

The Effect of Body Awareness Therapy on Pain, Fatigue, and Health-related Quality of Life in Female Patients with Tension Type Headache and Migraine

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ABSTRACT

Objective: The aim of this study was to examine the effect of body awareness therapy on pain, fatigue, and quality of life in women with tension type headache and migraine.

Methods: Socio-demographic features of patients who are included in the study were recorded. Visual analogue scale (VAS) was used for pain and Fatigue Severity Scale (FSS) was used for fatigue, Nottingham Health Profile (NHP) was used for life quality related with health. Following the first evaluation, body awareness therapy (BAT) was applied for patients for 6 weeks per 60 minutes in 3 sessions.

Results: Among patients with TTH, there was statistical difference between VAS, FSS and total NHP score before and after BAT ($p<0.05$). Among patients with migraine, there was statistical difference between total NHP score before and after BAT ($p<0.05$).

Conclusion: Body awareness therapy is an effective method that can be used in order to increase life quality related with health among women patients with TTH and migraine.

Keywords: Body awareness therapy, fatigue, health-related quality of life, migraine, quality of life, tension-type headache

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BACKGROUND

Headache disorder is a disease group which is commonly observed in the society (1, 2). The most common ones among headache disorders is migraine and tension type headache (TTH) (3, 4). It is stated that frequency of TTH throughout life is 46-86% (5, 6) and migraine is around 16.4% (7). Failure in general state of health (8), insufficient rest, sleeping disorders (9), irregular meals, anxiety (10, 11), depression (12, 13), fatigue (13), posture disorders (14-16), stress and menstruation period for women are risk factors for headache (17).

When frequency of TTH and migraine is considered, it is seen that they cause important handicap and economic cost (18-21) stated that when migraine and tension type headache is compared with healthy control groups, it is one of the most important health problems that distract life quality. At the same time, it causes decrease in working capacity, important deficiency in daily life activities and function of people (22, 23). Symptomatic approaches and multidisciplinary practices have quite important place in treatment methods that would be applied on these patients (20). Primary treatments methods are divided into two as pharmacological and non-pharmacological (20, 24). The first method applied in order to soothe pain by patients who have chronic disease is the use of analgesic (25). In addition to his, the effect of different treatment methods was also analyzed in order to decrease dependency on medical treatment and get rid of aside effects of medical treatments (26, 27). non-pharmacological treatment methods which are frequently applied on these patients are various physiotherapy applications (26, 28), electromyographic (EMG) biofeedback (29), exercises (such as aerobic exercises, stretching, posture exercise) and relaxing techniques, cognitive therapy and acupuncture, yoga, meditation, T'ai-Chi, Body Awareness Therapy (BAT) (8, 13, 20). Cost –effective programs being in the foreground in recent years and problems caused by side effects of drugs used by patients with headache made use of physiotherapy and rehabilitation practices and alternative treatment methods common (30).

Body awareness therapies can be defined as body-oriented physiotherapeutic approaches using an holistic perspective in physiotherapy treatment directed towards an awareness of how the body is used, in terms of body function, behavior and interaction with self and others (31, 32). Body awareness therapies aim to normalize posture, balance – and muscular tension or stiffness which are experienced and visible in the movement pattern (31-33). 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 (33). Various positive effects have been reported in different patient groups; improved quality of life in studies of eating disorders (34) and irritable bowel syndrome (35), fibromyalgia (36), stroke (33), reduced pain (32). In psychiatric physiotherapy it has shown positive effects on pain, quality of movement, self-efficacy and sleep pattern (31, 37). Although the effect of Mind-body approaches (including some combination of stress management, coping skills training, cognitive restructuring, cognitive-behavioral therapy, relaxation therapy, imagery, hypnosis, etc.) on patients with migraine and TTH was analyzed (8, 9, 38), there was no study which analyze the effect of BAT on patients with TTH and migraine. This study was carried out in order to examine the effect of body awareness therapy on pain, fatigue, and quality of life in women patients with GTBA and migraine.

METHOD

Data source and design

In this study, 172 persons with TTH (98) and migraine (74) will be recruited from İzzet Baysal State Hospital Neurosurgery Polyclinic, Bolu, Turkey. Criteria for participating in the study were; being 18 to 55 years of age, being diagnosed with GTBA or migraine, being

women, having no difficulty or problem of communication and being volunteer to participate in the study. During treatment sessions those whose pain increased in positive way, who have cardiac disease, cardiac arrhythmia, cardiovascular disease, malignity and who receive chemotherapy, radiotherapy that would cause malignity, who have any neurologic or orthopedic disorder that would cause imbalance, those who are pregnant, receive antidepressant and antipsychotic treatment, who have alcohol and drug addiction and who do not have cooperation that is enough to comprehend the exercise were excluded from the study. Examination was done by a medical doctor specialist for neurosurgery. After applying the inclusion and exclusion criteria, those included were referred to the physiotherapy department. Of the 172 patients, 78 TTH and 64 migraine patient did not meet the inclusion criteria. 30 patients (20 TTH, 10 migraine) who are informed with the study and accepted to participate were included in the study. 3 weeks after the study started, 1 patient from TTH group left the study due to private reasons and 1 patient due to transportation problem. The study was completed with the participation of 18 patients with TTH and 10 patients with migraine (Fig. 1).

Ethical approval of the study protocol

The study protocol was approved by Bolu Clinic Research Ethics Committee. All patients provided written informed consent to participate in the study.

Instruments

Patients who were included in the study were evaluated with patient evaluation form at the beginning of study and after 6 weeks. Demographic features of patients (age, weight, height, gender, body mass index (BMI)) were recorded in patient evaluation form. Educational status, marital status, number of children, existence of social security, existence of chronic disease,

status of smoking and drinking alcohol, status of pain in the last 6 and 12 months, treatment methods used for headache, characteristics of headache, complaints accompanying headache were interrogated.

Pain severity of patients was evaluated by using Visual Analogue Scale (VAS). VAS is pain measurement scale whose reliability was approved (39). Patients were told to evaluate their pain on a scale of 10 cm from 0 to 10. They were told that if there was no pain it is 0 (on the leftmost), the most severe pain was 10 (on the rightmost), pain at medium severity would be in the middle. According to these explanations, patients were expected to mark the severity of their pain on a line of 10 cm during when they have headache. The point where patients marked on line of 10 cm was measured with ruler and the value was recorded as the pain (40).

In order to determine life quality related with health, Turkish version of Nottingham Health Profile (NHP) was used (41). NHP is a survey of general life quality which measures health problems perceived by the person and the level of how much these problems effect their daily activities: the survey is composed of 38 items and assesses sub-dimension about health status: Energy (3 items), pain (8 items), emotional reactions (9 items), sleep (5 items), social isolation (5 items) and physical activity (8 items). Questions are answered with yes or no. Scoring varies between 0-100 in each section. 0 stated the best health status and 100 states the worst.

Fatigue Severity Scale (FSS) was used in order to measure fatigue of patients. FSS is a scale whose validity and reliability is confirmed (42). FSS is presented as the best example among one-dimensional scales. The person states how much he is in the same opinion with each item by choosing a number from 1 to 7. 1 states that he never agrees, 7 states that he totally agrees. Score range of the scale which is composed of 9 questions is 9-63. The score of 36 and above states severe fatigue (43).

Treatment program

Following first evaluation, treatment program was initiated with patients. As treatment protocol, BAT practices which is composed of relaxing, movement and massage sections was applied by a physiotherapist who is expert on BAT for 6 weeks in total being 60 minutes at 3 sessions per week. At the end of 6 weeks, evaluations obtained at the beginning of study were repeated and the study was completed.

Statistical analyses

“SPSS 20.0” statistical program which operates under Windows operating system was used in statistical analyses. All variables were stated in arithmetic average \pm standard deviation ($X \pm SD$). Mann Whitney U test and chi-square test were used in order to determine the difference age, height, weight, BMI values among patients with TTH and migraine. In order to determine the difference in the sense of categorical measurements before and after treatment program, Mann Whitney-U test and Wilcoxon signed ranks test were used. Statistical significance level was accepted as $p \leq 0.05$.

RESULTS

Age average of patients with TTH was 38.77 ± 11.54 years old and age average of patients with migraine is 38.90 ± 11.56 years old. Socio-demographic features 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 smoking and drinking alcohol and use of analgesic among patients who are included in the study ($p > 0,05$, Table 1).

In the statistical analyses there was no difference between patients with TTH and migraine among headache attacks during the past 6 and 12 months, characteristics of pain, continuity of headache, start of headache and factors which triggers pain ($p > 0.05$). There was statistical difference in the sense of headache location and headache side ($p < 0.05$, Table 2).

Among patients with TTH, there was statistical difference between VAS, energy level of NHP, pain, emotional reactions, social isolation, sleep, physical activity, total NHP score and FSS values before and after BAT ($p < 0,05$, Table 3). Among patients with migraine, there was statistical difference between emotional reaction of NHP, pain, sleep and total NHP score before and after treatment ($p < 0,05$), there was no difference between VAS, energy level of NHP, social isolation, physical activity and FSS values ($p > 0.05$, Table 3).

In the statistical analysis which was carried out between groups, there was no difference between VAS, energy level of NHP, pain, emotional reactions, social isolation, sleep, physical activity and total NHP score and FSS values before and after treatment ($p > 0.05$). There was difference only in the sense of VAS values among group after treatment ($p < 0.05$, Table 4).

DISCUSSION

The results of our study shows that BAT reduces the pain more among women patients with TTH compared to patients with migraine, decreases fatigue level and increases life quality of patients with TTH and increases life quality of patients with migraine together with the increase of emotional wellness and sleeping quality. This study is the first study that was

carried out on this issue and shows that BAT is an effective method that can be used in order to increase life quality in cases of chronic pain such as migraine and TTH.

In some studies, although it was determined that TTH and/or migraine type headache is related with degree of education, marital status, job, and it was commonly observed among people whose educational level is low and who has low income, low electricity consumption (44, 45), this was not found in other studies (46). In our study age average of both disease group was 38 and it was determined that there are more married people in both groups and most of the participants are housewives and their educational level is low.

A number of factors defying the International Classification of Headache Disorders-2 (ICHD-2) criteria pose obstacles, for example, the migraine headache are unilateral location, pulsating quality, moderate or severe intensity, aggravation by physical activity and association with nausea and/or photophobia and phonophobia (47). On the other hand, tension type headache (TTH) pain is typically bilateral, pressing or tightening in quality and of mild to moderate intensity, and it does not worsen with routine physical activity. There is no nausea but photophobia or phonophobia may be present (47). In our study it was found that pain frequency in the last 6 and 12 months, characteristics of pain, continuity of headache, starting of headache and factors which trigger pain are similar in both patient groups. There was difference in the sense of headache location and headache side. While pain of patients with migraine is mostly on the frontal location and the pain is one-sided, location of pain among patients with TTH is throughout the head and double-sided. Although the first method applied in order to soothe pain by patients who have chronic disease is the use of analgesic (25), in a meta-analysis study which analyze effects and superiority of pharmacological and non-pharmacological interventions (combined relaxation/thermal biofeedback training), it was determined that both treatment methods can be effectively used among patients with migraine. As a result of the study, authors suggest that greater attention should be paid to determining

the relative costs and benefits of widely used pharmacological and non-pharmacological treatments (38).

Similarly, in the meta-analysis studies which were carried out in order to analyze the effects of mind-body therapies, it was determined that single or combined uses are effective in arranging symptoms of migraine, tension and mixed-type headaches, side effects are generally minimal and transient (9, 48, 49).

In the studies which analyze the effectiveness of BAT in different follow-up durations among patients schizophrenia, chronic musculoskeletal system disease, psychosomatic problem, fibromyalgia syndrome, non-specific musculoskeletal system disease, it was reported that there is significant improvement in body awareness, self-confidence, level of sexual intercourse, social communication, skill of thinking, pain and psychogenic distress, life quality, there was decrease in symptoms related with stress, increase in self-sufficiency, decrease in depressive mood, decrease in anxiety, positive change about expressing feeling and in living styles (35, 37, 50). BAT is a method of treatment which enables awareness of people's own somatic sensations, increases somatic awareness and body awareness of person through relaxation, neutral standing position, breathing exercises, decreases muscle overuse of body and forms inhibition on pain which emerges accordingly (51, 52). In the meta analysis study which was carried out in order to analyze the effect of body awareness interventions on fibromyalgia and chronic fatigue syndrome, pain and fatigue level, it was emphasized that results are quite heterogeneous, this resulted from methodology of studies and clinical heterogeneity, further studies are required about the issue (51).

It was stated that exercise approaches which has relaxation aim, and focus on progressive stretching, respiration and stretching of specific muscle groups have positive effects on patients with TTH and migraine (53). It is stated that relaxation training (RT) and EMG biofeedback training alone and in combination decreased pain among nearly 50% of

patients with headache (54). Regarding outcomes at the 3-month follow-up, among those with tension headaches, RT led to reduced headache frequency, reduced headache disability, and marginally less physical symptoms, compared with a control condition.

However it was reported to have limited effects on patients with migraine (53). Mannix et al. detected that stretching methods increased life quality of patients with TTH compared to control group (55). Similarly, Söderberg et al. emphasized that stretching techniques increase symptoms (such as content-happiness, self-management, self-confidence, vitality-endurance, concentration, enthusiasm, sleep-night sleep, sleeping quality) which are related with central nervous system that influence well-being of patients with TTH and increase well-being and life quality, therefore stretching techniques which are used in patients with TTH are quite important (8). Similar results were obtained in our study, it was observed that BAT has positive effects on life quality related with health of both patient with migraine and TTH and this effect is much more on patients with TTH. It was determined that after treatment, pain level and fatigue level decreased significantly among patients with TTH and there was significant increase in all parameters. In addition to this, it was observed that there was no significant decrease in pain and fatigue level of patients with migraine, but significant results were obtained in emotional reactions, pain and sleeping parameters. Although there was not a significant difference, it was observed that there was improvement in energy level, social isolation and physical activity parameters of patients with migraine after BAT. In evaluation of effectiveness between groups, it was observed that pain level decreased much more among patients with TTH.

Limitations of our study; the first limitation is the lack of number of cases. Further studies that analyze effectiveness of BAT on patients with TTH and migraine is required with much more number of cases. Insufficiency of people who accept in participating in the study due to time problem, private reasons, preferring to use drugs is the most important reason of

this limitation. Second limitation of study is that life quality scale was not arranged especially for TTH and migraine. Although there are scales which are developed for patients with migraine, NHP was preferred as life quality scale since there is no scale which is effectively used for both groups. Specific scales are required in order to measure life quality among patients who suffer from headache. Third limitation of the study was that short-term effect of BAT was considered. Studies in which long-term effects of BAT are analyzed are required. It can be enabled to propagate use of BAT by showing effectiveness of it in long-term and stating that it is a method that can be used frequently without any side effects.

CONCLUSION

The result of our study shows that body awareness therapy is a treatment method that can be used effectively in order to decrease pain and fatigue level of patients with TTH and in order to increase life quality of both groups. Further studies are required in which short and long term effects of BAT are comprehensively analyzed with more cases.

ACKNOWLEDGMENTS

We thank all of the participants.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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

		TTH		Migraine		z, χ^2	p
Age (year, X \pm SD)		38.77 \pm 11.54		38.90 \pm 11.56		-0.26	0,79
Weight (kg, X \pm SD)		68,27 \pm 12,65		62,37 \pm 14,64		-1.51	0,13
Height (m, X \pm SD)		1,60 \pm 0,05		1,56 \pm 0,04		-1.61	0,10
BMI (kg/m ² , X \pm SD)		26,54 \pm 4,69		25,51 \pm 6,05		-0,62	0,53
		n	%	n	%		
Social Security	Yes	18	100	9	90	1.86	0,17
	No	-	-	1	10		
Marital Status	Married	14	77,8	9	90	0.65	0,41
	Single	4	22,2	1	10		
Occupation	Officer	2	11,1	1	10	1.35	0,92
	Worker	1	5,6	-	-		
	Self-employed	2	11,1	1	10		
	Housewife	10	55,6	7	70		
	Not working	3	16,7	1	10		
Educational Status	Elementary	11	61,1	7	70	6.49	0,26
	Secondary	1	5,6	1	10		
	High-school	2	11,1	2	20		
	College	4	22,3	-	-		
Chronic Disease	Yes	-	-	3	30	6.04	0,10
	No	18	100	7	70		
Smoking	Yes	4	22,2	-	-	2.59	0,10
	No	12	77,8	10	100		
Alcohol Use	Yes	-	-	-	-	-	-
	No	18	100	10	100		
Use of Analgesic	Yes	17	94,4	10	100	0.57	0,44
	No	1	5,6	-	-		

z=Mann Whitney U test, χ^2 = chi square test

Table 2. Headache characteristics of the subject's

			TTH		Migraine		χ^2	p
			n	%	n	%		
Headache attacks during the past 6 months	1-7 times		3	16,7	3	30	5.24	0,26
	8-14 times		1	5,6	3	30		
	15-30 times		2	11,1	1	10		
	31-160 times		10	55,6	3	30		
	180 and more		2	11,1	-	-		
Headache attacks during the past 12 months	1-7 times		1	5,6	1	10	4.17	3,83
	8-14 times		2	11,1	1	10		
	15-30 times		2	11,1	4	40		
	31-160 times		4	22,2	2	20		
	180 and more		9	50	2	20		
Characteristics of Pain	Continuously		12	67,7	6	60	4.77	0,31
	Attacks		2	11,1	2	20		
	Irregular		4	22,2	2	20		
Continuity of pain	5-8		2	11,1	1	20	5.49	0,24
	1-3 days		6	33,3	7	70		
	More than 3 days	3	4	22,2	2	20		
Location of headache	One-side		1	5,6	5	50	12.83	0,00*
	Both sides		14	77,8	1	10		
	Variable		3	16,7	4	40		
Headache side	Temporal		4	22,2	4	40	9.79	0,02*
	Frontal		-	-	4	40		
	Occipital		4	22,2	1	10		
	All over head		10	55,6	2	20		
Factors triggering pain	Stress		13	72,2	2	20	2.00	0,36
	Fatigue		2	11,1	6	60		
Start of headache	Morning		3	16,7	2	20	2.08	0,72
	Afternoon		1	5,6	-	-		
	Evening		2	11,1	-	-		
	At sleep		2	11,1	2	20		
	Irregular		10	55,6	6	60		

* p<0,05, χ^2 : chi-square test

Table 3. Difference between pain, fatigue and life quality values before and after BAT within the groups

		Before Treatment	After Treatment	z	p
		X±SS	X±SS		
TTH	VAS	6±1,71	3,56±1,71	-3,06	0,00*
	NHP(ES)	47,95±37,96	14,72±26,35	-2,67	0,00*
	NHP(A)	39,49±28,50	8,92±13,02	-3,29	0,00*
	NHP(ER)	38,29±33,84	15,97±22,05	-2,41	0,01*
	NHP(SE)	17,96±27,83	2,47±10,22	-2,19	0,02*
	NHP(U)	24,28±27,62	12,50±21,62	-1,84	0,06*
	NHP(FA)	18,41±14,84	12,05±15,24	-1,80	0,07*
	NHP(Total)	186,02±115,92	65,95±83,55	-3,12	0,00*
	FSS	36,30±13,60	23,88±12,14	-3,19	0,00*
	Migraine	VAS	7±2,26	5,5±2,32	-1,85
NHP(ES)		35,04±32,72	18,08±25,51	-1,78	0,07
NHP(A)		53,85±31,01	24,19±30,10	-1,96	0,05*
NHP(ER)		39,49±27,22	16,44±16,73	-2,07	0,03*
NHP(SE)		15,10±22,74	4,50±9,49	-1,21	0,22
NHP(U)		38,67±35,75	9,36±13,47	-2,37	0,01*
NHP(FA)		16,39±18,15	13,51±17,03	-0,84	0,39
NHP(Total)		198,57±107,30	86,25±84,02	-2,54	0,01*
FSS		29,4±15,67	22,5±12,93	-1,37	0,16

*p<0.05, Mann Whitney-U Test, VAS: Visual Analogue Scale, NHPES: Nottingham Health Profile Energy Level, NHPA: Nottingham Health Profile Pain, NHPER: Nottingham Health Profile Emotional Reactions, NHPSE: Nottingham Health Profile Social Isolation, NHPU: Nottingham Health Profile Sleep, NHPFA: Nottingham Health Profile Physical Activity, FSS: Fatigue Severity Scale; FSS: Fatigue Severity Scale

Table 4. Difference between pain, fatigue and life quality values before and after BAT between the groups

		Before treatment			After treatment		
		X±SS	z	p	X±SS	z	p
VAS	TTH	6±1,71	-1,60	0,10	3,56±1,71	-2,13	0,03*
	Migraine	7±2,26			5,5±2,32		
NHP(ES)	TTH	47,95±37,96	-1,00	0,31	14,72±26,35	-0,37	0,70
	Migraine	35,04±32,72			18,08±25,51		
NHP(A)	TTH	39,49±28,50	-1,29	0,19	8,92±13,02	-1,39	0,16
	Migraine	53,85±31,01			24,19±30,10		
NHP(ER)	TTH	38,29±33,84	-0,09	0,92	15,97±22,05	-0,56	0,57
	Migraine	39,49±27,22			16,44±16,73		
NHP(SE)	TTH	17,96±27,83	-0,10	0,91	2,47±10,22	-1,01	0,31
	Migraine	15,10±22,74			4,50±9,49		
NHP(U)	TTH	24,28±27,62	-1,05	0,29	12,50±21,62	-0,05	0,95
	Migraine	38,67±35,75			9,36±13,47		
NHP(FA)	TTH	18,41±14,84	-0,39	0,69	12,05±15,24	-0,05	0,95
	Migraine	16,39±18,15			13,51±17,03		
NHP(Total)	TTH	186,02±115,92	-0,36	0,71	65,95±83,55	-0,71	0,47
	Migraine	198,57±107,30			86,25±84,02		
FSS	TTH	36,30±13,60	-1,15	0,24	23,88±12,14	-0,22	0,82
	Migraine	29,4±15,67			22,5±12,93		

*p<0.05, z=Wilcoxon signed ranks test, VAS: Visual Analogue Scale, NHPES: Nottingham Health Profile Energy Level, NHPA: Nottingham Health Profile Pain, NHPER: Nottingham Health Profile Emotional Reactions, NHPSE: Nottingham Health Profile Social Isolation, NHPU: Nottingham Health Profile Sleep, NHPFA: Nottingham Health Profile Physical Activity, FSS: Fatigue Severity Scale; FSS: Fatigue Severity Scale

Fig 1. Flowchart and list of inclusion and exclusion criteria

