been non-pregnant young and middle-aged people[16, 29].

In various studies, duration of the effectiveness of music therapy on sleep quality is different. Blararu reported one week listening to music with relaxation was effective in improving sleep quality[34]. Chih Kuang Chen showed the effectiveness of listening to music for one night for an hour on the duration of deep sleep on the results of the polysomnography[5]. Also Street et al. reported the impact of listening to music for 30 days, 30 minutes every night before going to sleep on the Pittsburgh Sleep Quality Index[16]. Besides Chang et al. showed the efficacy of listening to music for 4 days, every night 45 minutes before sleep by using polysomnography evidence[33].

Harmat et al. assessed the impact of music on sleep quality in young people (19 to 28 years old). Participants were divided into three groups. One group listened to classical music, another one listened to audio books, both groups for 45 minutes before bedtime for three weeks and the third group received no intervention. Results of the study were collected using the Pittsburgh Sleep Quality Index, showed that classical music improves sleep quality, while no improvement was found in the sleep quality in the audio book group and the control group[35].

Chang et al in their study found that listening to music for 2 weeks in pregnancy had a significant impact on the mental health of the pregnant women[36]. On the other hand, Karami et al. found a significant relationship between sleep quality and mental health in pregnant women that means poor mental health can reduce sleep quality in pregnant women[37]. So it seems that music therapy can improve sleep quality during pregnancy through affecting on mental health in pregnancy.

CONCLUSION

Counseling with pregnant women to use music therapy was effective in improving sleep quality in pregnancy.

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Conflict of interest statement

The authors declare that they have no conflicts interest in this article.

REFERENCES

- [1] Jahdi F, Rezaei E, Behboodi Moghadam Z, Hagani H. Prevalence of sleep disorders in the pregnant women. *Journal of Iranian Institute for Health Science Research (Payesh)*. 2013;12(6):629-35.
- [2] Palagini L, Gemignani A, Banti S, Manconi M, Mauri M, Riemann D. Chronic sleep loss during pregnancy as a determinant of stress: impact on pregnancy outcome. *Sleep Med*. 2014;15(8):853-9.
- [3] Okun ML, Tolge M, Hall M. Low socioeconomic status negatively affects sleep in pregnant women. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2014;43(2):160-7.
- [4] Mehta N, Shafi F, Bhat A. Unique Aspects of Sleep in Women. *Missouri medicine*. 2015;112(6):430-4.
- [5] Chih-Kuang C, Yu-Cheng P, Ning-Hung C, Li-Ting H, Shih-Wei C, Wu Katie P, et al. Sedative Music Facilitates Deep Sleep in Young Adults. *The Journal of Alternative and Complementary Medicine*. 2014;20(4):312-7.
- [6] Shobeiri F, Khaledi S, Masoumi Z, Roshanei G. The prevalence of sleep disorders in pregnancy and some of the associated factors in Hamadan, Iran. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2016;7(5):885-92.
- [7] Teran-Perez G, Arana-Lechuga Y, Esqueda-Leon E, Santana-Miranda R, Rojas-Zamorano JA, Velazquez Moctezuma J. Steroid hormones and sleep regulation. *Mini reviews in medicinal chemistry*. 2012;12(11):1040-8.
- [8] Lara-Carrasco J, Simard V, Saint-Onge K, Lamoureux-Tremblay V, Nielsen T. Disturbed dreaming during the third trimester of pregnancy. *Sleep medicine*. 2014;15(6):694-700.
- [9] Okun ML, Tolge M, Hall M. Low socioeconomic status negatively affects sleep in pregnant women. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2014;43(2):160-7.
- [10] Neri I, Bruno R, Dante G, Facchinetti F. Acupressure on Self-Reported Sleep Quality During Pregnancy. *J Acupunct Meridian Stud*. 2016;9(1):11-5. Epub 2016/02/21.

- [11] Hung HM, Tsai PS, Ko SH, Chen CH. Patterns and predictors of sleep quality in Taiwanese pregnant women. *MCN: The American Journal of Maternal/Child Nursing*. 2013;38(2):95-101.
- [12] Fenwick J, Gamble J, Creedy D, Barclay L, Buist A, Ryding E. Women's perceptions of emotional support following childbirth. A qualitative investigation *Midwifery*. 2013;29(3):217-24.
- [13] Topf M. Hospital noise pollution: an environmental stress model to guide research and clinical interventions. *J Adv Nurse*. 2000;31(3):520.
- [14] Pallivalappila AR, Stewart D, Shetty A, Pande B, McLay JS. Complementary and alternative medicines use during pregnancy: a systematic review of pregnant women and healthcare professional views and experiences. *Evidence-Based Complementary and Alternative Medicine*. 2013;2013.
- [15] Tang NK, Lereya ST, Boulton H, Miller MA, Wolke D, Cappuccio FP. Nonpharmacological Treatments of Insomnia for Long-Term Painful Conditions: A Systematic Review and Meta-analysis of Patient-Reported Outcomes in Randomized Controlled Trials. *Sleep*. 2015.
- [16] Street W, Weed D, Spurlock A. Use of Music in the Treatment of Insomnia *Holist Nurs Pract*. 2014;28(1):38-42.
- [17] Whitaker M. Sounds soothing: music therapy for postoperative pain. *Nursing*. 2010;40(12):53-4.
- [18] Gold C, Heldal TO, Dahel T, Wigram T. Music therapy for schizophrenia of schizophrenia- like illnesses. *Music Therapy Perspectives*. 2009;31(2):91-8.
- [19] 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.
- [20] Callister L, Khalaf I. Spirituality in childbearing women. *The Journal of perinatal education*. 2010;19(2):16-24.
- [21] Toosi M, Akbarzadeh M, Zare N, Sharif F. The role of relaxation training in health index of infants in pregnant mothers. *Journal of Jahrom University of Medical Sciences*. 2013;11(1):15-21.
- [22] Gamble J, Creedy D, Moyle W. Counselling processes to address psychological distress following childbirth: perceptions of women. *Australian Midwifery*. 2004;17(3):12-5.
- [23] Johnson K, Tulskey J, Hays J, Arnold R, Olsen M, Lindquist J, et al. Which domains of spirituality are associated with anxiety and depression in patients with advanced illness? *Journal of general internal medicine*. 2011;26(7):751-8.
- [24] Rinehart W, Rudy S, Drennan M. GATHER guide to counseling. *Population reports Series J, Family planning programs*. 1998(48):1-31.
- [25] Shobeiri F, Taravati-Javad M, Soltani F, Karami M. Effects of Progressive Muscle Relaxation Counseling on Anxiety among Primigravida Women Referred to Health Care Centers in Hamadan. *Journal of Education and Community Health*. 2015;2(2):1-9.
- [26] Allami Z, Khankeh H, Dalvandi A, ali zademohammai M, Rezasoltani P. Effect of music-therapy on quality of sleep among elderly male of the Isfahan city petroleum's Retirement Association 2012. *Journal of Geriatric Nursing*. 2014;1(1):55-63.
- [27] Lazic SE, Ogilvie RD. Lack of efficacy of music to improve sleep: a polysomnographic and quantitative EEG analysis. *International Journal of Psychophysiology*. 2007;63(3):232-9.
- [28] Sanchez SE, Islam S, Zhong QY, Gelaye B, Williams MA. Intimate Partner Violence Is Associated with Stress-Related Sleep Disturbance and Poor Sleep Quality during Early Pregnancy. *PLoS One*. 2016;11(3):e0152199.
- [29] Liu YH, Lee CS, Yu CH, Chen CH. Effects of music listening on stress, anxiety, and sleep quality for sleep-disturbed pregnant women. *Women & health*. 2016;56(3):296-311.
- [30] Seyed Ahmadi Nejad FS, Golmakani N, Asghari Pour N, Shakeri MT. Investigation of Sleep quality during the third trimester of pregnancy and some related factors in primigravida women referred to health care centers in Mashhad. *Scientific Journal of Hamadan Nursing & Midwifery Faculty*. 2015;22(4):53-60.
- [31] Malekzadegan A, Moradkhani M, Ashayeri H, Haghani H. Effect of relaxation on insomnia during third trimester among pregnant women. *Journal of Faculty of Nursing and Midwifery, Iran University of Medical Sciences and Health Services*. 2010;23(64):52-8.
- [32] Jokar E, Rahmati A. The effect of stress inoculation training on anxiety and sleep quality in pregnant women in the third trimester of pregnancy. *Journal of Mental Health Principles*. 2015;17(2):62-8.
- [33] Chang E, Lai H, Chen P, Hsieh Y, Lee L. 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] Blanaru M, Bloch B, Vadas L, Arnon Z, Ziv N, Kremer I, et al. The effects of music relaxation and muscle relaxation techniques on sleep quality and emotional measures among individuals with posttraumatic stress disorder. *Mental Illness*. 2012;4(2).
- [35] Harmat L, Takács J, Bodizs R. Music improves sleep quality in students. *Journal of advanced nursing*. 2008;62(3):327-35.
- [36] Chang MY, Chen CH, Huang KF. Effects of music therapy on psychological health of women during pregnancy. *Journal of clinical nursing*. 2008;17(19):2580-7.

[37] Karami J, Momeni K, Alimoradi F. Prediction of sleep quality based on stress, depression and anxiety with role of mediator cognitive emotion regulation strategies in pregnant women. *Journal of Obstetrics Gynecology and Infertility*. 2016;19(9):1-10