Explore 20 (2024) 222–230

Contents lists available at ScienceDirect

EXPLORE

journal homepage: www.elsevier.com/locate/jsch

Original Research

The effect of therapeutic touch on sleep quality and fatigue in menopausal women

Özlem Yalcinkaya [a], Ebru Gozuyesil [b,*]

[a] Turkey Republic Ministry of Health Tepecik Training and Research Hospital, Gaziler Cd, No:468, Yenişehir, Konak, İzmir 35020, Turkey
[b] Midwifery Department, Faculty of Health Sciences, Çukurova University, Adana 01330, Turkey

ARTICLE INFO

Keywords:
Menopause
Therapeutic touch
Sleep
Fatigue
Women

ABSTRACT

Background and aims: The management of well-known and common complaints such as insomnia and fatigue experienced in the menopausal period has the potential to affect many aspects of life in women during this period positively. This research was carried out to determine the effect of therapeutic touch on sleep quality and fatigue in menopausal women.

Methods: This randomized controlled experimental study was conducted with 48 (24 in the intervention group and 24 in the control group) women who sought treatment in the gynecological outpatient clinic of a public hospital. According to the study procedure, while the intervention group received therapeutic touch, the control group received SHAM therapeutic touch for 10 min a day for five consecutive days. Data were collected through the Personal Information Form, the Pittsburgh Sleep Quality Index, and the Piper Fatigue Scale.

Results: The median post-test total sleep quality score was significantly lower in the intervention group than in the control group (p=0.010). However, the mean total fatigue scores did not differ significantly between the groups (p=0.917).

Conclusions: The results of this study showed that therapeutic touch was effective in improving sleep quality, but it did not affect fatigue in menopausal women.

Introduction

Menopause is a physiological event defined as the permanent cessation of menstruation and the loss of reproductive ability as a result of the decrease in estrogen production.[1] Menopause is an important life event that has medical, psychosocial, and cultural importance for women. Changes experienced in this period are investigated as the effects of early, middle, and late periods of the decrease in estrogen levels. The early period includes vasomotor, psychological, and sleep changes; the middle period includes the genitourinary system, skin, cartilage, and connective tissue changes; and the late period involves cardiovascular diseases, osteoporosis, and central nervous system changes.[2]

Sleep is one of the most fundamental physiological needs in life.[3] Sleep disorders are one of the most disturbing symptoms among menopausal complaints. The prevalence of insomnia is reported to increase in the menopausal period; it is reported to be experienced at ratios ranging from 40% to 60% in premenopausal and postmenopausal women; and sleep problems are reported to increase with the increase in age.[3–6] The mechanisms that cause insomnia in this period are multifactorial. They include hormonal changes, hot flashes, night sweating, and mood disorders in the transition period to menopause as well as the increase in the incidence of stress, obesity, poor health, and other sleep disorders experienced in the transition from middle to older age.[3,4] Women who experience insomnia also experience negative effects on their cognitive functions, physical performance, and bodily systems; more problems in their daily lives; and a worsening in their quality of life.[7] Sleep and fatigue problems certainly require consultancy because they are important variables affecting individuals' quality of life and health and they are experienced frequently in the menopausal period. In line with holistic care, it is important for nurses and midwives to know about and apply nonpharmacological methods for sleep problems.[4,8]

Sleep disorders and fatigue experienced during the menopause period are problems that affect each other. A study conducted in China reported the prevalence of fatigue as 75.84% and the prevalence of insomnia as 69.39% in menopausal women.[9] These problems are experienced more frequently in women who experience vasomotor symptoms because vasomotor symptoms affecting daily life affect

* Corresponding author.
E-mail address: egozuyesil@cu.edu.tr (E. Gozuyesil).

https://doi.org/10.1016/j.explore.2023.08.007
Received 9 June 2023; Received in revised form 16 August 2023; Accepted 18 August 2023
Available online 23 August 2023
1550-8307/© 2023 Elsevier Inc. All rights reserved.

women's psychology and sleep routines negatively, which makes them experience fatigue.[10]

Nursing is a discipline that studies bodily, mental, and harmony of spiritual integrity. Nursing theories emphasize the importance and priority of this compatibility. Watson's human caring theory states the importance of holistic care which is based on scientific, creative, and aesthetic knowledge and includes mental, bodily, and spiritual integrity while providing care.[11–13] Supplementary and supportive practices are the focus of nursing in terms of holistic nursing care.[8] Today, the integration of practices such as yoga, therapeutic touch (TT), reiki, massage, aromatherapy, music therapy, reflexology, relaxation, and meditation are common while providing holistic care.[8,14] Providing a healing environment, raising individuals' awareness, and revealing their secret healing power are fundamental to the basis of these practices.[8] Therapeutic touch (TT) is one of these methods.

TT is an integrated treatment method that assumes that individuals find their inner balance, they can change their energy field, and the energy in the universe is used with a specific intention and compassion.[14] TT was discovered and developed by Dolores Krieger and Dora Kunz, who were affected by Roger's theory in the 1970s. Kriger and Kunz taught this method applied using their hands to nurses and other health professionals and they experienced it together.[15] Diseases and their symptoms may cause disruptions, blockages, and deformations in energy fields or they may affect the normal rhythm of the field. In addition to psychological problems, physical problems such as fatigue and sleep problems could cause imbalances in energy fields.[16–18] With their healing hands, people who perform TT try to give energy to the individual, and with the awareness they create, they help them to assess and regulate their energy field. When the energy field is balanced, the treatment is ended in approximately 10-20 min.[19] In this way, asymmetric and imbalanced energy fields are balanced and can be treated.[16] TT has positive psychological effects that strengthen spiritual care, create a sense of confidence in individuals, and increase patient-nurse interaction.[8] The North American Nursing Diagnosis Association (NANDA) accepted "energy field disturbance" as a nursing diagnosis.[20] The literature reports that TT decreases anxiety, increases relaxation and feeling of well-being, and improves the quality of life by providing benefits for fatigue and sleep quality.[8,15,21,22] Since it is an easily-applied, nonpharmacological method with no side effects, TT can be used for the improvement of women's health within the scope of nurses' and midwives' independent roles.[14,22] Various studies have evaluated the effects of TT on sleep quality and fatigue.[8,16–18,22,23] With the effects of hormonal, vasomotor, and psychological changes, menopausal women go through a period that requires many physiological and psychological adaptations. The management of well-known and common complaints such as insomnia and fatigue experienced in the menopausal period has the potential to affect many areas of life in women in this period positively. There seems to be insufficient interest in this topic in the literature.[24] Therefore, this research was carried out to determine the effect of therapeutic touch (TT) on sleep quality and fatigue in menopausal women. The following hypotheses were tested for this purpose:

H_1: Therapeutic touch affects the sleep quality of women in the menopausal period.
H_2: Therapeutic touch affects the fatigue level of women in the menopausal period.

Materials and methods

Study design

This study was conducted as a parallel randomized-controlled, single-blind, single-centered, interventional study with a pre-test and post-test design. The study was conducted with women in the menopausal period who sought treatment in the gynecological outpatient clinic of a public hospital between the 15th of December, 2021 and the 15th of March, 2022.

Participants

The study included women who agreed to participate in the study, lived in the city center, were at least literate, were in the natural premenopausal (irregular menstrual cycle within the last three months), perimenopausal (amenorrhea for 3-11 months or increased irregular menstruation), or postmenopausal (amenorrhea for more than 12 months) periods, were open to communication and cooperation, and could speak Turkish. The women who received hormone replacement treatment, used drugs for sleep problems and depression, were diagnosed with medical psychiatric disease, and had sensitivity or problems about touching were excluded. Those who wanted to withdraw from the study with their own will or due to any reasons, medical procedures, for example, during the practice were considered to be excluded, yet no women were excluded due to these reasons.

Sample size and randomization

The number of the sample was calculated using G*power 3.1.9.6 program.[25] The effect size to be used for the calculation of the sample size was determined using data from the study conducted by Yeşil (2021).[26] Calculations indicated that with a 5% margin of error (α=0.05) and 99% power (1-β=0.99), the sample size for the t-test with paired groups (d=1.37) was determined as 21 for the intervention group and 21 for the control group.[27] Considering potential losses in the process, the sample size in both groups was increased by 15%, so 24 women were included in each group and the study was completed with 48 women. A total of 73 women were found to seek treatment in the polyclinic between the aforementioned dates and meet the research criteria. Eight women refused to participate in the study due to COVID-19, seven women stated that they would not be able to continue coming regularly for the intervention, and ten women could not be reached due to communication problems (Fig. 1). Randomized assignment and randomization concealment were performed to control selection bias. Assignment of the women to the groups was performed by an independent statistician by using block randomization. For this implementation, eight combinations composing the letters "A" and "B" were formed for the randomization of 48 women. Random numbers formed on the computer were utilized for the selection or random permuted block technique (two blocks with equal size). The block randomization procedure was completed by assigning the 8 combinations 6 times randomly (Fig. 1).[28] The letters A and B were named intervention and control groups by drawing lots. A total of 48 women, 24 in the intervention group and 24 in the control group, were included in the study. The women in the intervention and control groups were found to be similar in terms of their socio-demographic and descriptive characteristics, and statistical analyses showed no significant differences between the groups ($p>0.05$) (Table 1). Once informed consent was received from women who participated in the study, the Personal Information Form and the pre-test of the scales were administered. These procedures were performed by the assistant researcher.

Blinding and bias

This study used blinding for the participants, statistics, and reporting of the procedures. The women who agreed to participate in the study were not informed as to which group they were assigned. As the groups were not known to the women, the study used a single-blind design. The pre-test and post-test data were completed by the assistant researcher. After the pre-tests were administered and before the practice was initiated, the principal researcher to implement the intervention contacted the statistician who did randomization to access the randomization list. The principal researcher implemented the intervention after she learned

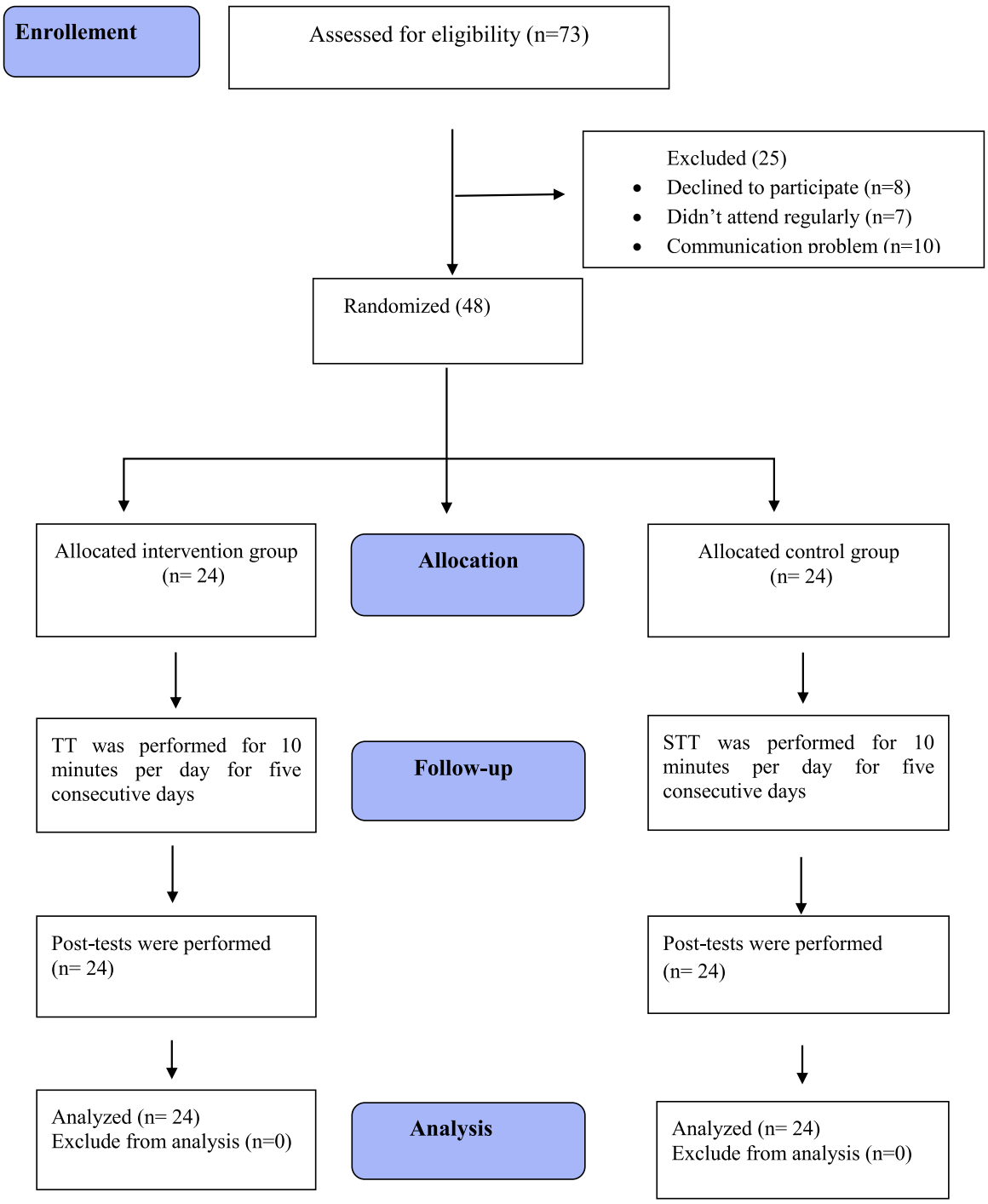


Fig. 1. CONSORT flow diagram.

about the groups. Transferring the pre-test and post-test data to the computer was performed by an independent specialist midwife who did not know about the intervention and control groups. No names were used for the intervention or control groups when the data obtained were put on the computer; the codes were written using the letters "A" and "B". Statistical analyses and reporting of the results were performed by the statistician who did randomization. The codes determined for the intervention and control groups were explained only after the statistical analysis was performed and the study report was written. In this way, statistical bias was controlled. TT intervention was implemented in hospital rooms which were designed similarly. The women were administered the interventions one by one so that the intervention and control groups would not see each other during practice.

Intervention

In this study, while the intervention group was administered TT, the control group was administered Sham TT (STT). The interventions in the study were implemented using the literature information[16,23,29] as well as the Therapeutic Touch Practice Procedure (TTPP) and Sham Therapeutic Practice Procedure (STPP). To administer the TT practice, the researcher received a certificate by participating in the first and second-level courses held by the International Therapeutic Touch Association. All the procedures were done in two special rooms in the

Table 1
Descriptive characteristics of the participants.

Characteristics	İntervention group (n=24)		Control Group (n=24)		Test statistics	p
	$\overline{X} \pm SD$	$\widetilde{X}$[min-max]	$\overline{X} \pm SD$	$\widetilde{X}$[min-max]		
Age	48.7±4.4	48 [40-55]	50.4±5.6	51 [40-58]	U=221.5	0.169
Duration of menopause (year)	3±3.3	2 [1-15]	4.6±4.7	3 [1-23]	U=204.0	0.075
Menarch Age	12.2±1.8	12 [9-17]	12.6±1.3	13 [10-16]	U=220.5	0.150
Number of births	2.3±0.9	2 [1-4]	3.2±2.2	3 [1-9]	U=140.5	0.220
	n	**%**	**n**	**%**		
Education level						p*=0.056
Literate	1	4.2	7	29.2		
Primary school	6	25.0	4	16.7		
Secondary school	2	8.3	1	4.2		
High school	6	25.0	9	37.5)		
University	9	37.5	3	12.5		
Working status					X^2=2.087	p=0.149
Working	14	58.3	9	37.5		
Not working	10	41.7	15	62.5		
Income Level						p*=0.999
Income less than expenses	7	29.2	8	33.3		
Income equal to expenses	16	66.7	16	66.7		
Income more than expenses	1	4.2	0	0.0		
Smoking					X^2=2.424	p=0.119
Yes	10	41.7	5	20.8		
No	14	58.3	19	79.2		
Having chronic disease					X^2=2.116;	p=0.244
Yes	16	66.7	11	45.8		
No	8	33.3	13	54.2		
Regular drug use					X^2=1.333	p=0.348
Yes	14	58.3	10	41.7		
No	10	41.7	14	58.3		
Having menopause education					X^2=2.424	p=0.119
Yes	10	41,7	5	20,8	NN	
No	14	58,3	19	79,2		

U: Mann Whitney U test statistics; t: independent sample t test, X^2: Chi square test statistics; p*: Exact test,
Exact test was used when the expected value was greater than 5. Test statistics could not be calculated. p<0,05 Significance level.

gynecology service of the related hospital. To enhance standardization, all the interventions were implemented in the special hospital rooms which were designed similarly. The rooms where the interventions were implemented included a patient bed, an etagere, a chair, and a lavatory for washing hands.

Intervention group

The participant who filled in the pre-test forms in the hospital polyclinic with the help of the assistant researcher was given an appointment for the following day, and the intervention was implemented in a special room in the service. The participant who came to the gynecology service when the appointment was given was met by the principal researcher. She was asked to relax and her vital signs were taken. Before and after each practice, the room was aired for 5 min, and the TT procedure was started after the room was dimmed. At the end of each intervention, the participant was told to come for the practice again at the same time on the following day. The day following the fifth day, when the procedure was completed, the participant was referred to the polyclinic to fill in the post-test form administered by the assistant researcher. Since the literature recommends the best time for TT practice as between 18:00 and 20:00, the intervention group was administered TT for 10 min for 5 successive days.[16,23] In addition, this time interval has been preferred since the relevant service is quieter after 18:00.

The procedures implemented in line with the TTPP included the following steps: centering, assessing, rebalancing, reassessing, reexamining, grounding, and closure. The woman's comfort was enhanced by designing and airing the room. She sat on the chair comfortably, and if she could not, she lay on the bed. The woman who was administered the intervention was asked to focus on her breath to concentrate throughout the procedure. Centering was done by the practitioner by clearing her mind, silencing, and focusing her emotions during the procedure. To help the woman who was administered the practice to heal, the practitioner intended and assessed the energy field in the participant's all body using her palms from a 2-4 inch distance (5-10 cm). Sweeping motions were performed by the practitioner gently, kindly, and rhythmically to clear and recover imbalances in the energy field; the practice was continued until the energy field was balanced. The energy was modulated to eliminate blockages and refacilitate the flow of energy. Then the energy field was reassessed, and the steps were repeated if there were imbalances. The woman who was administered the intervention was grounded and TT was ended. The woman who received the intervention was asked to relax and give feedback.

Control group

The control group was administered STT instead of TT for 10 min for successive 5 days. The practice was implemented in line with STTPP. The practice was implemented by not centering or intending to help to heal, by moving at a longer distance, and by imitating the TT practice protocol visually. In this regard, the practice steps were as follows: first, the room was designed and aired and the participant had a comfortable position. She sat on the chair comfortably, and if she could not, she lay on the bed. The practitioner was not centered; to prevent centralization, the practitioner counted or sang a song silently, did not intend to help the woman who was administered the intervention, did not assess the energy field, kept her hands 7-8 inches (18-20 cm) away from the woman's body, and imitated her hands like they are used in TT. The woman who received the intervention was asked to relax and give feedback. To prevent the deprivation of lack of intervention, the women in the control group who wanted to try the practice were also given the practice after the study was completed. Twelve women were administered the intervention. All the steps of the procedure in the intervention group were also done in the same phases in the control group. The women were found to develop no complications after all the procedures.

Data collection

The Personal Information Form was developed by the researcher in line with the literature.[23,26] This form was composed of 11 questions that aimed to collect data about women's socio-demographic characteristics such as age, education level, working or not, income level and other features such as menarche age, number of births, duration of menopause, presence of a chronic disease, etc.

The Turkish version of the Pittsburgh Sleep Quality Index (PSQI), which was developed by Buyssee et al. (1989), was used for the assessment of sleep quality. It is a self-report scale that makes a quantitative assessment of sleep quality and sleep disorders over a one-month time interval.[30] Turkish reliability and validity of the scale were performed by Ağargün et al. in our country (1996).[31] The scale is composed of 18 items and seven sub-scales, which include Subjective Sleep Quality, Sleep Latency, Sleep Duration, Habitual Sleep Efficiency, Sleep Disorders, Use of Sleeping Drugs, and Daytime Dysfunction. Each item is scored between 0 and 3. The total score of the seven sub-scales gives the PSQI score. Scores to be obtained from the scale range between 0 and 21. A total score greater than 5 indicates "poor sleep quality." Cronbach's alpha reliability coefficient of the PSQI was reported 0,804 in the Turkish adaptation of the scale.[31]

The Turkish version of the Piper Fatigue Scale (PFS) was utilized to assess fatigue. PFS was developed by Barbara F. Piper et al. in 1987.[32] Turkish reliability and validity of the scale were performed by Can et al. (2001).[33] The scale responded on a 5-point Likert scale has 22 items and four sub-scales and it aims to assess individuals' subjective perceptions about fatigue. The sub-scales are Behavioral/Severity, Affective Meaning, Sensory, and Cognitive /Mood. Calculation of the sub-scale scores is done by summing all the items in that sub-scale and dividing it by the number of items. Higher scores indicate higher fatigue levels. Total Cronbach's alpha value was reported to be 0,99 in the Turkish reliability and validity of the scale.[33]

Vital Signs: All the participants' blood pressure, heart rate, and respiration rate were measured before and after the intervention. Before the practice started, the participant was asked to relax for around 20 min and her vital signs were measured afterward. All the measurements were done around 5 min before and after the intervention. Each measurement took around 5 min. Data were stored in a locked filing cabinet by the assistant researcher.

The principal researcher administered TT and STT according to the randomization diagram. The assistant researcher received the participant's consent without knowing the groups, filled in the pre-tests, and then filled in the post-tests after the practice was completed. All the forms were administered by meeting the participants face-to-face.

While filling in the pre-test forms took about 20 min, the post-test forms were completed in 15 min. The questionnaire form was piloted with 10 women to test the comprehensibility and the administration process. After the pilot test, no changes were made to the data collection forms and implementations. Data collected from women who were included in the pilot test were not included in the study.

Statistical analysis

Statistical analyses of the study were performed using IBM SPSS V25 (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.). The normality distribution of the continuous variables according to categories was tested before the statistical analyses. Normality distribution was checked using suitable Shapiro Wilk/Kolmogorov Smirnow tests. While descriptive characteristics were presented using numbers (n) and percentages (%) for categorical variables, they were presented using suitable mean ±standard deviations and median[minimum-maximum] measures of central tendency. While independent samples t-test/Mann Whitney U test was utilized for the mean/median comparisons of two independent groups, dependent sample t-test/Wilcoxon test was utilized for the comparison of two dependent groups. X^2/Exact test was utilized to assess the relationship of categorical variables with each other. As for the analysis of the repeated measures, the repeated measures ANOVA test was used when normality assumptions were met, and the nonparametric test F1-LD-F1 design was used for repeated measures. When group-time interaction was significant, comparisons within and between groups were assessed independently. Statistical significance was accepted $p<0,05$.

Ethical considerations

Before the study was conducted, ethics committee approval was obtained from Cukurova University Clinical Research Ethics Committee (07.09.2021/Meeting:113/Decision:46), and necessary permissions were obtained from the institution where the study was conducted. The data collection phase was performed in line with the Declaration of Helsinki. All the participants were informed about the confidentiality and privacy of the study. Moreover, they were informed that they could withdraw from the study whenever they wanted to. Informed consent was obtained from the participants before randomization. A Clinical Trials protocol registration was carried out for the study ("ClinicalTrials.gov.ID: NCT05075694"). Reporting of the study was done in line with the CONSORT-2017 criteria.[34]

Findings

The average age of the participants in the intervention group was 48,7±4,4, and that of the control group was 50,4±5,6. While 37,5% of the women in the intervention group graduated from university, 31,3% graduated from high school. Table 1 demonstrates findings about other descriptive characteristics of participating women. No significant differences were found between the groups in terms of their age, education level, working condition, income level, smoking or not, presence of a chronic disease, regular drug use, receiving education about menopause, and duration of menopause. Hence, the distribution of the descriptive characteristics was found to be similar, independent, and homogenous between the groups (Table 1).

Table 2 demonstrates the comparison of PSQI total and sub-scale scores according to the groups. When the PSQI pre-test and post-test total medians were compared in the groups, group-time interaction was found to be significant ($p<0.001$). Therefore, these comparisons within and between groups were evaluated independently of time. While no statistically significant differences were detected between PSQI total pre-test measures medians ($p=0.093$), a statistically significant difference was detected between the post-test measure mean scores ($p=0.010$). Post-test measure median of the women in the intervention group was found to be lower than that of the women in the control group. In within-group comparisons; A significant difference was detected when the PSQI total pre-test and post-test measure medians were compared in the intervention group ($p<0.001$) and the control group ($p=0.001$). In both groups, PSQI post-test measure median was lower than the pre-test measure median (Fig. 2) (Table 2). The Cohen's d value for the difference in PSQI between the intervention and control groups was 0.244 after the intervention.

Table 3 displays findings about the comparison of the participants' PFS total and sub-scale scores according to the groups. When the total mean scores were compared before and after the PFC practice, group-time interaction was found to be significant ($p<0.001$). While significant differences were found between PFS total pre-test measure mean scores ($p=0.007$), no significant differences were detected between the PFS post-test measure mean scores ($p=0.917$). The pre-test PFS total mean score of the intervention group was significantly higher than the mean score of the control group. Within-group comparisons of the PFS pre and post-mean scores indicated significant differences in the intervention ($p<0.001$) and control group ($p<0.001$). In both groups, the PFS post-measure mean score was lower than the pre-measure mean score (Fig. 2; Table 3).

Table 2
The evaluation of pre and post-test Pitsburg Sleep Quality Index scores.

	Intervention Group			Control Group			Test statistics	Test statistics	Effect size
	$\overline{X} \pm SD$	$\widetilde{X}$[min-max]	Test statistics	$\overline{X} \pm SD$	$\widetilde{X}$[min-max]	Test statistics			
PSQI Total	13.63	14 [11-	W=-3.976b	12.71	13 [10-	W=-3.363	U=207.5	Group WTS=0.689	Group: 0.032
Pre-test	±1.71	16]	p<0.001	±1.9	17]	p=0.001	p=0.093	p=0.407	Time: 0.673
Post-test	7.91	7.5 [4-		10.22	11 [3-15]		t=-2.699	Time: WTS=75.46	Group*Zama:
	±2.54	13]		±3.15			p=0.010	p<0.001	0.244
								Group*Time:	
								WTS=13.13 p<0.001	
PSQI subscales	2.25	2 [2-3]	W=-3.945	2.21	2 [2-3]	W=-2.653	U=276	Group WTS=3.475	Group: 0.069
Subjective Sleep	±0.44		p<0.001	±0.41		p=0.008	p=0.734	p=0.062	Time: 0.525
Quality Pre-test								Time: WTS=50.13	Group*Time:
Post-test	1.36	1 [1-2]		1.74	2 [1-3]		U=165	p<0.001	0.083
	±0.49			±0.54			p=0.022	Group*Time:	
								WTS=4.311 p=0.037	
Sleep Latency	2.21	2 [1-3]	W=-3.638	2.13	2 [0-3]	W=-1.658	U=276	Group WTS=0.670	Group: 0.008
Pre-test	±0.78		p<0.001	±0.85		p=0.097	p=0.791	p=0.406	Time: 0.336
Post-test	1.5±0.67	1.5 [0-3]		1.83	2 [0-3]		U=191.5	Time: WTS=19.903	Group*Time:
				±0.98			p=0.136	p<0.001	0.069
								Group*Time:	
								WTS=3.802 p=0.051	
Sleep Duration	2.58±0.5	3 [2-3]	W=-3.938	2.38	2 [1-3]	W=-3.153	U=235	Group WTS=0.158	Group: 0.007
Pre-test			p<0.001	±0.58		p=0.002	p=0.212	p=0.691	Time: 0.661
Post-test	1.32	1 [0-3]		1.78	2.5 [0-3]		U=165	Time: WTS=79.394	Group*Time:
	±0.72			±0.74			p=0.030	p<0.001	0.238
								Group*Time:	
								WTS=12.78 p<0.001	
Habitual Sleep	2.17	2 [0-3]	W=-3.202	2.38	3 [1-3]	W=-2.379	U=258.5	Group WTS=6.047	Group: 0.120
Efficiency	±0.96		p=0.001	±0.77		p=0.017	p=0.507	p=0.014	Time: 0.399
Pre-test								Time: WTS=28.176	Group*Time:
Post-test	0.86	1 [0-3]		1.78	2 [0-3]		U=149	p<0.001	0.077
	±0.89			±1.28			p=0.014	Group*Time:	
								WTS=4.027 p=0.045	
Sleep Disorders	2.29	2 [1-3]	W=-3.638	2.17	2 [1-3]	W=-1.134	U=251.5	Group WTS=0.366	Group: 0.009
Pre-test	±0.62		p<0.001	±0.48		p=0.257	p=0.370	p=0.545	Time: 0.357
Post-test	1.68	1.5 [1-2]		2.04	2 [1-3]		U=175.5	Time: WTS=23.938	Group*Time:
	±0.48			±0.56			p=0.031	p<0.001	0.203
								Group*Time:	
								WTS=11.217 p<0.001	
Use of Sleeping Drugs	0±0	0 [0-0]	NA	0±0	0 [0-0]	NA	NA	NA	NA
Pre-test									
Post-test	0±0	0 [0-0]		0±0	0 [0-0]		NA		
Daytime Dysfunction	2.13	2 [1-3]	W=-3.704	1.46	1.5 [0-3]	W=-3.000	U=151.5	Group WTS=5.818	Group: 0.112
Pre-test	±0.61		p<0.001	±0.72		p=0.003	p=0.002	p=0.016	Time: 0.554
Post-test	1.18	1 [0-2]		1.04	1 [0-2]		U=222.5	Time: WTS=50.793	Group*Time:
	±0.66			±0.56			p=0.422	p<0.001	0.165
								Group*Time:	
								WTS=6.579 p=0.010	

WTS: Wald type statistics; U: Mann Whitney U test; W: Wilcoxon test; p<0.05 Significance level.

There were no significant differences between the groups regarding the vital signs before and after the intervention except for diastolic blood pressure (p< .05) before the intervention (p > 0.05) (Table 4).

Discussion

This study, which aimed to determine the effect of TT on sleep quality and fatigue in menopausal women, found that TT had positive effects on improving women's sleep quality, but it did not have any effects on fatigue. TT can be used as a non-pharmacological and integrative treatment method within the scope of nurses' and midwives' independent roles for the improvement of women's health.[14] This study is of importance and value as it is the first study to investigate the effect of TT on sleep quality and fatigue in women in the menopausal period. The study is believed to contribute to the literature by providing novel and original information that can positively be reflected in the care of women in the menopausal period.

This study found that TT had effects on improving the sleep quality of menopausal women in the intervention group, yet this effect was close to little effect.[35] When the results are analyzed in terms of the scale scores, it can be concluded that although women's sleep problems continued, the severity of insomnia was found to decrease in women in the intervention group.

When the related literature was analyzed, only one thesis was found to have investigated the effect of TT on sleep quality.[24] In the experimental study including three groups and menopausal women, Töre (2022) investigated the effect of TT and music on sleep quality and menopausal problems, and quality of life. The groups included TT, music group, and control group. The results showed that TT and music improved sleep quality, increased quality of life, and decreased menopausal symptoms, yet the positive effect of TT was more than the effect of music.[24]

Several studies investigated the effect of TT on sleep quality.[8,16,17,22,23] These studies were conducted with different sample groups, which included university students[16], patients with Chronic Obstructive Pulmonary Disease (COPD)[22], elderly individuals, and palliative care patients.[8,17,23] A study conducted with midwifery and nursing students found that therapeutic touch decreased daytime sleepiness at a moderate level and increased sleep quality.[16] A study conducted with individuals with COPD reported that the patients in the

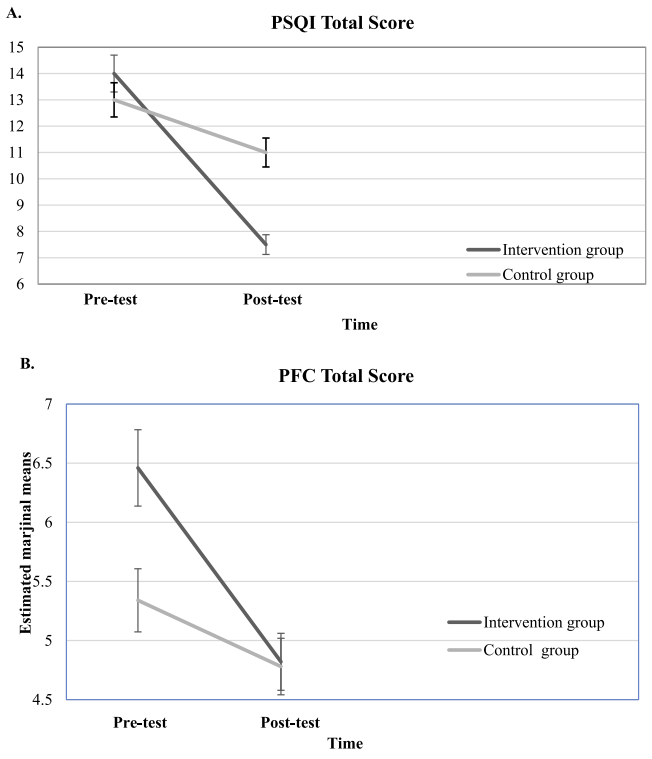


Fig. 2. Comparison of PSQI (A) and PFC (B) scores in groups.

experimental group had a good level of sleep quality.[22] A study conducted with nursing home residents and another study conducted with palliative care patients also reported that TT could be an effective practice for improving elderly individuals' sleep quality.[8,23] In their qualitative study that investigated the effect of TT on patients in the palliative care unit, Senderovich et al. found that the majority of the patients achieved a state of relaxation and sleep and expressed their experiences as follows: "TT helped me relax and sleep for some time" and "it helped me to sleep easily by making me feel the energy and relaxation".[17] In addition, other studies on the topic report that TT transfers energy to missing places in the human etheric body or activates or reshapes the blockage energy, so the relaxation effect it creates improves sleep quality.[18,36] Although the effect of TT on improving sleep quality was close to a little effect in this study, the decrease in the severity of insomnia of the women in the intervention group shows the positive effect of TT. Nurses and midwives are health members who have a primary role in the improvement of women's health. TT can be used for the improvement of women's health as it is an easily applied, non-pharmacological practice with no side effects.

This study found that TT had no effects on healing fatigue. An analysis of the related literature indicated no studies that assessed the effect of TT on menopausal women's fatigue, yet several studies using different sample groups and scales investigated the effect of TT on fatigue.[16,18,37–39]

A study that investigated the effects of TT in students measured the fatigue variable using a different scale. TT was reported to decrease students' fatigue levels.[16] A study that investigated the effect of TT in women with breast cancer receiving radiotherapy found no significant effects of TT in terms of fatigue before and after the practice.[37] A study that investigated the effect of TT on pain and fatigue in patients who received chemotherapy found that TT was highly effective in decreasing fatigue in cancer patients compared to the control group; STT was also found to heal fatigue when compared to the control group.[38] Another study conducted with cancer patients reported that TT enhanced relaxation, had positive effects on anxiety levels and psychology, and decreased fatigue levels.[18] A randomized-controlled study that investigated the effect of healing touch on pediatric oncology patients found that the healing touch enabled an important decrease in pain, stress, and fatigue levels, indicating that the energy treatment can be used in pediatric oncology patients.[39] In this study, the lack of TT effect on healing fatigue could be associated with the fact that fatigue is a subjective finding. Also, the results could be associated with the COVID-19 period, when the present study was conducted and the participants experienced anxiety, worries, and uncertainties. So, these problems may have affected the results. Besides, increasing the number of days the practice was administered could be beneficial in improving fatigue.

Strengths and limitations

This study has some strengths. First of all, the study is believed to

Table 3
The evaluation of pre and post-test Piper Fatique Scale scores.

	Intervention Group			Control Group			Test statistics	Test statistics	Effect size
	$\overline{X} \pm SD$	$\tilde{X}$[min-max]	Test statistics	$\overline{X} \pm SD$	$\tilde{X}$[min-max]	Test statistics			
PFC Total	6.46	6.25 [4.22-	t=7.459	5.34	5.24[3.43-	t=4.259	t^s=2.8	Group: F=3.330 p=0.075	Group: 0.072
Pre-test	±1.4	8.54]	p<0.001	±1.35	8.65]	p<0.001	p=0.007	Time: F=75.316 p<0.001	Time: 0.637
Post-test	4.82	4.88 [2.67-		4.78	4.4 [2.43-		t^s=0.105	GroupxTime: F=26.061 p<0.001	Group*Time:
	±1.02	7.26]		±1.27	7.25]		p=0.917		0.377
PFC Subcales									
Behavioral/	5.93	5.63 [3.67-	t=5.644	4.5	4.2 [1.4-	t=2.078	t^s=3.018	Group: F=6.313 p=0.016	Group: 0.128
severity Pre-test	±1.49	8.4]	p<0.001	±1.79	8.83]	p=0.049	p=0.004	Time: F=34.128 p<0.001	Time: 0.442
Post-test	4.56	4.8 [2.83-		3.97	3.67 [0.8-		t^s=2.586	GroupxTime: F=11.635 p<0.001	Group*Time:
	±1.05	7]		±1.77	6.83]		p=0.013		0.213
Affective meaning	6.62	6.3 [4.4-9]	t=7.019	5.58	5.5 [2-8.8]	t=2.221	t^s=2.861	Group: F=2.350 p=0.133	Group: 0.052
Pre-test	±1.31		p<0.001	±1.47		p=0.037	p=0.006	Time: F=50.589 p<0.001	Time: 0.541
Post-test	5.08	5 [2.8-7.8]		5.11	5.2 [1.6-		t^s=1.31	GroupxTime: F=21.163 p<0.001	Group*Time:
	±1.13			±1.39	7.4]		p=0.197		0.330
Sensory	6.73	6.3 [3.8-	t=6.845	5.42	5.2 [2.6-	t=3.829	t^s=1.351	Group: F=3.001 p=0.090	Group: 0.065
Pre-test	±1.62	9.2]	p<0.001	±1.55	8.8]	p=0.001	p=0.184	Time: F=62.824 p<0.001	Time: 0.594
Post-test	4.86	4.6 [2.2-		4.82	4.2 [1.6-		t^s=-0.082	GroupxTime: F=22.983 p<0.001	Group*Time:
	±1.37	7.4]		±1.6	7.8]		p=0.935		0.348
Cognitive/mood	6.55	6.92 [1.67-	t=7.808	5.88	5.58 [3-	t=5.182	t^s=0.104	Group: F=0.140 p=0.710	Group: 0.003
Pre-test	±1.94	9.33]	p<0.001	±1.56	8.5]	p<0.001	p=0.918	Time: F=88.298 p<0.001	Time: 0.672
Post-test	4.77	5 [1.33-		5.22	5.33 [2.5-		t^s=-1.108	GroupxTime: F=24.836 p<0.001	Group*Time:
	±1.4	6.83]		±1.38	7.5]		p=0.274		0.366

F: Repeated measures ANOVA test; t^s: Independent sample t-test; t: Dependent sample t-test; p<0.05 Significance level.

Table 4
Evaluation of the pre and post-test Vital Signs.

	Intervention Group			Control Group			Test statistics; p value	Test statistics	Effect size
	$\overline{X} \pm SD$	Min-Max	Test statistics	$\overline{X} \pm SD$	Min-Max	Test statistics			
Sistolic Blood Pressure Pre-test	120.29 ±13.39	97-150	W=-3.928 p<0.001	118.33 ±12.25	100-140	W=-3.557 p<0.001	U=257 p=0.521	Group: WTS=0.015 p=0.090 Time: WTS=70.39 p<0.001 Group*Time: WTS=4.280 p=0.038	Group: 0.001 Time: 0.594 Group*Time: 0.060
Post-test	111.59 ±8.73	96-125		112.83 ±8.65	100-127		U=235 p=0.674		
Diastolic Blood Pressure Pre-test	77.54 ±10.89	55-104	W=-3.930 p<0.001	71.38 ±7.37	60-90	W=-2.055 p=0.040	U=174 p=0.018	Group: WTS= 2.295 p=0.130 Time: WTS=28.250 p<0.001 Group*Time: WTS=3.943 p=0.047	Group: 0.044 Time: 0.452 Group*Time: 0.149
Post-test	69.14 ±7.03	51-81		68.48±6.3	60-80		U=224 p=0.498		
Heart rate Pre-test	80.83 ±8.74	63-96	W=-4.125 p<0.001	81.33 ±8.81	66-105	W=-4.041 p<0.001	U=288 p=0.999	Group: WTS=0.055 p=0.815 Time: WTS=109.7 p<0.001 Group*Time: WTS=0.874 p=0.349	Group: 0.003 Time: 0.785 Group*Time: 0.019
Post-test	75.68 ±8.42	60-90		76.87 ±7.23	65-92		U=235.5 p=0.69		
Respiratory rate Pre-test	17.58 ±0.83	16-18	W=-1.633 p=0.102	17.5±0.88	16-18	W=-.577 p=0.564	U=276 p=0.734	Group: WTS=0.450 p=0.502	Group: 0.010 Time: 0.025
Post-test	17.18 ±1.01	16-18		17.57 ±0.84	16-18		U=204.5 p=0.170	Time: WTS=1.109 p=0.292 Group*Time: WTS=2.942 p=0.086	Group*Time: 0.065

WTS: Wald type statistics:; U: Mann Whitney U test i; W: Wilcoxon test; p<0.05 Significance level.

contribute to the literature in important ways because it is the only study to investigate the effects of TT on menopausal women's sleep quality and fatigue. Secondly, to decrease the risk of bias, the patients were prevented from seeing each other while they were administered the intervention. Finally, the study is a good example of the integrative practices that can be implemented in line with the independent nursing and midwifery roles. As a traditional and complementary treatment, it can contribute to the improvement of health services.

As for the limitations of the study, firstly, including a small number of women in the menopausal period in a public hospital might have caused a limitation. The results of the study can be generalized only to the study group. Secondly, the COVID-19 pandemic caused fear and anxiety in women worldwide, so women were reluctant to participate in the study, which caused delays in accessing the desired number of women in the study. Thirdly, the study could not use the double-blind method due to the nature of the study; it used a single-blind method to eliminate bias. Finally, the long-term effects of TT could not be evaluated in the present study. For future research, it may be recommended that the long-term effects of TT can be evaluated by long-distance sessions and applying more days.

Conclusions

The results of this study showed that therapeutic touch had effects on improving sleep quality, but it did not have effects on fatigue in menopausal women. In line with these results, TT can be used as a nonpharmacological and integrative treatment method to heal women's menopausal complaints by nurses and midwives in line with their independent roles. Additionally, it could be compared TT with other complementary and supportive treatments.

Financial support

This study was funded by the Scientific Research Projects unit of Çukurova University (Ç.Ü. BAP) (grant code: TYL-2021-14179).

Acknowledgments

The authors would like to thank all women who agreed to participate in the study.

References

1 RCN. *Menopause RCN Guidance for Nurses, Midwives and Health Visitors*. London: Royal College of Nursing; 2017.
2 Akman G. Tıbbileştirme ile tıbbileştirmeme kıskacında menopozun doğallık sorunu. In: Kulakaç Ö, ed. *Kadın Sağlığının Medikalizasyonu; Kadının Yaşam Dönemleri, Uygulamalar ve Önlemler*. 1st ed. Ankara: Türkiye Klinikleri; 2021:44–52.
3 Şahan Ö, Yeşiltepe ÜO. Postmenopozal dönemde uyku değişiklikleri ve yönetimi. *Sağlık Akad Derg*. 2021;8:350–359. https://doi.org/10.52880/sagakaderg.923970.
4 Proserpio P, Marra S, Campana C, et al. Insomnia and menopause: a narrative review on mechanisms and treatments. *Climacteric*. 2020;23:539–549. https://doi.org/10.1080/13697137.2020.1799973.
5 Baker FC, Lampio L, Saaresranta T, Polo-Kantola P. Sleep and sleep disorders in the menopausal transition. *Sleep Med Clin*. 2018;13:443–456. https://doi.org/10.1016/j.jsmc.2018.04.011.
6 Zolfaghari S, Yao C, Thompson C, Gosselin N, Desautels A, Dang-Vu TT. Effects of menopause on sleep quality and sleep disorders: Canadian longitudinal study on aging. *Menopause*. 2020;27:295–304. https://doi.org/10.1097/GME.0000000000001462.
7 Demir Y. Uyku ve uyku ile ilgili uygulamalar. In: Ay FA, ed. *Sağlık Uygulamalarında Temel Kavramlar ve Beceriler*. 4th ed. İstanbul: Nobel Tıp Kitabevleri; 2012:682–694.
8 Ünal Aslan KS, Çetinkaya F. The effects of therapeutic touch on spiritual care and sleep quality in patients receiving palliative care. *Perspect Psychiatr Care*. 2021:1–9. https://doi.org/10.1111/ppc.12801.
9 Ruan X, Cui Y, Du J, Jin F, Mueck AO. Prevalence of climacteric symptoms comparing perimenopausal and postmenopausal Chinese women. *J Psychosom Obstet Gynecol*. 2017;38:161–169. https://doi.org/10.1080/0167482X.2016.1244181.
10 Külekci M, Kostanoğlu A. Postmenopozal dönemde olan ve olmayan kadınların yorgunluk düzeyi ve sağlık profili. *Genel Tip Derg*. 2019;29:106–112.
11 Türkçü SG, Özkan S. The effects of reflexology on anxiety, depression and quality of life inpatients with gynecological cancers with reference to Watson's theory of human caring. *Complement Ther Clin Pract*. 2021;44:1–9. https://doi.org/10.1016/j.ctcp.2021.101428.
12 Dikmen HA, Terzioğlu F. Effects of reflexology and progressive muscle relaxation on pain, fatigue, and quality of life during chemotherapy in gynecologic cancer patients. *Pain Manag Nurs*. 2019;20:47–53. https://doi.org/10.1016/j.pmn.2018.03.001.
13 Kaya Ş, Karakuş Z, Boz İ, Özer Z. Dünyada ve Türkiye'de tamamlayıcı terapilere ilişkin yasal düzenlemelerde hemşirelerin yeri. *JAREN*. 2020;6:584–591. https://doi.org/10.5222/jaren.2020.58561.
14 Bağcı H, Cinar Yucel S. A systematic review of the studies about therapeutic touch after the year of 2000. *Int J Caring Sci*. 2020;13:231–241.

15 Alp FY, Cınar Yucel S. The effect of therapeutic touch on the comfort and anxiety of nursing home residents. *J Relig Health*. 2021;60:2037–2050. https://doi.org/10.1007/s10943-020-01025-4.
16 Doğru BV, Utli H, Aykar FŞ. Effect of therapeutic touch on daytime sleepiness, stress and fatigue among students of nursing and midwifery: a randomized sham-controlled trial. *Complement Ther Clin Pract*. 2021;43, 101322. https://doi.org/10.1016/j.ctcp.2021.101322, 2021.
17 Senderovich H, Ip ML, Berall A, et al. Therapeutic Touch® in a geriatric palliative care unit–a retrospective review. *Compl Ther Clin Pract*. 2016;24:134–138. https://doi.org/10.1016/j.ctcp.2016.06.002.
18 Tabatabaee A, Tafreshi MZ, Rassouli M, Aledavood SA, AlaviMajd H, Farahmand SK. Effect of therapeutic touch in patients with cancer: a literature review. *Med Arch*. 2016;70:142. https://doi.org/10.5455/medarh.2016.70.142-147.
19 O'Mathúna DP. Therapeutic touch for healing acute wounds. *Cochrane Database Syst Rev*. 2016;5, CD002766. https://doi.org/10.1002/14651858.CD002766.pub4.
20 Garrett B, Riou MA. A rapid evidence assessment of recent therapeutic touch research. *Nurs Open*. 2021;8. https://doi.org/10.1002/nop2.841, 2318-230.
21 Pınar SE, Demirel G. The effect of therapeutic touch on labour pain, anxiety and childbirth attitude: a randomized controlled trial. *Eur J Integr Med*. 2021;41, 101255. https://doi.org/10.1016/j.eujim.2020.101255.
22 Çalıskan MA, Cerit B. Effect of therapeutic touch on sleep quality and anxiety in individuals with chronic obstructive pulmonary disease: a randomized controlled trial. *Complement Ther Clin Pract*. 2021;45, 101481. https://doi.org/10.1016/j.ctcp.2021.101481.
23 Bagcı H, Yücel SÇ. Effect of therapeutic touch on sleep quality in elders living at nursing homes. *J Relig Health*. 2019:1–19. https://doi.org/10.1007/s10943-019-00831-9.
24 F.K. Töre, Menopozal kadinlarda terapötik dokunma ve müzik dinletisinin uyku kalitesi, menopozal semptomlar ve yaşam kalitesine etkisi. Yayımlanmamış Doktora Tezi, İnönü Üniversitesi Sağlık Bilimleri Enstitüsü, Malatya, 2022.
25 Faul F, Erdfelder E, Lang AG, Bunchner A. G *Power 3: a flexible statis- tical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods*. 2007;39:175–191.
26 F.H. Yeşil, Reiki uygulamasinin menopoz semptomlarina etkisi. Yayımlanmamış Yüksek Lisans Tezi, Mersin Üniversitesi Sağlık Bilimleri Enstitüsü, Mersin, 2021.
27 Cohen J. *The analysis of variance. Statistical Power Analysis forthe Behavioral Sciences*. 2nd ed. Lawrence Erlbaum Associates; 1988:274–287.
28 G.C. Urbaniak, S. Plous, Research randomizer (Version 4.0).(201) Retrieved December 17, 2022, from http://www.randomizer.org/.
29 Therapeutic Touch International Association (TTIA). 2020, Retrieved from http://therapeutictouch.org/.
30 Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. *Psychiatr Res*. 1989;28:193–213. https://doi.org/10.1016/0165-1781(89)90047-4.
31 Agargün MY, Kara H, Anlar O. The validity and reliability of the Pittsburgh sleep quality ındex. *Turk J Psychiatr*. 1996;7:107–115.
32 Piper BF, Dibble SL, Dodd MJ, Weiss MC, Slaughter RE, Paul SM. The revised piper fatigue scale; psycho metric evalution in women with breast cancer. *Oncol Nurs Forum*. 1988;25:677–684.
33 G. Can, Meme kanserli hastalarda yorgunluğun ve bakim gereksinimlerinin değerlendirilmesi. Doktora Tezi, İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul, 2001.
34 Boutron I, Altman DG, Moher D, Schulz KF, Ravaud P. CONSORT statement for randomized trials of nonpharmacologic treatments: a 2017 update and a CONSORT extension for nonpharmacologic trial abstracts. *Ann Intern Med*. 2017;167:40–47. https://doi.org/10.7326/M17-0046.
35 Kilic S. Effect size. *J Mood Disord*. 2014;4:44–46. https://doi.org/10.5455/jmood.20140228012836.
36 Marta IER, Baldan S, Berton AF, Pavam M, Silva MJPD. The effectiveness of therapeutic touch on pain, depression and sleep in patients with chronic pain: clinical trial. *Rev Esc Enferm USP*. 2010;44(4):1100–1106. https://doi.org/10.1590/S0080-62342010000400035.
37 Younus J, Lock M, Vujovic O, et al. A case-control, mono-center, open-label, pilot study to evaluate the feasibility of therapeutic touch in preventing radiation dermatitis in women with breast cancer receiving adjuvant radiation therapy. *Complement Ther Med*. 2015;23:612–616. https://doi.org/10.1016/j.ctim.2014.11.003.
38 Aghabati N, Mohammadi E, Esmaiel ZP. The effect of therapeutic touch on pain and fatigue of cancer patients undergoing chemotherapy. *Evid Based Complement Altern Med*. 2010;7:375–381. https://doi.org/10.1093/ecam/nen006.
39 Wong J, Ghiasuddin A, Kimata C, Patelesio B, Siu A. The impact of healing touch on pediatric oncology patients. *Integr Cancer Ther*. 2013;12:25–30. https://doi.org/10.1177/1534735412446864.