Research Paper

Investigating the Effectiveness of Art Therapy Based on Painting on Sleep Quality of Pregnant Women

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ABSTRACT

Background: Various factors, such as pregnancy, can lead to irregular sleep patterns. Sleep disturbances are common during pregnancy, leading to adverse maternal and neonatal outcomes. Accordingly, this study aims to examine the effectiveness of art therapy based on painting on the sleep quality of pregnant women in the third trimester.

Methods: This was a quasi-experimental study followed by a pre-test, post-test design and a control group. The statistical population included pregnant women in their third trimester of pregnancy who were referred to 22 Bahman Health Center of Kerman City, Iran, in 2019. According to the inclusion criteria, 34 individuals were selected via the convenience sampling method and randomly assigned into the experimental (n=17) and the control group (n=17). To collect the data, we used the Pittsburgh sleep quality index. Then, twelve 90-min sessions of art therapy based on painting were carried out on the experimental group. After completing these sessions, we conducted a post-test. Data analysis was performed by multivariate analysis of covariance and the Bonferroni post hoc test in the SPSS software, version 26.

Results: Art therapy based on the painting had significant effects on sleep quality and its components (P<0.001), while no significant differences were found in the control group (P>0.05).

Conclusion: Art therapy based on painting can effectively improve pregnant women's sleep quality. Accordingly, applying this method is recommended to improve the status of these individuals.

Keywords: Art therapy, Painting, Sleep quality, Pregnancy, Third trimester

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1. Introduction

Various changes in pregnant women's status can disrupt their normal sleep pattern and impair their sleep quality, in a way that even many women who have not had any previous sleeping difficulty are more likely to have serious sleep problems during this period [1]. These problems may not return to pre-pregnancy conditions for years [2].

Complaints of sleep disorders throughout life are more common among women compared to men, and women are prone to sleep disturbances due to menstruation, pregnancy, menopause, and many hormonal changes, among which pregnancy brings about the biggest alteration in women's sleep quality [3]. Most sleep disturbances during pregnancy are seen in the third trimester [1, 4], the most obvious of which are frequent awakenings during the night and reduced subjective sleep quality. The former has been mentioned as the main sleep disturbance during pregnancy [1]. For instance, a study revealed that 90% of pregnant women wake up frequently during the night in their third trimester [5].

About 79% of pregnant women worldwide suffer from such disturbances along with poor sleep quality [6], and the prevalence of this issue in the third trimester has been reported at 94.8% in a study [4]. Thus, sleep disturbances are very common during this period [7] and if they are ignored or not resolved, a predisposing ground for psychological disorders is created in this period [8]. It can also have devastating effects on the mother and the fetus, including Preterm birth, cesarean section, stillbirth, preeclampsia, elevated blood pressure, gestational diabetes mellitus, low birth weight [9], jaundice, fetal hypoglycemia [6], increase in labor duration [8], forgetfulness [10], fatigue [4], weakening of mother-child relationship and attachment, prepartum and postpartum depression [11], decreased pain tolerance [12], fear of accepting the mothering role and caring for the infant [13], delay in walking and speech, and memory and learning disorders [14]. This indicates the importance and necessity of considering the quality of women's sleep during this period, in a way that improving the sleep quality of pregnant women has an undeniable role in the mental health of the mother, child, and family. Although sleep problems are very common in the third trimester of pregnancy and can have devastating effects on maternal and fetal health, they have received little attention and are considered a natural complication of pregnancy [15]. Therefore, high-quality and adequate sleep is necessary for the health and well-being of pregnant women in particular, which also contributes to the health and growth of the fetus [5].

As pharmacological treatments cause serious damage to maternal and fetal health during pregnancy, non-pharmacological therapies are preferred [16], one of which is art therapy. Art therapy is a type of psychotherapy that increases the awareness of oneself and others along with strengthening positive emotions. The most common and important art therapy tool is painting [17]. Art therapy based on painting reduces externalizing behaviors by expressing inner emotions and feelings that are difficult or impossible to express verbally [18]. Art therapy contributes to overcoming of problems, personal growth, internal change in the patient, and the reduction of disorders' clinical symptoms [19]. Besides, this method improves the overall health status of pregnant women [20].

Various studies have been conducted on the effectiveness of painting therapy on a wide range of psychological issues, such as poor sleep quality in different populations. Shahin [21] reported that painting therapy had significant effects on improving the sleep quality of children. Ebrahimi et al. [22] showed that participants in the painting therapy condition demonstrate significantly greater improvements in sleep quality and have reduced their sleep disorders. Perkins [23] concentrated on the effect of art therapy on the negative effects of hospitalization of patients in hospitals and found improved sleep quality in these subjects. Hence, because of the availability of painting therapy, compared to the previous solutions for sleep disturbances, a need for research in this field and the importance of studying this issue is felt more than before. However, in previous studies, the effectiveness of painting therapy interventions for sleep quality has been studied in different statistical communities, such as patients with cancer, autistics, and hospitalized patients [21-23]. However, no study is conducted to investigate the effectiveness of painting therapy on sleep quality in pregnant women. In addition to its decisive role in the health and future of both the mother and the fetus, impaired sleep quality during pregnancy can also lead to physical and psychological damage, which is irreparable in some cases. Accordingly, identifying and explaining therapeutic interventions that can be effective in controlling impaired sleep cycles and improving pregnant women's mental health is of great necessity. Hence, the present study aims to investigate the effectiveness of art therapy based on painting on the overall sleep quality and its components in pregnant women in their third trimester.

2. Methods

This was a quasi-experimental study based on a pre-test, post-test design with a control group. The statistical population of this study comprised 57 pregnant women in their third trimester referring to 22 Bahman Health and Treatment Center in Kerman City, Iran, during the autumn of 2019. The sample consisted of 34 women in their third trimester of pregnancy according to the inclusion criteria via the convenience sampling method. Since in experimental research, the sample size in each group is recommended to be at least 15 people [24-26], a total of 34 people was considered enough as the sample size. The participants were homogenized in terms of age, education level, gravida, history of abortion, and gestational age. The participants were randomly assigned into an experimental and a control group, each with 17 participants using a shuffled deck of cards.

The inclusion criteria comprised the following items: being in the third trimester of pregnancy, having first or second pregnancy experience, having 18 to 40 years of age, having minimum education of middle school, and a total score of 5 or more in the Pittsburgh Sleep Quality Index (PSQI), interest and informed consent of the participants to take part in the research, not receiving any simultaneous psychological intervention programs, not suffering from any kind of disease, and not taking any special medication. The exclusion criteria were reluctance to continue with the research; being absent for one session; any problem or inability that makes it difficult for the participant to attend; changes in the mental conditions of the participants because of an unpleasant event such as the death of a loved one; a high-risk pregnancy; and Preterm birth. Then, the questionnaire was distributed among the participants as the pre-test. The experimental group received art therapy based on painting package twice a week. However, the control group did not undergo any intervention. The pre-test questionnaire was repeated as a post-test for both groups 48 h after the last therapy session to neutralize the effects during the sessions.

Study instruments

The research instrument in this study was PSQI. This standard self-report scale was designed in 1989 by Buysse et al. to assess the quality of an individual's sleep over the past month and includes 18 questions, divided into 7 components, including subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. In each component, the participant's score will range from 0 to 3, with 0 indicating no sleep problems, 1 indicating moderate sleep problems, 2 indicating a serious sleep problem, and 3 indicating a very serious sleep problem. The total score of the questionnaire is obtained from the sum of the scores of the 7 components, which will be a number from 0 to 21; meanwhile, a score of 5 or higher indicates poor sleep quality [27]. The results regarding the validity and reliability of this index revealed a high internal consistency of 0.83 [27]. Qiu et al. examined this index's construct validity and factor structure among pregnant women and obtained the Cronbach α of 0.74 [28]. In another study, Mohammad Gholi Mezerji et al. examined the reliability and validity of the Persian version of this index. The Cronbach α coefficient was 0.65 and the content validity index was 0.90 [29]. This study's reliability of 0.76 was obtained using the Cronbach α method.

The experimental group received twelve 90-min sessions of art therapy based on painting twice a week at 22 Bahman Health and Treatment Center in Kerman City, Iran. To implement art therapy based on painting, the specified protocol for this research was designed by Ali Zadeh-Mohammadi (the founder and director of the Center for Art Therapy Studies in Iran) since no pre-prepared protocol existed in this field. The validity of this protocol has been confirmed by scholars with a correlation coefficient of 0.81. All therapy sessions were performed by the first author who had taken specialized workshops. A summary of the sessions is described in Table 1.

The data were analyzed using descriptive statistics (Mean and Standard Deviation [SD]) and inferential statistics (multivariate analysis of covariance [MANCOVA] and the Bonferroni post hoc test). All statistical analyses were performed via the SPSS software, version 26. The significance level was considered at 0.05.

3. Results

The demographic characteristics of the participants in the experimental and control groups are reported in Table 2. According to the Chi-square test (χ^2), no significant difference was observed between the groups in terms of demographic characteristics, namely age, education level, gravida, history of abortion, and gestational age (P>0.05).

The distribution of participants' scores on overall sleep quality and its components for the experimental and control groups in the pre-test and post-test phases is provided in Table 3.

Table 1. Art therapy based on painting protocol

Session	Objective	Content and Activity
1	Attracting group members and helping them bond with their fetus	Warm-up Practice: Introduction painting tools and their usage, asking participants to introduce themselves in one color. Main Practice: Communication with the fetus.
2	Knowing and understanding oneself; developing a positive attitude toward oneself	Warm-up Practice: Stains and butterflies. Main Practice: My body.
3	Expressing negative emotions and overcoming them	Warm-up Practice: Painting with the opposite hand. Main Practice: Expressing fears and worries.
4	Emotional expression; the reflection of family relationships and the member's positions	Warm-up Practice: From chaos to order. Main Practice: Family tree.
5	Internal relaxation	Warm-up Practice: Listening to a soothing sound and breathing, thinking about the fetus in their womb. Main Practice: Dream.
6	Recognizing different feelings and emotions	Warm-up Practice: Performing different emotions and feelings in pantomime. Main Practice: Emotions.
7	Group dynamics and interaction; familiarity and communication with the unknowns during pregnancy and the new parenting role; creating a positive attitude toward oneself	Warm-up Practice: Drawing a continuous line to be turned into a painting. Main Practice: self-image.
8	Recognizing the new parenting role and communicating with the child	Warm-up Practice: Forming creative shapes with colored paper and painting. Main Practice: Mothering role.
9, 10	Recognizing the feelings and changes of pregnancy and offering solutions; creating a positive attitude toward the pregnancy process	Warm-up Practice: Talking about individuals' experiences from previous sessions. Main Practice: Pregnancy booklet.
11	Feeling positive and hopeful	Warm-up Practice: Painting dreams. Main Practice: Support circle.
12	Expressing the individual's main and important feelings	Warm-up Practice: Talking about general feelings and experiences during the art therapy course. Main Practice: Group painting and post-test.

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Table 2. Demographic characteristics in experimental and control groups

Variable		No. (%)		χ^2	P
		Experimental	Control		
Age	>20	2(11.77)	1(5.88)	0.370	0.831
	20-30	13(76.46)	13(76.46)		
	31-35	2(11.77)	2(11.77)		
Education	Junior certificate and diploma	9(52.94)	9(52.94)	1.053	0.591
	Associate and bachelor's degrees	7(41.18)	7(41.18)		
	Master's degree	1(5.88)	1(5.88)		
Gravida	1st	13(76.47)	13(76.47)	0.000	1.000
	2nd	4(23.53)	4(23.53)		
History of abortion	Yes	2(11.77)	2(11.77)	0.000	1.000
	No	15(88.23)	15(88.23)		
Gestational age (week)	29	4(23.53)	5(29.41)	0.889	0.828
	31	5(29.41)	5(29.41)		
	33	4(23.53)	5(29.41)		
	35	4(23.53)	2(11.77)		

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*The Chi-square test; P<0.05 is significant.

Table 3. Mean±Standard Deviation of the variables in the experimental and control groups

Variables	Phases	Mean±SD	
		Experimental	Control
Subjective sleep quality	Pre-test	0.82±0.09	0.94±0.13
	Post-test	2.52±0.12	0.64±0.14
Sleep latency	Pre-test	2.29±0.16	2.47±0.15
	Post-test	0.82±0.15	2.05±0.24
Sleep duration	Pre-test	5.15±0.23	4.85±0.39
	Post-test	7.47±0.28	5.29±0.58
Sleep efficiency	Pre-test	1.76±0.27	1.41±0.29
	Post-test	2.82±0.12	1.58±0.37
Sleep disturbances	Pre-test	1.64±0.14	1.52±0.17
	Post-test	1.17±0.09	2.05±0.05
Daytime dysfunction	Pre-test	1.64±0.19	1.94±0.13
	Post-test	0.76±0.13	2.05±0.23
Total PSQI score	Pre-test	10.29±0.38	10.47±0.47
	Post-test	8.52±0.27	10.11±0.41

PSQI: Pittsburg Sleep Quality Index.

Before analyzing the data via MANCOVA, its assumptions were investigated and the results showed the following confirmed assumptions: the Shapiro-Wilk test for the assumption of normality for the sleep quality variable in the pre-test and post-test stages (P>0.05); based on the Box's M test, the assumption of homogeneity of covariance matrices (Box's M=6.17, F=1.93, P=0.10>0.05); and based on the Levene test, the assumption of homogeneity of error variances ($F_{1,35}$= 2.79, P=0.10). In addition, the homogeneity of the regression line slope test was examined by the interaction of sleep quality components in the pre-test and post-test stages. The interaction of these pre-tests with the independent variable was not significant, thus suggesting the homogeneity of the regression line slope (F=2.04, P=0.14). Therefore, the use of MANCOVA was possible. Moreover, the results of the Pillai trace ($F_{7,17}$=31.67, P=0.001, Pillai trace=0.93), Wilks lambda ($F_{7,17}$=31.67, P=0.001, Wilk lambda=0.07), and Hotelling trace ($F_{7,17}$= 31.67, P=0.001, Hotelling trace=13.04), revealed a significant difference at least in one component of sleep quality between the experimental and control groups.

The results of MANCOVA after the post-test showed a statistically significant difference between the mean scores of the experimental and the control group in the overall score of sleep quality and all sleep quality components, whereas no difference was observed between the two groups in the pre-test. Therefore, art therapy based on painting is effective in the overall sleep quality and its components in pregnant women (Table 4). Therefore, based on the significance of this test, it is possible to compare the groups in pairs using the Bonferroni post hoc test, the results of which are provided in Table 5.

The results of the Bonferroni post hoc test showed that the participant's scores in the experimental group in the post-test were significantly different from the scores of the control group. The difference between the mean of the post-test and the pre-test of the experimental group and the post-test of the control group in 3 components of subjective sleep, sleep duration and sleep efficiency revealed that after receiving art therapy based on painting, these components increased significantly in pregnant women compared to the control group in the post-test stage. Also, the participant's scores in the components of sleep latency, sleep disturbances, and daytime dysfunction showed that after receiv-

Table 4. Results of multivariate analysis of covariance on the scores variable in experimental and control groups

References	Stage	Variable	Total Squares	df	MS	F	P	Eta
Group	Post-test	Subjective sleep quality	22.29	1	22.29	56.70	0.001	0.74
		Sleep latency	8.34	1	8.34	8.88	0.007	0.28
		Sleep duration	14.75	1	14.75	12.59	0.002	0.35
		Sleep efficiency	13.05	1	13.05	9.19	0.006	0.28
		Sleep disturbances	3.99	1	3.99	43.20	0.001	0.65
		Daytime dysfunction	16.79	1	16.79	32.79	0.001	0.59
		Total PSQI score	24.52	1	24.52	9.39	0.004	0.24
Error		Subjective sleep quality	7.80	23	0.33			
		Sleep latency	21.62	23	0.94			
		Sleep duration	26.94	23	1.17			
		Sleep efficiency	23.64	23	1.41			
		Sleep disturbances	2.12	23	0.09			
		Daytime dysfunction	11.77	23	0.51			
		Total PSQI score	76.50	23	3.32			

PSQI: Pittsburg sleep quality index; *Multivariate analysis of covariance; P<0.05.

Table 5. Results of the bonferroni post hoc test to compare groups in terms of sleep quality components

Variables	Group	Weighted Mean	Means Difference	Standard Error	P	Confidence Level 0.95	
						Lower Limit	Upper Limit
Subjective sleep quality	Experimental	2.51	1.85	0.22	0.001	1.37	2.32
	Control	0.67	-1.85	0.22	0.001	-1.32	-1.37
Sleep latency	Experimental	0.86	-1.13	0.38	0.007	-1.91	-0.34
	Control	2	1.13	0.38	0.007	0.34	1.91
Sleep duration	Experimental	7.47	2.17	0.12	0.001	3.70	0.64
	Control	5.29	-2.17	0.12	0.001	-0.64	3.70
Sleep efficiency	Experimental	2.84	1.41	0.46	0.006	0.45	2.38
	Control	1.42	-1.41	0.46	0.006	-2.38	-0.45
Sleep disturbances	Experimental	1.22	-0.78	0.12	0.001	-1.02	-0.53
	Control	2	0.78	0.12	0.001	0.53	1.02
Daytime dysfunction	Experimental	0.59	-1.60	0.28	0.001	-2.18	-1.02
	Control	2.20	1.60	0.28	0.001	1.02	2.18
Total PSQI score	Experimental	10.07	1.57	0.61	0.018	0.29	2.84
	Control	8.50	-1.57	0.61	0.018	-2.84	-0.29

PSQI: Pittsburg sleep quality index; *The Bonferroni post hoc test; P<0.05.

ing art therapy based on painting, their scores decreased significantly compared to the control group in the post-test stage. Also, the overall sleep quality in pregnant women in the experimental group demonstrates an increase in sleep quality as well as the effectiveness of art therapy based on painting (Table 5).

Since the use of sleep medications (the sixth component) during pregnancy is forbidden and avoiding them was one of the study's inclusion criteria, the score of this component was considered 0.

4. Discussion

The present study aimed to examine the effectiveness of art therapy based on painting on the sleep quality of pregnant women in their third trimester. The results revealed that the intervention significantly affected the sleep quality of the participants in all components, namely subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, and daytime dysfunction, along with the total score of PSQI. Accordingly, the intervention increased total sleep quality, subjective sleep quality, sleep duration, and sleep efficiency, while decreasing sleep latency, sleep disturbances, and daytime dysfunction when compared to the control group that received no intervention during study time. Since taking hypnotic drugs (the sixth component) is forbidden during pregnancy and not taking these drugs was one of the study's inclusion criteria, the score of this component was considered 0.

Sleep quality is a pivotal factor in the quality of life as it is a window into each person's emotional functioning [21]. The results are consistent with the results of other similar studies. For instance, Shahin's study which was conducted to investigate the effectiveness of painting therapy on the sleep quality of children with cancer showed that painting therapy can be an appropriate technique as a psychological intervention to increase the sleep quality of this group [21]. Ebrahimiet al. investigated the effectiveness of painting therapy on children's sleep with autism and their findings showed that the intervention group had a significant improvement in sleep quality when compared to the control group [22]. Perkins focused on the effects of various types of art therapy, including painting, on hospitalization consequences, such as impaired sleep quality. The findings of his study indicated that this intervention was significantly effective in the amelioration of sleep quality in hospitalized patients [23]. Although the statistical population of the current study (pregnant women) differs significantly from the participants of the mentioned experimental studies, the results can be compared because some techniques in art therapy are included in the package of art therapy based on painting.

The explanation of this study's findings can be sought in the nature of painting therapy. Painting has a refining action that helps to act out the negative emotions that exist in individuals. Accordingly, the participants can represent themselves creatively and reduce their negative feelings. In other words, painting is an attractive and privileged means of expressing emotion that can be therapeutic in nature [21]. Painting therapy is effective for developing non-verbal collaborations and communication. It also bypasses the pre-verbal level of the conscious and gives the therapist and the participant a concrete understanding of a problem of which the individual may have been unaware [18].

Another explanation is the relationship between the therapist and the participants. Painting therapy creates a safe atmosphere. Also, painting as a means of expression helps in expressing many emotions and feelings not released in any other form. For this reason, the process of artistic creation is inherently capable of treatment and healing [18]. By externalizing the problem through art, it becomes possible to relate to and deal with it. Finally, considering the described cases, it leads to many benefits, one of which is reduced sleep problems [17]. Also, these findings can be explained in terms of the amelioration of sleep quality as a result of positive feelings and hopefulness brought in pregnant women so they could have a positive attitude toward themselves and pregnancy without being concerned over negative thoughts [20].

These results are inconsistent with the results of some similar research [18, 30, 31]. Hejri et al. [18] determined the effectiveness of painting therapy on emotional-behavioral problems. It was concluded that painting therapy did not affect the somatic complaints of internalized problems and the rule-breaking behavior of externalized problems. In the study of Bazargan and Pakdaman [30], the effectiveness of painting therapy in reducing internalizing and externalizing problems was investigated and the reduction of externalizing problems was not significant. Jing et al. [31] examined the effect of painting therapy on quality of life and the results showed that painting did not have a significant effect.

One interpretation for the difference between the findings of these studies and the present study could be due to the difference in sample size and the statistical population, namely children with cancer, female adolescent students, hospitalized schizophrenic patients in those studies, and pregnant women in the present study.

Another interpretation is the number of painting therapy sessions a way that in other research, it included 6 sessions, while there were 12 sessions in the present study. Thus, it can be concluded that the number of intervention sessions was insufficient which could negatively affect the bond between participants and therapists. Also, the participants were reluctant to attend sessions in those studies, hindering the bond formation between the participants and the therapists, which could affect the results negatively. However, in this study, they were willing to take part in the sessions and signed a letter of satisfaction.

Additionally, the group was not homogeneous in a study by Hejri et al. [18]. However, the participants in this study were homogenized in terms of age, education level, gravida, history of abortion, and gestational age. Furthermore, there was a drop in the sample size (9 individuals), while this was not the case in this study.

The following items were the limitations of this study: 1) the convenient sampling method was used because of the limitation in accessing the intended participants for sampling; 2) the follow-up test was not possible as many of the pregnant women went for delivery and became engaged in postpartum care. Accordingly, the consistency of the intervention effects has not been examined in the long term. Therefore, it is suggested that other researchers interested in this field conduct the same research with a larger population and via other sampling methods, especially with participants from other cultures or cities to contribute to the findings of this study. Also, they can give follow-up tests if pregnant women are available after delivery. It is further suggested that other psychological interventions in ameliorating sleep quality be used and their results be compared with this study.

5. Conclusion

This study tried to use art therapy based on painting to improve the overall quality of sleep and its components in pregnant women in the third trimester of pregnancy. The findings indicated that this type of intervention can affect the sleep quality of pregnant women. This intervention has increased the overall sleep quality, subjective sleep quality, sleep duration, and sleep efficiency while reducing sleep latency, sleep disturbances, and daytime dysfunction. Therefore, considering the effectiveness of this method, it is recommended to adopt a therapeutic approach that is a combination of education and art therapy methods for pregnant women.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Research Ethics Committee of Shahid Bahonar the University of Kerman (Code: E.A.98.09.10.01).

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Authors' contributions

Conceptualization and Supervision: Ghasem Askarizadeh; Methodology: Latifeh Sharifpour; Investigation, writing–original draft, and writing–review: Latifeh Sharifpour; Editing: Latifeh Sharifpour and Masoud Bagheri; Data collection: Latifeh Sharifpour; Data analysis: Latifeh Sharifpour and Ghasem Askarizadeh.

Conflict of interest

The authors declare no conflict of interest.

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