



# The Effects of Sleep and Touch Therapy on Symptoms of Fibromyalgia and Depression

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## Abstract

**Background:** Many alternative interventions are practiced in an effort to reduce symptoms of fibromyalgia. The aim of this study was to determine the effects of sleep and touch therapy accompanied by music and aromatherapy on the symptoms of fibromyalgia and depression.

**Methods:** The study was carried out between September 2009 and March 2011 in the Physical Medicine and Rehabilitation Polyclinic in Trabzon, Turkey. The sample consisted of 162 female patients and had been diagnosed with fibromyalgia at least 6 months prior to the study. Since the sample contains two intervention groups and one control group, each group was assigned 54 patients. Data were collected through a Personal Information Form, a Fibromyalgia Symptom Form and the Beck Depression Index. The study employed a pre-test/post-test control group design. A paired sample *t*-test was used in the comparisons of the in-group scale points; the chi-square in the intergroup comparisons, and the McNamer test in the in-group comparisons.

**Results:** After the interventions, it was observed that the depression levels in the touch-music-aroma therapy group showed a larger decrease (before:  $22.01 \pm 5.3$ ; after:  $14.52 \pm 3.7$ ) than in the sleep-music-aroma therapy group (before:  $24.81 \pm 5.1$ ; after:  $20.16 \pm 4.9$ ) and control groups (before:  $23.73 \pm 4.4$ ; after:  $21.05 \pm 2.6$ ). Symptoms such as restless sleep, headache, morning fatigue, exhaustion, feeling like crying and bowel complaints were also significantly reduced ( $P < 0.05$ ).

**Conclusion:** It is suggested that nurses providing healthcare to FMS patients should also offer these patients aromatherapy, sleep, music and touch therapies.

**Keywords:** Aroma, Touch, Fibromyalgia, Music, Symptoms, Turkey

## Introduction

Fibromyalgia is a chronic disease characterized by sensitive points on the body that manifest common musculoskeletal pains, fatigue, and low pain threshold. Although there is no clear-cut data about the prevalence and incidence of FMS in the world, prevalence is generally between 6% and 20% (1). 80%-90% of patients with a diagnosis of fibromyalgia are female and that the age of onset of fibromyalgia is between 30 and 50 (2). The prevalence of fibromyalgia among females in the 20-64 age group was 3%-6% and 80%-90% of all

FMS patients were female in Turkey (3, 4).

Because no specific cause has been associated with FMS, it is difficult to speak about a definite treatment. Fibromyalgia syndrome can easily be diagnosed through a good history of the patient and a detailed physical examination. The ACR criteria released in 1999 are employed for the diagnosis (5). The pain of whole body, morning stiffness, fatigue and exhaustion, sleep disorders, restless sleep, awakening from sleep, difficulty in falling asleep, depression/anxiety/panic attacks,

migraine/headaches and gastrointestinal problems are the most common symptoms for FMS (6-17). Touch therapy, massage, aromatherapy, reflexology and acupuncture can be effective in improving the life quality of FMS patients (18). Nurses are the most suitable professional group to ensure the inclusion of complementary treatment methods in the healthcare system. The role of the nursing profession in this process will be to carry out evidence-based complementary treatment applications (19, 20).

This study is of great importance in that it attempts to show the effects on patient health of complementary treatment methods used by nurses on the field in their approach to chronic diseases. In Turkey, public health nurses are assigned a significant role in homecare and are able to regularly visit patients in their homes. These visits serve not only to identify problems and accordingly take the necessary measures to find solutions, but they also create a basis for identifying the effects of therapeutic touch and music therapy on patients and understanding the impact of the development of positive relationships between nurses and patients.

The aim of this study was to determine the effects of sleep and touch therapy accompanied by music and aromatherapy on the symptoms of fibromyalgia and depression.

## Materials and Methods

This study employed a pre-test/post-test control group design. The study was carried out between September 2009 and March 2011 with a sample of female patients with a diagnosis of fibromyalgia living in the city center of Trabzon who applied to the Physiotherapy Clinic of the Farabi Hospital, Medical Faculty, Karadeniz Technical University.

The population of the study contained female patients who had been diagnosed with fibromyalgia at least 6 months prior to the study. Male patients were not included in the study because of restrictions placed by reasons of religious belief on having a massage performed by a female researcher. Another reason for the inclusion of only female

patients in the study was that FMS is more prevalent in females.

The size of the research sample was determined using PASS (Power Analysis and Sample Size). Of the female patients who consented to participate in the study, those who applied to the hospital on Mondays were assigned to the intervention group of Sleep+Music+Aroma (SMA); those who applied on Wednesdays were assigned to the intervention group of Touch+Music+Aroma (TMA); and, those who applied on Fridays were assigned to the control group. Since the sample contains two intervention groups and one control group, each group was assigned 54 patients. A homogeneity test was performed to determine whether there were differences among the groups in terms of independent variables. The absence of statistically significant differences between groups indicates that each group was similar with regard to socio-demographic characteristics. None of the patients from any of the three groups withdrew from the study before completion. The study has a 95% confidence interval and 0.5 level of confidence 0.05 alpha level.

### Intervention

The general planning of therapies was as follows:

*The 1<sup>st</sup> Meeting (No intervention in the first week):* The researcher introduced herself to the patients, provided them with information about the study, obtained their consent, administered the pre-tests, and set up appointments for the second meeting.

*The 2<sup>nd</sup> and 3<sup>rd</sup> Meetings (The second meeting took place in the first week):* The forms were filled out using the face-to-face interview technique, education was provided about FMS, treatment (15 minutes) was implemented, and appointments were set up for the next meetings.

*The 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> Meetings (Twelve interventions every other day for six weeks):* Patients were informed about the therapies, treatment was started, after-treatment education was provided, and appointments were set up for the next meeting (each intervention, together with the education, was completed in approximately 50 minutes). *The 10<sup>th</sup> Meeting (Last week, post-test):* The tests were per-

formed a second time using the face-to-face interview technique, which ended the interaction with the patients.

The therapy lasted for 6 weeks of two sessions a week (every other day) for each patient, and each session lasted 30-35 minutes (Massage, 30-35 minutes; sleep, 30-35 minutes). No post-test intervention was carried out. At the end of the sixth week, the BDI and symptom questionnaire that had been implemented at the last meeting were administered once again.

**Touch+Music+Aroma Therapy (TMA):** In the touch therapy of the FMS patients in the present study, finger massage was applied to the sensitive fibromyalgia points described in related literature (21,22) by gently pressing with the fingertips just enough for the patient to feel the pressure, and by rubbing each pre-determined point for 3-5 seconds. Based on the related literature, patients were asked to listen to four different pieces of music (in Hüseyni, Saba, Rast and Uşşak maqams (a maqam, or muqam, is a type of melody or musical mode in classical Turkish music), and then they were asked to state which music they liked (23). As suggested in the related literature (24,25), all the patients in the TMA group were also asked to smell different aromas. To carry out this application, the researcher obtained the necessary permission from the Department of Pharmacognosy of Gazi University (Permission No. 4/1/2010), Ankara, Turkey. Each patient smelled lavender, mint, orange, rose, chamomile, Asiatic dayflower, rosemary, common sage and linden one by one, and then were asked to state which of these gave them relief. In this way, the researcher identified the most suitable aroma for each patient. During the treatment, the aroma chosen by each patient was sprayed in the treatment room in two puffs. In the TMA group, music and aroma were applied throughout the treatment. For each patient, the TMA therapy lasted 6 weeks for two days a week (every other day) and each session lasted 30-35 minutes.

**Sleep+Music+Aroma Therapy (SMA):** After the patients selected their own music and aroma, they lay down on the bed in the treatment room, the patients listened to the music they liked through

headphones, and while they were listening to the music, the aroma that they liked was sprayed in the room in two puffs at 15-minute intervals. The patients were left in the room alone, accompanied by music and aromas, and the researcher entered the room only after 30-35 minutes. The SMA therapy lasted 6 weeks for two days a week (every other day) for each patient, and each session lasted 30-35 minutes.

After each session of each group, the researcher educated the patients by giving them some general information about FMS through the use of texts and visuals. Each educational session lasted 15 minutes.

#### ***Data collection process***

A Personal Information Form, a Fibromyalgia Symptom Questionnaire, and the Beck Depression Index were employed in data collection.

**Personal Information Form:** This form elicits information from respondents about their age, educational background, marital status, monthly income, job, duration of illness, and whom they live with. The form was developed by the researcher based on the related literature.

**Fibromyalgia Symptom Form:** This form was developed by the researcher and contains 12 items that aim to identify fibromyalgia symptoms. The items in this form elicit information about morning fatigue, morning stiffness, exhaustion, restless sleep, sleeplessness, pain, headache, tiredness after low-effort jobs, being easily distracted when doing something, exaggerated reactions to different things, a continuous feeling like crying, and bowel complaints. Respondents were required to respond to the items as “yes” or “no.”

**Beck Depression Index (BDI):** The BDI assesses the physical, emotional, cognitive and motivational symptoms that are seen in depression. It is a self-assessment scale that contains 21 symptom categories. In each category, the items have four options and the respondent is asked to choose one of the four options that best describes him/her. Each item contains four statements. These statements are in order from neutral (0 points) to the severest condition (3 points). The

statements in this scale were created on the basis of the statements of the patients under treatment. The highest score is 63. The 0-13 point range is evaluated as “no depression,” the 14-24 point range as a “medium level of depression,” and the 25 and above range as “serious depression.” In the present study, the patients read the statements, choosing those that best described themselves. The BDI was developed by Beck (26) and its validity and reliability work was carried out by Hisli (27).

### Data Analysis

The *t*-test was used for the comparison of the in-group scale scores, the Chi-square test was used in the between-groups comparison, and the McNamer test was used in the in-group comparison. The analysis of variance (ANOVA) and the post-hoc multiple comparison test were used to compare the three groups. The findings were presented in mathematical means,  $\pm$  standard deviation and percentages (%). The findings were evaluated at the 95% confidence interval, and the significance at the  $P < 0.05$  level.

### Ethical Issues

The participants were informed that they were free to participate or refuse to participate in the study, and those who were willing to participate were included in the study. The research took place in Trabzon, and the approval of the Ethical Committee in Trabzon was also obtained (Permission No. 75/10-07-01-2010). In addition, the chief physician and the Physiotherapy and Rehabilitation Clinic of the Farabi Hospital were also informed in writing and their permissions obtained.

### Criteria for inclusion in the study;

- being an FMS patient who was diagnosed according to the ACR 1990 criteria
- being in the 30-55 age group (because FMS is prevalent in this age group)
- having no previous diagnosis of asthma and allergy (due to the nature of the aromatherapy treatment)

- being a female
- voluntarily participating in the study

## Results

The control and study TMA and SMA groups were compared and it was found that there were no statistically significant differences between the pre-test point averages of the groups in terms of personal characteristics of patients.

The average ages of the participants in the three groups were found to be as follows: the average age of the patients in the control group was  $42.96 \pm 11.45$ , and  $42.74 \pm 11.89$  among the patients in the TMA group,  $41.70 \pm 12.15$  among the patients in the SMA group. As for marital status, it was found that 83.3% of the patients in the control group, 75.5% of the patients in the TMA group, and 75.5% of the SMA group were married. In terms of educational background, it was found that 42.6% of the control group, 37.0% of the TMA group, and 35.2% of the SMA group were primary school graduates. As concerned employment, it was found that 79.5% of the control group, 70.4% of the TMA group, and 79.4% of the SMA group were housewives and that all the patients in the three groups had health insurance. In terms of the duration of the illness, it was found that 37.0% of the control group, 31.5% of the TMA group, and 29.5% of the SMA group had been afflicted with the illness for a period of 11-24 months (Table 1).

The pre-test results of the Control, TMA and DMA groups show that there was no significant difference among the patients in the three groups in terms of morning stiffness ( $X^2=0.93$ ), exhaustion ( $X^2=3.20$ ), restless sleep ( $X^2=1.46$ ), sleeplessness ( $X^2=0.89$ ), headache ( $X^2=0.95$ ), tiredness after low-effort jobs ( $X^2=0.93$ ), being easily distracted during any activity ( $X^2=3.09$ ), exaggerated reactions to things ( $X^2=5.91$ ), feeling like crying ( $X^2=2.12$ ), and bowel complaints ( $X^2=0.34$ ) (Table 2). This shows that the patients in all groups were homogeneous.

**Table 1:** The distribution of the patients in terms of their personal characteristics

Patient Characteristics	Control Group		Touch+Music+Aroma Group (TMA)		Sleep+Music+Aroma Group (SMA)	
	n	(%)	n	(%)	n	(%)
<b>Marital Status</b>						
Married	45	(83.3)	40	(75.5)	40	(75.5)
	6	(11.1)	10	(16.9)	10	(16.9)
Widow	3	(5.6)	4	(7.6)	4	(7.6)
<b>Level of Education</b>						
Illiterate	7	(13.0)	7	(13.0)	5	(9.3)
Literate	8	(14.8)	7	(13.0)	5	(9.3)
Primary School	23	(42.6)	20	(37.0)	19	(35.2)
Secondary School	5	(9.2)	2	(3.8)	11	(20.4)
High School	9	(16.7)	13	(24.0)	8	(14.7)
University	2	(3.7)	5	(9.2)	6	(11.1)
<b>Employment Status</b>						
Housewife	43	(79.5)	38	(70.4)	43	(79.4)
Worker	5	(9.3)	1	(1.9)	3	(5.6)
Civil Servant	4	(7.4)	6	(11.2)	2	(3.8)
Student	1	(1.9)	3	(5.6)	3	(5.6)
Retired	1	(1.9)	1	(1.9)	3	(5.6)
<b>Social Security</b>						
Social Insurance Institution	26	(48.1)	28	(51.8)	28	(51.8)
Retirement Fund of Civil Servants	14	(25.9)	11	(20.4)	12	(22.2)
Social Security Organization for the Self-employed	11	(20.4)	13	(24.1)	11	(20.4)
Green Card	3	(5.6)	2	(3.7)	3	(5.6)
<b>Duration of Illness</b>						
1-5 months	11	(20.4)	13	(24.1)	13	(24.1)
6-10 months	2	(3.7)	2	(3.7)	7	(13.0)
11months-2 years	20	(37.0)	17	(31.5)	16	(29.5)
3 - 7 years	14	(25.9)	13	(24.1)	9	(16.7)
above 8 years	7	(13.0)	9	(16.6)	9	(16.7)
	$\bar{X} \pm SS$		$\bar{X} \pm SS$		$\bar{X} \pm SS$	
<b>Monthly Income</b>	875±3.77		963±4.80		876±4.27	
<b>Age</b>	42.96±11.45		42.74±11.89		41.70±12.15	

A look into the between-groups comparison of the Fibromyalgia Symptom Form post-tests in the Control, TMA and SMA Groups shows that there was a significant difference in terms of the variables of morning tiredness ( $X^2=35.49$ ,  $P<0.05$ ), exhaustion ( $X^2=10.12$ ,  $P<0.05$ ), restless sleep ( $X^2=6.37$ ,  $P<0.05$ ), tiredness after low-effort jobs ( $X^2=8.56$ ,  $P<0.05$ ), feeling like crying ( $X^2=8.99$ ,

$P<0.05$ ), and bowel complaints ( $X^2=24.31$ ,  $P<0.05$ ), while there was no significant difference in terms of the variables of morning stiffness ( $X^2=3.85$ ), sleeplessness ( $X^2=3.39$ ), pain ( $X^2=2.42$ ), headache ( $X^2=0.34$ ), being easily distracted during activity ( $X^2=315$ ), and exaggerated reactions to things ( $X^2=7.85$ ) (Table 3).

**Table 2:** The between-groups comparison of the fibromyalgia symptom form pre-tests in the control, tma and sma groups

Symptoms		Pre-test Points						X <sup>2</sup> df *P
		Control		TMA		SMA		
		Yes	No	Yes	No	Yes	No	
Morning Fatigue	n	54	-	54	-	54	-	
	(%)	(100)	-	(100)	-	(100)	-	
Morning Stiffness	n	39	15	35	19	39	15	0.93 2 >0.05
	(%)	(72.2)	(27.8)	(64.6)	(35.2)	(72.2)	(27.8)	
Exhaustion	n	40	14	47	7	41	13	3.20 2 >0.05
	(%)	(74.1)	(25.9)	(87.0)	(13.0)	(75.9)	(24.1)	
Restless sleep	n	44	10	48	6	44	10	1.46 2 >0.05
	(%)	(81.5)	(18.5)	(88.9)	(11.1)	(81.5)	(18.5)	
Sleeplessness	n	43	11	42	11	39	15	0.89 2 >0.05
	(%)	(79.6)	(20.4)	(77.8)	(20.4)	(72.2)	(27.8)	
Pain	n	54	-	54	-	54	-	
	(%)	(100)	-	(100)	-	(100)	-	
Headache	n	33	21	42	12	32	22	0.95 2 >0.05
	(%)	(61.1)	(38.9)	(77.8)	(22.2)	(59.3)	(40.7)	
After low-effort works	n	46	8	45	9	46	8	0.93 2 >0.05
	(%)	(85.2)	(14.8)	(83.3)	(16.7)	(85.2)	(14.8)	
Quick distraction of concentration during any activity	n	31	23	36	18	27	27	3.09 2 >0.05
	(%)	(57.4)	(42.6)	(66.7)	(33.3)	(50.0)	(50.0)	
Exaggeration in reactions to things	n	33	19	24	29	29	24	5.91 2 >0.05
	(%)	(61.1)	(35.2)	(44.4)	(53.7)	(53.7)	(44.4)	
Feeling like crying	n	26	28	19	35	20	34	2.12 2 >0.05
	(%)	(48.1)	(51.9)	(35.2)	(64.8)	(37.0)	(63.0)	
Complaints from the bowels	n	27	27	26	28	24	30	0.34 2 >0.05
	(%)	(50)	(50)	(48.1)	(51.9)	(44.4)	(55.6)	

\*Significant at the  $P < 0.05$  level**Table 3:** The between-groups comparison of the fibromyalgia symptom form post-tests in the control, tma and sma groups

Symptoms		Post-Test Points						X <sup>2</sup> df *P
		Control		TMA		SMA		
		Yes	No	Yes	No	Yes	No	
Morning Fatigue	n	48	6	43	11	44	10	35.49 6 <0.05
	(%)	(88.9)	(11.1)	(79.6)	(20.4)	(81.5)	(18.5)	
Morning Stiffness	n	36	18	24	30	34	20	3.85 2 >0.05
	(%)	(66.7)	(33.3)	(44.4)	(55.6)	(63.0)	(37.0)	
Exhaustion	n	40	14	33	21	37	17	10.12 2 <0.05
	(%)	(74.1)	(25.9)	(61.1)	(38.9)	(68.5)	(31.5)	

Table 3: Cond....

Restles Sleep	n	38	16	34	20	30	24	6.37 2 <0.05
	(%)	(70.4)	(29.6)	(63.0)	(37.0)	(55.6)	(44.4)	
Sleeplessness	n	39	15	32	22	24	30	3.33 2 >0.05
	(%)	(72.2)	(27.8)	(59.3)	(40.7)	(44.4)	(55.6)	
Pain	n	48	6	43	11	44	10	2.42 2 >0.05
	(%)	(88.9)	(11.1)	(79.6)	(20.4)	(81.5)	(18.5)	
Headache	n	31	23	31	23	24	30	0.34 2 >0.05
	(%)	(57.4)	(42.6)	(57.4)	(42.6)	(44.4)	(55.6)	
Tiredness after low-effort works	n	39	15	34	20	31	23	8.56 2 <0.05
	(%)	(72.2)	(27.8)	(63.0)	(37.0)	(57.4)	(42.6)	
Quick distraction of concentration during any activity	n	25	29	32	22	22	32	3.15 2 >0.05
	(%)	(46.3)	(53.7)	(59.3)	(40.7)	(40.7)	(59.3)	
Exaggeration in reactions to things	n	22	32	15	39	30	24	7.85 4 >0.05
	(%)	(40.7)	(59.3)	(27.8)	(72.2)	(55.6)	(44.4)	
Feeling like crying	n	20	34	8	46	31	23	8.99 2 <0.05
	(%)	(37.0)	(63.0)	(14.8)	(85.2)	(57.4)	(42.6)	
Complaints from the bowels	n	25	29	11	43	32	22	24.31 2 <0.05
	(%)	(46.3)	(53.7)	(20.4)	(79.6)	(59.3)	(40.7)	

\*Significant at the  $P<0.05$  level

After the intervention, according to the One-way Anova Test, a statistically significant difference was observed between the control group and the study groups for BDI [TMA (Before:  $22.01\pm 5.3$ ,

After:  $14.52\pm 3.7$ ); SMA (Before:  $24.81\pm 5.1$ , After:  $20.16\pm 4.9$ ); Control (Before:  $23.73\pm 4.4$ , After:  $21.05\pm 2.6$ )] (Table 4).

Table 4: Intergroup comparison of the beck depression index

*BDI	TMA		SMA		Control	
	Before treatment $\bar{X} \pm SS$	After treatment $\bar{X} \pm SS$	Before treatment $\bar{X} \pm SS$	After treatment $\bar{X} \pm SS$	Before treatment $\bar{X} \pm SS$	After treatment $\bar{X} \pm SS$
	$22.01\pm 5.3$	$14.52\pm 3.7$	$24.81\pm 5.1$	$20.16\pm 4.9$	$23.73\pm 4.4$	$21.05\pm 2.6$
**P	0.15	0.01	0.37	0.02	0.62	0.07
f	1.85	6.91	0.99	3.90	0.47	4.16

\*One-Way Anova test was used

\*\*Significant at the  $P<0.05$  level

When the preferences for music types (maqam) in the study groups are examined, it can be seen that in the TMA group, 44.4% preferred the Uşak maqam, 27.8% the Rast, 16.7% the Hüseyini and 11.1% the Saba maqam. On the other hand, in the SMA group, 29.7% preferred the Uşşak maqam, 27.7% the Rast, 20.4% the Hüseyini and 22.2% the Saba. As for the aroma preferences in the study groups, in the TMA group, 46.3% preferred lavender, 27.8% orange, 24.1% rose, 1.9% Asiatic dayflower, while no patients in this group preferred mint and rosemary. In the SMA group, 37.0% preferred lavender, 27.8% rose, 11.6% orange, 9.3% Asiatic dayflower, 7.5% mint, and 7.3% rosemary.

## Discussion

Although the literature on FMS (28,29) refers to some alternative methods that have the effect of diminishing symptoms in patients diagnosed with FMS, there is no program in Turkey implemented in the hospitals or in patients' homes for FMS patients. The aim of this study was to investigate the effects of sleep and touch therapy accompanied by music and aromatherapy on the symptoms of fibromyalgia and depression, and the findings were evaluated under the light of related literature. This study has found the most common symptoms in the FMS patients to be as follows: pain, morning fatigue, restless sleep, sleeplessness, and exaggerated reactions to things. A study mentioned that 100% of FMS patients have pain, 91.3% sleep disorder, 90.1% restless sleep, 95.1% fatigue and similar symptoms (30). Other study found that 98% of FMS patients have pain, 56% sleep disorder, 92% fatigue and other symptoms, while another study reported that FMS patients have pain, fatigue, sleep disorder and depressive complaints (12, 31). A study conducted with 171 FMS patients revealed that 83% of the patients had headache, 95% fatigue, and 76% sleep disorder (32). The findings of this study are similar to the findings in the literature.

There are some studies in the literature that show that various complementary treatments have been used in the treatment of some diseases and that

these treatments have been effective in patients (7, 29, 33). That the present study has found some statistically significant differences between the symptoms in the FMS patients before and after the intervention is an indication that such interventions improve the symptoms. This finding of the study supports the hypothesis that "sleep and touch interventions accompanied by music and aromatherapy reduce FMS symptoms."

Studies on FMS have revealed that levels of depression and anxiety are high in FMS patients (15, 34-36). The presence of depression in FMS patients in the present study is congruent with the findings in the literature. A significant difference can be seen between the mean BDI points of the patients in the TMA and SMA groups obtained before and after the treatment. This finding shows that the interventions had a positive impact on depression in FMS patients. A study conducted with 116 patients where they found that the depression is significantly more prevalent in FMS patients compared to non-FMS patients and concluded that it is important that the treatment of the FMS patient must also include treatment of depression (36). With the implementation of different programs in connection with FMS patients, another study mentioned that different educational and exercise programs are effective in the treatment of depression in FMS patients (37). The small difference in the mean scores in the BDI in the SMA group is thought to be the result of the fact that the room in which the intervention took place was inappropriate since patients were bothered by the noise coming in from outside during the intervention even though they were wearing headphones.

Many studies that have used music and aroma in the treatment of some diseases can be found in the literature (38, 39). Lavender aroma applied through inhalation had an impact on anxiety, pain and depression (24). It has been stated that the Uşşak maqam is effective in stimulating feelings of relief, joy and strength in patients with various diseases. The present study chose music and aroma types that are found in the literature, and found that patients mostly preferred the Uşşak maqam and the lavender aroma. Many studies



have shown that if patients are permitted to choose their favorite music, this contributes to their recovery (40). The patients in this study, too, were allowed to choose their favorite music type and this was seen to improve many of the patients' symptoms.

## Conclusion

The aim of this study was to investigate the effects of sleep and touch therapy accompanied by music and aromatherapy on the symptoms of fibromyalgia and depression, and the findings are as follows (These results support the study hypotheses):

- The TMA intervention reduced FMS symptoms in patients, and the change is statistically significant.
- The SMA intervention reduced FMS symptoms in patients, and the change is statistically significant.
- The education given to the patients in both the TMA and SMA groups during the intervention was effective in decreasing the symptoms.
- The TMA and SMA interventions were effective in decreasing the level of depression in patients.
- The TMA and SMA interventions in the experimental groups were effective interventions.

*In line with these conclusions, the following recommendations can be made:*

- Nurses providing healthcare to FMS patients should also offer these patients aromatherapy, sleep, music and touch therapies.
- Nurses that are to apply such therapies to FMS patients should educate and improve themselves in this area.
- Patients and healthcare-providers should be appropriately educated so that they can conduct such interventions on their own.
- FMS patients should be continuously educated about their illness.

## Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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