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Comparison of the effects of physiotherapeutic approaches and body awareness therapy on disability, fatigue, anxiety, well-being and health-related quality of life in migraine patients

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ABSTRACT

The aim of this study was to compare the effects of combine physical therapy methods and body awareness therapy (BAT) on disability, fatigue, anxiety, well-being and health-related quality of life in female migraine patients. Nineteen female patients with migraine were included in the study. The patients were randomly divided into two groups: Ten patients for BAT and nine patients for combine physical therapy approaches. All the patients were evaluated through the migraine disability assessment, state-trait anxiety ınventory (STAI), life satisfaction index, body Cathexis scale, Nottingham health profile (NHP). The treatments were applied to 6 weeks (45-60 min/day, 3 days/week) for both of two groups. At the end of 6 weeks, there was a significant difference in terms of STAI-state versus sleep subscale of NHP between the groups ($p<0.05$). The results of the study showed that both treatment programs play important roles in the reduction of disabilities, improvements in emotional state and enhancements in the quality of life.

INTRODUCTION

Migraine affects approximately 20% of the adult population, developing in the second and third decades and often persisting into late middle age and beyond (Mann et al., 2008; Martin and Behbehani, 2006; Lipton et al., 2001). Migraine headaches are those with genetic predisposition that result in vascular and neuronal pathways being affected by a variety of triggering factors, resulting in loss of work power by affecting one's daily life activity and adversely affecting the comfort of life. In vascular theory, cranial vasoconstriction and vaso-dilatation explain the emergence of migraine pain. In neurovascular theory, migraine pain is explained by vascular changes due to neuronal changes (Adams and Victor, 2001; Silberstein, 2004). Migraine has a considerable impact on functional capacity, resulting in disrupted work and social activities (Mennini et al., 2008; Leonardi et al., 2010). Terwindt et al. (2000) reported that migraine leads to a significant decrease in health-related quality of life.

The majority of migraines are treated medically, but, pharmacological treatments are not suitable for all patients, nor are they universally effective. For this reason a large number of migraine patients receive some different forms of physical and behavioral treatment for their headache (Goslin et al., 1999; D'Amico, 2004). Such physical treatments include physiotherapy, behavioural approaches, (spinal) manipulation, exercise therapy, etc. (Dindo et al., 2014; Grant and Niere, 2000; Wahbeh et

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al., 2008).

Several behavioral treatments have been widely used over the past two decades in the management of recurrent migraine. The most frequently employed interventions fall into four broad categories: Behavioral treatment (cognitive behavioral therapy-stress management, coping skills, biofeedback, mind-body therapies-meditation, yoga, body awareness therapy, guided imagery, hypnosis, Tai Chi, deep breathing exercices, progressive muscular relaxation), physical therapy (spinal manipulation/mobilisation, massage, trigger point therapy) electrotherapy and exercise therapy (Goslin et al., 1999; Wells and Loder, 2012). Of most treatment options, the effectiveness is still unclear (Lenssinck et al., 2004). However, the meta-analyses showed that these treatments reduced migraine symptoms by 32-49% compared with no treatment (Sierpina et al., 2007). Over the same period of time, there has also been an increase in the use of physical treatments for migraine, principally acupuncture, cervical spinal manipulation, and mobilization therapies. Though there are exceptions, these behavioral and physical interventions are primarily aimed at the prevention of migraine episodes rather than the alleviation of symptoms once an attack has begun. Some studies showed that physiotherapy produced greater gains in mood state and in reduced headache intensity (Vernon et al.,1999).

Myofascial dysfunctions are the most common problems in patients with migraine. This musculoskeletal dysfunction may include abnormalities of upper cervical joint mobility, trigger points in the cervical muscles or decreased strength and endurance in the deep cervical flexors (Grant and Niere, 2000). Active myofascial trigger points in the cervical and sub-occipital musculature have been identified in 65% of individuals with chronic tension-type headache (Ajimsha et al., 2011). Migraine patients in particular have been shown to present a significantly greater number of active myofascial trigger points in the cervical muscles, mostly ipsilateral to migraine headaches (Fernandez-de-Las-Penas et al., 2006). They may also be elicited by over activity of muscles, sustained postural stresses, emotional stresses, intervertebral disc dysfunction, and articular and neural conditions (Bolton and Selvaratnam, 2009). In a study, Schleip et al. (2003) stated that under normal conditions, fascia tends to move with minimal restrictions. However, injuries resulting from physical trauma, repetitive strain injury, and inflammation are thought to decrease fascia tissue length and elasticity resulting in fascial restriction. Miyofascial release therapy (MFR) is a combination of manual traction and prolonged assissted streching maneuvers designed to break up fascial adhesions (Liptan et al., 2013).

Body awareness therapy (BAT) is one popular non-pharmacological approach to the treatment or prevention of migraine headaches for which there is limited evidence of safety and efficacy. Body awareness therapies aim to normalize posture, balance – and muscular tension or stiffness which are experienced and visible in the movement pattern (Gyllensten et al., 2003; Gard et al., 2005; Lindvall and Forsberg, 2014; Sertel et al., 2017). Movements are performed in supine, sitting, and standing with the main focus of finding a center line of the body. In the movements, postural control, balance, free breathing, and coordination are integrated. Reflecting upon the breathing is essential, to notice whether the breathing flows easily and calm or is strained (Lindvall and Forsberg, 2014).

To our knowledge, there are no reports in the conventional medical literature of the use of BAT for migraine, either alone or in combination with standard medical care. This is the first rigorous approach to the study of BAT for migraine. In previous studies, the effectiveness of exercise approaches (in particular, aerobic exercises) and the electrical nerve stimulation effect applied in combination with exercises have been investigated. The aim of this study was to compare the efficiency of two different treatment methods on female patients with migraine. Patients were randomly divided into 2 groups. A group consisted of patients who received combined massage, MFR therapy and exercise treatments while the other group received BAT. At the end of the study, the effects of these two different treatment methods over fatigue, well-being, anxiety, disability, body image and healthiness were assessed.

MATHERIALS AND METHODS

Subjects

This was a randomized, prospective, single center pilot study. In this study, patients with migraine were recruited from Köroglu State Hospital Neurosurgery Polyclinic, Bolu, Turkey. Examination was done by a medical doctor specialist for neurosurgery and the diagnosis was confirmed by the physician. Migraine was diagnosed according to the International Headache Society (IHS) classification and diagnostic criteria published in 2004 (IHS, 2004). Inclusion criteria for participating in the study were; being 18 to 55 years of age, being diagnosed with migraine, being a woman, having a headache episode that last for hours, having severe headache, having a migraine headache at least once a month or a maximum of 3-4 times a month, having no difficulty or problem of communication and being volunteer to participate in the study. Exclusion criteria were: During treatment sessions, those whose pain increased and required non-medical therapies (such as acupuncture, mind body therapies, physical therapy, massage, miyofascial release,

osteopathy, etc.) within 3 months before the beginning of the study, who had cardiac disease, cardiac arrhythmia, cardiovascular disease, malignity and who received chemotherapy, radiotherapy that caused malignity, who had any neurologic or orthopedic disorder that caused imbalance, those who were pregnant, receive antidepressant and antipsychotic treatment, who had alcohol and drug addiction and who do not have cooperation that is enough to comprehend the exercise; were excluded from the study. Also, the participant could not use prophylactic medication for migraine during the treatment.

The study protocol was approved by Bolu Clinic Research Ethics Committee. All patients provided written informed consent to participate in the study. Demographic features of patients (age, weight, height, gender, body mass index-BMI) were recorded in patient evaluation form. Patients were also asked to complete a questionnaire that recorded their educational status, marital status, existence of social security, existence of chronic disease, status of pain in the last 6 and 12 months, the effects on home/school/work life of headache (effect completely, affect my attention, no effect), frequence of headache, contiunity of headache, start of headache.

Nineteen adults with migraine participated in the study. Block randomization was done by a computer-generated random number list prepared by an investigator with no clinical involvement in the trial. The volunteers were randomly assigned to 2 groups: BAT and MFR. The nineteen patients included in the study were divided into 2 groups with simple randomisation method. The first group was included in the study as BAT group (n=10), the second group as combined massage, exercise and myofascial release treatment (n=9). Figure 1 shows an overview of the study protocol.

After recorded socio-demographic and clinical characteristics of the patients the migraine disability assessment scale (MIDAS) (Gedikoglu et al., 2005), fatigue severity scale (FSS) (Armutlu et al., 2007; Krupp et al., 1989), STAI (Öner and Le Compte,1985), body cathexis scale (BCS) (Secord and Jourard,1953), NHP (Kucukdeveci et al., 2000) and Life Satisfaction Index (LSI) (Neugarten et al., 1961) forms were applied to the patients.

Migraine disability assessment

The Turkish version of MIDAS was used to assess the impact of headache. It consisted of five questions that measures the influence of headaches on three domains of activity over the preceding three months: Paid and school work, household work, and leisure activities with family or in social situations. MIDAS score is calculated by adding the individual scores of the first five questions and indicates the number of days in which migraine interfered with these activities. According to given intervals, four disability grades can be calculated: Minimal (0-5), mild (6-10), moderate (11-20) and severe (≥21) disability. Two additional questions inquired about the number of headaches (MIDAS A) and avaerage pain level associated with headaches over the past three months (MIDAS B). These two questions were for the clinicians benefit, but were not used in deriving the MIDAS score (Gedikoglu et al., 2005).

Fatigue

FSS was used in order to measure fatigue of patients. FSS is a scale whose validity and reliability is confirmed (Armutlu et al., 2007). This consists of nine statements that are scored on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The patients were asked to rate their perceived severity of fatigue during the last week. A total score is calculated as the mean score of the nine statements, where lower scores indicate less effect of fatigue on everyday life. The score of 36 and above states severe fatigue (Krupp et al., 1989).

Level of anxiety

STAI was developed in 1970 by Spielberger and colleagues. The reliability and validity of the Turkish version of the STAI was conducted in 1985 by Öner and Le Compte. State anxiety scale measures how a person feels in a certain situation at a certain period of time. This internationally validated questionnaire consists of 40 items: 20 designed to assess state anxiety (STAI-state) and the other 20 aimed at evaluating trait anxiety (STAI-trait).

The STAI-state assesses how respondents felt at that moment. The STAI-anxiety evaluates how people “generally feel”. Total scores obtained from the STAI range from 20 to 80. A higherscore indicates higher levels of anxiety (Öner and Le Compte, 1985).

Body image

A Turkish version of the Body Cathexis Scale (BCS) that was developed by Secord and Jourard was used in order to identify the satisfaction level of body image. The scale consists of 40 items. Each item defines a part of the body (arm, leg, face, etc.) or a function of the body, such as the level of sexual activity. Each item has a point value between 1 and 5; a total score of 40–200 is reached at the end with high points representing a more positive evaluation (Secord and Jourard, 1953).

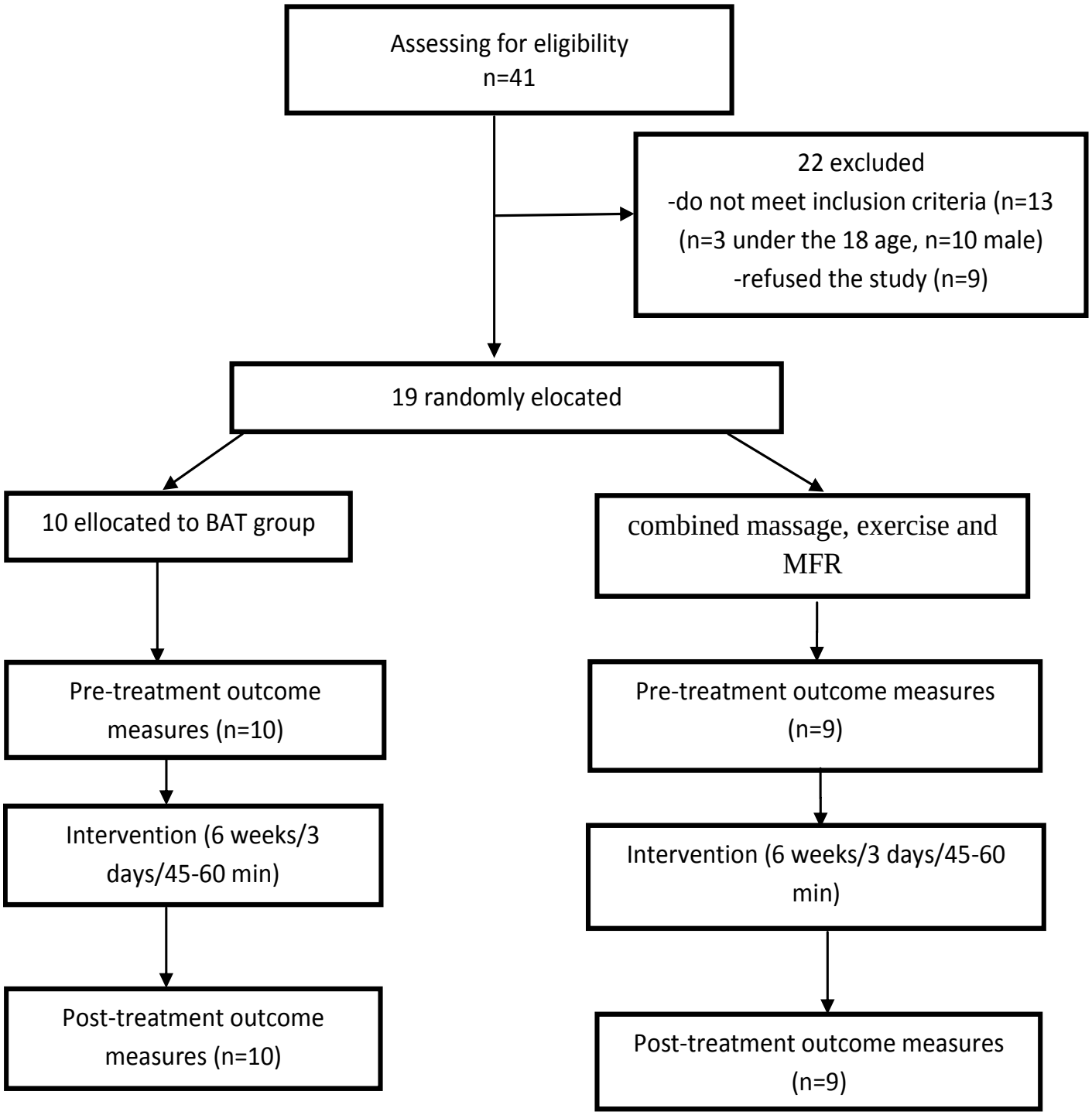

Figure 1. Flow chat of the study.

Health-related quality of life

The Turkish version of the NHP was used to evaluate health-related quality of life. This survey consisted of 38 questions in six sections including pain, physical activity, sleep, social isolation, and emotional reaction. Questions were answered with “yes” or “no”. Each section is graded between 0 and 100 points with a value of 0 for the best

health condition and 100 for the worst health condition (Kucukdeveci et al., 2000).

Life satisfaction index (LSI)

LSI was used to measure psychological well-being in patients. LSI consists of 20 attitude items in which participants indicated whether they agreed, disagreed, or were uncertain. Scores could range from 0 to 20, with thegreater value indicating maximum life satisfaction. The LSI is multidimensional in character, and three factors (life, mood tone, and congruence between desired and achieved goals) are analyzed (Neugarten et al., 1961).

Treatment regime

Following first evaluation, treatment regime was initiated with patients. The patients received BAT and MFT therapy for six weeks each being 60 min in three sessions every week. As treatment protocol (in group 1), BAT practices which is composed of relaxing, movement and massage sections was applied by a physiotherapist who is expert on BAT for six weeks in total being 60 min at three sessions per week. The elements of the BAT are basically moving, breathing and massage in combination with the conceptual frames of increasing and improving awareness of the body to promote health status. The goals of a single session consisted of establishing the inter-relationship of the body parts, including their movements, symmetry, equilibrium points of contact with soil, distribution of weight, volume and respiration. The patients performed the exercises in lying, standing, sitting or walking positions, while their awareness were turned to movements and to what is experienced inside and outside of the body at the moment of performance. At later stages the integration of breathing and movements and the voice was used. Massage also has influence on the physical and mental health. The treatment included restoring postural balance, grounding, free breathing, co-ordination and increasing awareness.

In group 2, the treatment program was performed by a trained physiotherapist. The patient was lying in supine position. The application was supported by face cradle and carried out in a frontward semi-horizontal position in which the neck was relaxed. The classical massage (sometimes called Swedish technique) was applied to the upper back and neck area (Erectorspinae M., M. trapezius, M. Levatorscapulae and suboscipital) for 20 min. The treatment was started with 20 min massage applied on neck and back areas. The procedure included 3 strokes, 3 kneads, and 3 strokes to the upper back and neck area. Then, myofacsial releasing for cervical fascia, upper trapezius release and gross stretch of the posterior cervical musculature techniques were applied. Fascial relaxation was achieved performing tractions and stretchings on fascia cervicalis superficialis, fascia cervicalis media and fascia cervicalis profunda fascias. And finally patients were placed on active and isometric neck exercises (flexion of neck, extension of shoulder, rotation and lateral flection). Treatment programme was carried out for three days in a week. A treatment sessions took approximately 45-60 min. Fascia cervicalis profunda is attached to pars basillaris of occipital bone and links the base of skull to the central tendon. By the help of these techniques, mild traction applied on fascia, causes an increase in blood perfusion and heat of the area thus the pain is relieved and performance is improved thanks to the self correction effects of fascia. A fascial stretch applied in any region of the body can be sensed and is effective in another region as well (Shah et al., 2005; Shah et al., 2008). At the end of six weeks, evaluations obtained at the beginning of the study were repeated for both groups and the study was completed.

Statistical analyses

Statistical evaluation was carried out using SPSS version 20.0. All variables were stated in arithmetic average ± standard deviation (X±SD). Chi-square tests and Mann-Whitney U-tests were used for making distribution-free comparisons of independent samples. For within-subjects' comparisons, Wilcoxon tests were used. The level of significance required was calculated in 90% power was obtained at the confidence limit of 80% and with 0.05 error margin ($p<0.05$).

RESULTS

Socio-demographic features and clinical characteristics of patients included in the study and analysis of the difference between two groups were given in Table 1. In the statistical analyses, there was no difference between age, weight, height and BMI between groups ($p>0.05$) (Table 1). There was no statistical difference in the sense of existence of social security, marital status, occupation, educational status, existence of chronic disease, status of pain in the last 6 and 12 months, the effects on home and work life of headache, contiunity of headache, start of headache and frequence of headache among patients who are included in the study ($p>0.05$) (Table 1).

Among patients with group 1 (BAT), there was statistical difference between STAI-state and STAI-trait, pain, emotional reaction, sleep subparameters and total score of NHP ($p<0.05$) (Table 2). There was no difference between MIDAS (A, B and total score), LSI, FSS, BCS, energy level, social isolation, and physical activity subparameters of the NHP ($p>0.05$) (Table 2).

Among patients with group 2, there was statistical

Table 1. Socio-demographic and clinical characteristics of the subject's.

	Group 1	Group 2	z,χ^2	p
Age, (years)	38.90±11.56	39.44±9.22	-0.246	0.842
Height (cm), (X±SD)	156.50±4.40	158.66±5.19	-1.148	0.278
Weight (kg), (X±SD)	63.07±15.10	66.88±12.29	-0.899	0.400
BMI (kg/cm^2), (X±SD)	25.81±6.28	26.86±5.66	-0.390	0.740
Social security, n (%)			0.006	0.937
Yes	90 (90)	8 (88.9)		
No	1 (10)	1 (11.1)		
Marital status, n (%)			0.006	0.937
Married	90 (90)	8 (88.9)		
Single	1 (10)	1 (11.1)		
Occupation			2.621	0.623
Officer	1 (10)	2 (22.2)		
Employee	1 (10)	1 (11.1)		
House wife	7 (70)	5 (55.6)		
Other	1 (10)	1 (11.1)		
Educational status			2.621	0.454
Illiterate	2 (20)	-		
Primary school	5 (50)	7 (77.8)		
Secondary school	1 (10)	1 (11.1)		
High school	2 (20)	1 (11.1)		
Existence of chronic disease			3.077	0.545
Hypertension	1 (109	-		
Rheumatical	1 (10)	-		
Psychiatric	2 (20)	1 (11.1)		
None	6 (60)	8 (88.9)		
Status of pain in the last 6 month			4.961	0.175
1-7 time	3 (30)	-		
8-14 time	3 (30)	3 (33.3)		
15-30 time	1 (10)	4 (44.4)		
31-160 time	3 (30)	2 (22.2)		
Status of pain in the last 12 month			2.153	0.708
1-7 time	1 (10)	-		
8-14 time	1 (10)	-		
15-30 time	4 (40)	4 (44.4)		
31-160 time	2 (20)	3 (33.3)		
180	2(20)	2 (22.2)		
The effects on home and work life of headache			1.269	0.260
Affect my attention	3 (30)	5 (55.6)		
Effects completely	7 (70)	4 (44.4)		
Frequence of headache			3.958	0.555
Everyday	-	1 (11.1)		
1-3 days a week	4 (40)	5 (55.5)		
2 times a week	2 (20)	2 (22.2)		
Once a week	3 (30)	1 (11.1)		
Other	1 (10)	-		
Contiunity of headache			8.457	0.076
1-4 hour	-	4 (44.4)		
5-8 hour	1 (10	-		
9-24 hour	2 (20)	3 (33.3)		

Table 1. Contd.

1-3 days	5 (50)	2 (22.2)		
Than three days	2 (20)	-		
Start of headach			4.293	0.232
In the morning	2 (209	2 (22.2)		
Afternoon	-	3 (33.3)		
During sleerp	2 (20)	1 (11.1)		
Irregular	6 (60)	3 (33.3)		

Z, Chi-square tests; **z,** Mann-Whitney U-test.

Table 2. Comparison of baseline and six weeks data of the group 1.

	Before Treatment	**After Treatment**	**z**	**P**
	X±SD	**X±SD**		
MIDAS A	20.50±18.44	5.1±4.72	-1.214	0.225
MIDAS B	6.5±2.81	5.8±2.44	-0.184	0.854
Modas total	19.6±12.5	8.5±8.01	-1.897	0.058
LSI	45.7±6.61	49.9±4.06	-1.612	0.107
STAI- state	51.9±5.15	49.5±5.79	-2.205	0.027*
STAI-trait	78.6±23.5	68.5±21.65	-1.965	0.049*
BCS	45.1±4.72	46.8±4.31	-1.661	0.097
FSS	29.4±15.67	22.5±12.93	-1.378	0.168
NHP				
Total	198.57±107.30	86.25±84.02	-2.547	0.011*
EL	35.04±32.72	18.08±25.51	-1.787	0.074
P	53.85±31.01	24.19±30.10	-1.960	0.049*
ER	39.49±27.22	16.44±16.73	-2.073	0.038*
SI	15.10±22.74	4.50±9.49	-1.219	0.223
S	38.67±35.75	9.36±13.47	-2.371	0.018*
PA	16.39±18.15	13.51±17.03	-0.845	0.398

*, p<0.05; **z,** Wilcoxon signed ranks test; **MIDAS,** migraine disability assessment; **STAI,** state-trait anxiety ınventory; **LSI,** life satisfaction ındex; **BIQ,** body cathexis scale; **FSS,** fatigue severity scale; **NHP,** Nottingham health profile; **ES,** energy level; **P,** pain; **ER,** emotional reaction; **SI,** social isolation; **S,** sleep; **FA,** physical activity.

difference between MIDAS (A, B total score), social isolation, emotional reaction subparameters of the NHP and total score of the NHP (p<0.05) (Table 3). There was no statistical difference between LSI, BCS, FSS, STAI-stateand trait, energy level, pain, sleep, and physical activity subparameters of the NHP (p>0.05) (Table 3).

In the statistical analysis which was carried out between groups, before treatment program, there was no difference between MIDAS (A, B and total score), total score of the NHP and all subparameters of the NHP, LSI, BCS, STAI-state and trait (p>0.05) (Table 4). After treatment program, there was statistical difference between STAI-trait and sleep parameter of the NHP (p<0.05) (Table 4). There was no statistical difference between energy level, pain, emotional reaction, social isolation, physical activity subparameters and total score of the NHP, BCS, LSI, FSS, STAI-state, MIDAS (A, B and total score) (p>0.05) (Table 4).

DISCUSSION

The result of our study suggests that in migraine patients, a combined therapy programme consisted of massage, MFR treatment and exercises, is more effective at relieving pains related to disabilities and improves quality of life more effectively. As for BAT, it alters the emotional state (state and trait anxiety) thus improves quality of life

Table 3. Comparison of baseline and six weeks data of the group 2.

	Before Treatment	After Treatment	z	p
	X±SD	X±SD		
MIDAS A	14.42±10.13	4.28±3.35	-2.023	0.043*
MIDAS B	8.14±1.67	5.42±2.93	-2.032	0.042*
Modas total	36.5±36.44	10±11.38	-1.997	0.046*
LSI	24.25±3.49	26.71±2.56	-1.841	0.066
STAI- state	45.42±3.40	43.25±3.57	-0.736	0.461
STAI-trait	51±8.51	47.57±6.29	-0.542	0.588
BCS	80.62±28.39	97.22±27.59	-1.120	0.263
FSS	27.5±11.53	26.83±12.76	-0.828	0.408
NHP				
Total	215.44±109.67	84.47±62.48	-1.965	0.049*
EL	40.5±38.09	15.5±23.56	-1.364	0.172
P	36.52±21.64	14.66±27.6	-1.684	0.092
ER	41.23±22.57	9.22±8.08	-2.527	0.012*
SI	32.52±36.29	9.68±10.34	-2.041	0.041*
S	43.52±14.40	23.25±13.13	-1.527	0.127
PA	21.06±13.48	4.28±3.35	-1.219	0.223

***,** p<0.05; z, Wilcoxon signed ranks test; **MIDAS,** migraine disability assessment; **STAI,** state-trait anxiety ınventory; **LSI,** life satisfaction ındex; **BIQ,** body cathexis scale; **FSS,** fatigue severity scale; **NHP,** Nottingham health profile; **ES,** energy level; **P,** pain; **ER,** emotional reaction; **SI,** Social isolation; **S,** sleep; **FA,** physical activity.

Table 4. Comparisons of changes between the groups.

	Before treatment				After treatment			
	Group 1 (X±SD)	Group 2 (X±SD)	z	P	Group 1 (X±SD)	Group 2 (X±SD)	z	p
MIDAS A	20.50±18.44	14.42±10.13	-0.503	0.628	5.1±4.72	4.28±3.35	-0.049	0.962
MIDAS B	6.5±2.81	8.14±1.67	-1.172	0.295	5.8±2.44	5.42±2.93	-0.296	0.813
MIDAS total	19.6±12.5	36.5±36.44	-0.934	0.360	8.5±8.01	10±11.38	-0.049	0.962
LSI	45.7±6.61	24.25±3.49	-1.248	0.237	49.9±4.06	26.71±2.56	-2.168	0.813
STAI- state	51.9±5.15	45.42±3.40	-0.312	0.762	49.5±5.79	43.25±3.57	-0.294	0.033*
STAI-trait	78.6±23.5	51±8.51	-1.226	0.243	68.5±21.65	47.57±6.29	-1.118	0.274
BCS	45.1±4.72	80.62±28.39	-0.906	0.408	46.8±4.31	97.22±27.59	-0.843	0.417
FSS	29.4±15.67	27.5±11.53	-0.178	0.897	22.5±12.93	26.83±12.76	-0.601	0.562
NHP								
Total	198.57±107.30	215.44±109.67	-0.089	0.965	86.25±84.02	84.47±62.48	-0.178	0.897
EL	35.04±32.72	40.5±38.09	-0.227	0.829	18.08±25.51	15.5±23.56	-0.051	0.965
P	53.85±31.01	36.52±21.64	-1.471	0.146	24.19±30.10	14.66±27.6	-1.426	0.203
ER	39.49±27.22	41.23±22.57	0.000	1.000	16.44±16.73	9.22±8.08	-0.865	0.408
SI	15.10±22.74	32.52±36.29	-1.142	0.315	4.50±9.49	9.68±10.34	-0.854	0.515
S	38.67±35.75	43.52±14.40	-0.313	0.762	9.36±13.47	23.25±13.13	-2.659	0.009*
PA	16.39±18.15	21.06±13.48	-0.767	0.460	13.51±17.03		-0.178	0.965

***,** p<0.05; **z,** Mann Whitney U test; **MIDAS,** migraine disability assessment; **STAI,** state-trait anxiety ınventory; **LSI,** life satisfaction ındex; **BIQ,** body cathexis scale; **FSS,** fatigue severity scale; **NHP,** Nottingham health profile; **ES,** energy level; **P,** pain; **ER,** emotional reaction; **SI,** social isolation; **S,** sleep; **FA,** physical activity.

in patients with migraine.

Mind-body therapies and MFR therapy can affect these neurologic pathways at multiple levels (Sierpina et al., 2007). In our study, two different methods were applied. Classic massage was applied in the beginning, then exercise was given and finally MFR treatment was

performed for the group who received combined therapy.

Myofascial trigger point technique (trigger point release) was used by Moraska and colleagues in a treatment administered for 2 patients with chronic headache; a change in blood flow and decrease in lactate levels were detected as a result (Moraska et al., 2013). Both stretch, exercise and massage are thought to reduce muscle spasms. Wakim (1980) describes the effects of massage as relieving muscle fatigue from overexertion by improving circulation and removing waste products. The conducted studies stress that MFR techniques are effective in tension-type headache, fibromyalgia, disability in chronic headache patients and easing the severity and frequency of headache; furthermore they are are noninvasive, less expensive and they can be used as an effective conservative treatment modality (Ajimsha et al., 2011; Liptan et al., 2013; Nagrale, 2009). In our study, it is shown that manuel techniques and similar above mentioned effects of MFR treatments help patients to relieve and this relief enables them to cope with disabilities that are encountered in domestic and business life. Exercise approaches as well as massage and myofascial techniques plays an active role in the subsidence of spasms and headaches due to their effects on strength and endurance of neck muscles. Some studies compared the patients with headache and healthy individuals; reduction in strength and endurance were detected in deep cervical flexors of patients with heachache (Jull et al., 1997). The goal of the exercises in patients with headache is to strengthen neck muscles, which will render them more resilient and less likely to return to spasm (Jull et al., 1997). After application of manuel treatment techniques to the patients, interference of headache with daily life reduced, they had lesser constraints on their activities (lesser social isolation was seen after treatment) and they became emotionally relieved after the stress and tension caused by migraine. All these factors were resulted in an increase in life quality. We believe that manuel treatment techniques (such as massage, MFR) and exercises, which target the factors caused by headache, will play an important role for migraine patients to become more independent in daily life and and to raise their life quality.

In our study, a significant change was found in STAI-state and trait levels of BAT applied group and a significant change was detected in pain, emotional reactions and sleep duration also their quality of life was improved. Conducted studies predict the action mechanism of mind-body theraphy on chronic headache patients; and it is thought that this therapy has indirect effects caused by eased depression/anxiety, improved coping skills, and/or by improved locus of control and self-efficacy. More direct mechanisms of action might include decreasing stress hormones, modifying central sensitization, affecting pain pathways by changing brain function and structure, or activating endogenous analgesic processes (Wells and Loder, 2012). In our study, different from the other group, in BAT applied group more changes in STAI levels were found. BAT resulted in relief of anxiety, better emotional state and raise in sleep quality of patients. Although no significant difference was found, disability degree of BAT applied patients (MIDAS) considerably reduced.

For both groups, evaluation within group did not reveal a considerable change in body image, fatigue and life satisfaction. In females, body image can be effected by various factors. BMI is one of important factors that can effect body image (Jun and Choi, 2014). Patients of each group consisted of overweight individuals in our study. However the treatment applied for the patients does not have an effect on weight although it has an effect on pain and anxiety. We estimate that high weight and BMI of our patients might effect body image results. Hence body images of the patients in this study are found to be low (mean values of the patients who are in first group 45.1±4.72) mean values of BAT applied patients who are in the second group went up from 80.62±28.39 to 90.22±27.59. However, the applied treatment did not have an effect on body image. Similarly, conducted studies suggest that chronic fatigue is more commonly seen in advanced aged housewifes and housewifes (Wong and Fielding, 2010). Majority of our patients were housewifes and we estimete that burden of responsibilities and routine daily work on housewifes might effect fatigue results, except migraine aches.

Comperative analysis showed that applied treatment programme created difference in trait anxiety level and quality of life for sleep parameters in favor of BAT applied group. For the other outcomes, applied treatment programmes did not show a difference in terms of efficiency. According to the acquired results, BAT which is one of the approaches developed for migraine patients, has more efficient at reducing anxiety level of the patients, comparing to the other manual techniques (massage and MFR). Results of our study suggest that easing of tension and anxiety and removing disabilities that occur due to migraine related pain, significantly improves quality of life together with the improvement in social life, participation in activities and emotional states in migraine patients. Additionally, we suggest that, rather than a single treatment modality, combined use of different treatment modalities which targets different purposes has more efficacy in terms of patient independence in daily life and higher quality of life.

The limitation of this study is that an insufficient number of patients were enrolled in this study (Figure 1). Study groups were consisted of patients from different health care centers and sufficient number of volunteer patients could not be reached. The patients reported that they could not allocate time for the study or they came from far thus they did not desire to take part in the study. Therefore we figure that limited number of the

participants effected the results. The other limitation about the study is that effects long term outcomes were not analysed. Continuity of long term outcomes of treatment programmes which are applied for chronic diseases such as migraine, may have an important role. For this reason, awareness about long terms benefits of applied treatment programmes, is important in terms of acceleration of clinician's decision process for the suitable treatment modality selection. Besides, it was not possible to say which treatment method that applied in second group was more succesful in the long run. A research can be carried out which reveals the efficacy of exercise and MFR treatment methods alone or combined with massage and the efficacy of each treatment methods seperately. The last limitation of the study is lack of a control group. In the study, presence of a control group who do not receive any treatment could be beneficial in terms of a better treatment efficacy assessment in patients who receive a treatment. More participants and more randomized controlled trials which assess the long term efficiency of different treatment methods in migraine patients are needed. However, despite all these limitations, our study demostrated that two different treatment methods have a value in respect of symptomatic relief in migraine patients.

Conclusion

This study have a feature of being the first study conducted to investigate the effects of BAT on migraine patients. The study results demonstrate that two different treatment methods consisting of BAT and massage, MFR therapy, exercise combinations plays a role in; reduction of disabilities, improvements in emotional state and enhancements in quality of life. Further investigations is needed about this subject.

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