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# An Investigation of The Effectiveness of a Composed Model of Cognitive- behavior Headache Management on the Treatment of Anxiety, Depression, Stress and Migraine Symptoms

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## Abstract

Migraine is a bio-psychosocial problem, a multilateral study that focused on psychological factors is essential. Researches revealed a strong relationship between migraine headache and negative effects. To determine the effectiveness composed model of the cognitive-behavior migraine management on migraine symptoms, 10 women with migraine randomly assigned into two groups. Experimental group participated in 8 treatment sessions. Differences between pretreatment and posttreatment were calculated for the two groups. And were analyzed, using a series of U Mann-Whitney tests. The results indicated that patients who received the treatment had lower levels of depression, stress and migraine symptoms, compared to patients in the control group.

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## 1. Introduction

More than 90 percent of the people, at least one day in year, and initial complainant of the 10 to 12 percent of people who see a doctor is headache (Gatchel, R and Blanchard, EB, 1997). In America, 18 percent of women and 6 percent of men experience migraine headaches (Lipton, R. B et al, 2001). Migraine headaches have significant negative impact on performance and quality of life in migraine patient's (Holroyd, K. A. et al, 2006). Several hypotheses about the cause of migraine headaches are propounded. While some of them believe that biological system malfunction is the cause of headaches. But migraine headaches often are initiated along by severe stress, frustration, anger and other emotional factors (Pearce, J., 1977). Anger can play an intensification factor role in headaches. Studies support of the influence of anger in adjustment with pain (Burns, J. W. et al, 1998; Kerns, R. D. et al, 1994) and response to treatment (Anderson, K. O. et al, 1995; Edwards, R. et al, 2001). Moreover, research suggests a significant role of anger in headaches in general, and migraines in particular, (Materazzo, F. et al, 2000; Nicholson, R. A. et al, 2003; Perozzo, P. et al, 2005). Using cognitive - behavioral therapy in the control and management of chronic pain has also increased. In three recent decades, cognitive-behavioral model produce more accepted conceptualization of pain (morely, S. J. et al, 1999). All methods of cognitive-behavioral therapy in pain are participant in theoretical assumptions about the interaction between environmental events, knowledge, and verbal and nonverbal pain behavior (Turk, D. C. & Rudy, T. E. 1989). Cognitive-behavioral therapy of chronic pain believes that focus on cognitive and emotional factors that patient form in related with their pain can improve therapeutic

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result and help to its maintainance (Turk, D. C. & Gatchel, R., 2002). Patterned on the cognitive-behavioral theory of pain (Turk, D.C. et al, 1983), various methods for the treatment of migraine headache has generated. Furthermore, the cognitive-behavior approach is one of the most successful therapies in controlling and reducing anger and aggression. Various researches confirm the impact of cognitive-behavior control on reduction of anger and aggression, among them can pointed to Moon and Eisler (1986), Hazaleus and Deffenbacher (1986), stermac(1986), Deffenbacher and colleagues (2000), Sukhodolsky and colleagues (2004), Burns and colleagues (2008).

Considering that anger has an important role in adjustment to pain, headaches and especially migraine, adding anger related interventions to migraine treatment manuals, probably will be able to create different results. The present study was designed to investigate this issue.

## 2. Materials and methods

### 2.1. Participants

Study population the study included all patients for the treatment of migraine headaches that have been referred to the neurologist clinic.

To determine sample size, we made a quick look at some of the research between 1976 and 2005 in areas associated with headache has been published. Turin and Johnson (1976), 9 participants, Mullinix and colleagues (1978), 11 participants, Claghorn and colleagues (1981), 11 participants, Daly and colleagues (1983), 20 participants, Mizener and colleagues (1988) 11 participant, Nicholson and Blanchard (1993) , 14 participants, Blanchard and Kim (2005), 12 participants.

We select the average of the above number of participants to determine sample size. There for we randomly select 12 patient and because of failing one subject in experimental group we omitted a patient in control group randomly.

### 2.2. Inclusion criteria

Participants of this study were 10 women with migraine whom referred a neurologist clinic. Considered for selection criteria that are mentioned below. Selecting the subjects for participation in the study after obtaining all criteria were as follows:

Selecting the subjects for participation in the study after obtaining all criteria was as follows:

Age over 18 years, Neurologist diagnosis proving migraine, Experience At least twice the headache within last month and 5 headaches among 6 past months, At least graduated from secondary school, Acceptance and commitment therapy

No major psychiatric disorder (i.e., psychoses or dementia), No componentry and alternative medicine treatment  
No severe daily headaches

### 2.3. Research Tools

All participants were asked to provide basic demographic information and complete the measures described below:

#### 2.3.1. Depression Anxiety Stress Scale (DASS-21):

DASS- 21 scale is formed of 21 sentence associated with signs of negative emotions (depression, anxiety and stress). (Anthony and Barlow, 2002). Several studies have shown that DASS sub-scales had good psychometric properties. In a study with nonclinical population, internal consistency coefficients of three subscales depression, anxiety and stress, respectively was, 0/91, 0 /84, 0/90 (Lovibond and Lovibond, 1995). And in a study with clinical populations (pathological) internal consistency coefficients for the three subscales respectively were 96/0 89/0 93/0 has been reported (Brown, TA et al, 1997). Brown and colleagues (1997) psychometric properties (validity and reliability) of this questionnaire among Iranian nonclinical samples has been approved.

#### 2.3.2. Migraine headache symptom questionnaire:

To check the reliability of this questionnaire retest method has been used, this coefficient for all subjects was 0/0 8 and 0/47 for female subjects and 0/75 for male subjects. To assess the internal consistency, alpha coefficient was calculated that this value for all subjects was 0/91 and for female subjects was 0/81 and for male subjects was 0/89.

Also to check the convergent validity, this questionnaire was administered with hospital depression and anxiety questionnaire (HADS) and the MMPI questionnaire. The results indicate the adequate validity of this questionnaire (Najarian, 1997).

2.3.3. *Treatment session:* each subject in the experimental group participated in 8 treatment sessions (one 45 min session per week) based on pain management training and anger control. The session’s content was based on pain CBT (Turk, D.C. & Rudy, TE. 1989) and MTCT (Lipchik, G. L. et al, 2002) and anger control program.

### 3. Findings

The current sample consisted middle-aged (M age 33.4 in the control group and 26 years) participant and All of them were female. 40% in each group were married and 40% in each group were unemployed at the time of testing. There were no significant differences between the groups on these demographic variables (see Table 1). The migraine duration did not differ between the two migraine patient groups, who on average had been suffering from migraine for 137 months in control group an 119 month in the experimental group. The group assignment of patients was randomly.

Table 1. Demographic characteristic

Groups	Age	Headache duration(month)	Marital status	occupation	
Control Group	Subject 1	41	132	Married	employed
	Subject 2	32	96	Single	employed
	Subject 3	22	196	Single	Unemployed
	Subject 4	49	240	Married	employed
	Subject 5	23	20	Single	Unemployed
Experimental Group	Subject 1	23	60	Single	Unemployed
	Subject 2	26	124	Single	employed
	Subject 3	26	12	Single	employed
	Subject 4	30	240	Married	employed
	Subject 5	25	160	Married	Unemployed

Table2. Comparison Pretest – post test scores difference of variables in experimental and control group

Groups	Number	M (SD) Pretest – post test scores difference	Sum of Ranks	Mean Rank	Z	significance	
Depression	Control Group	5	-2.80(3/63)	15.00	3.00	-2.619	0.009
	Experimental Group	5	5.60(2.88)	40.00	8.00		
Anxiety	Control Group	5	-1.40(5.86)	22.00	4.40	-1.156	0.248
	Experimental Group	5	2.40(2.70)	33.00	6.60		
Stress	Control Group	5	-2.20(1.79)	15.00	3.00	-2.652	0.008
	Experimental Group	5	4.20(2.77)	40.00	8.00		
Migraine symptoms	Control Group	5	-2.20(10.80)	20.50	4.10	-2.619	0.009
	Experimental Group	5	13.80(6.76)	34.50	6.90		

The results presented in Table 2 show that in depression variable the differences between pre-test and post-test score in compare with control group’s differences is meaningful ( $z = -2/619, p = 0/009$ ). This finding means that the combined intervention of cognitive-behavioural control of pain and anger had effective impact on depression in patients with migraine headache. In stress variable the differences between pre-test and post-test score in comparison with control group differences is meaningful too ( $z = -2/652, p = 0/008$ ). This finding means that the combined intervention of cognitive-behavioral control of pain and anger has been effective in reduction migraine headache patient’s stress. But as shown in table 2 changes in anxiety isn’t significant it means that our intervention can’t impact on patient’s anxiety. In headache symptoms variable the differences between pre-test and post-test score in comparison with

control group differences is meaningful ( $z = -2/619$ ,  $p = 0/009$ ). This finding means that the combined intervention of cognitive-behavioural control of pain and anger, has been effective in reduce headache symptoms of patients with migraine headaches.

Table 3. Comparison of the change percentage in groups

	Groups	sum of Pretest –scores	Sun of posttest scores	Change percent
Control Group	Depression	37	9	76
	Stress	38	17	55
Experimental Group	Migraine symptoms	369	300	-19
	Depression	31	45	-45
	Stress	45	56	-24
	Migraine symptoms	354	365	3

According to table 3, the highest percentage of change is in depression variable (76%). In contrast, in the control group, the percentage rate of change is negative for all variables. This table clearly shows that the percentage change in the patient group cognitive-behavioural therapy has better results than were control patients.

#### 4. Conclusion

Altogether, these results suggest that performed intervention was effective in the control headache symptoms, and also reduced depression and stress. Treatment groups, compared with control patients, at the end of treatment were less depressed, less complained of stress and milder symptoms reported. But there wasn't any significant change in anxiety. With respect to no difference existed in pre-test comparison of two groups, we can say that changes in all variables (except anxiety) was the result of intervention.

Here deserve to mention the actions that performed for improve accuracy of this study:

- 1- Use research colleague to perform and interpret the questionnaires to prevent possible biases.
- 2- Use questionnaires that their validity and reliability have been confirmed in Iran.
- 3 - Use a combination of cognitive behavioural approach to control pain and anger
- 4- Finally, use control group

The behavioural and cognitive changes were the targets of intervention that has been performed in this study. Developing small and easy behavioral goals help patients improve their daily activity and as a result of this improvement achieve more self-efficacy and after that they experience less negative affect such as depression, and progressive muscle relaxation method reduce their stress. These behavioral methods can create a positive sense of the person to help reduce negative emotions. And anger control training helps people to avoid exciting event that related to anger. The efficacy of composing models of cognitive- behavior headache management in decreasing migraine headache patients anger component and increasing their self-efficacy was proven in a separate article (hamedei, v. et al,2010). These to variable act as process variable and change depression, stress and headaches symptoms as resultant variable.

The findings and results of this study have many similarities with previous research about the use of cognitive behavioral methods of controlling chronic pain have been published until now. For example, in a study to assess the direct relationship between beliefs and symptoms of headache patients was designed, Newton and Barbaree (1987) before and after cognitive-behavioural therapy assessed the nature of headache that patients experience during and immediately after it. Also the results of this study are similar to researches that support the MTCT methods effectiveness on migraine headache symptoms. Altogether the results indicated that MCTC can decrease migraine headaches between 40 to 60 percent (Lipchick et al, 2002).

The results of this study's findings are coordinated with Sadjadi, et al (1387). This group of researchers that examined the impact of cognitive-behavioural therapy on depression and feelings of

disability caused by headaches in patients with migraine and tension headache, their study showed that the method of cognitive-behavioural group therapy had significantly reduced headache-related disability and depression in patients with headache. The study is also partly similar to the results of the Janbozorgi (1379) it was shown that people who therapy with muscle relaxation combined with biofeedback techniques have been able to significantly decrease duration, intensity and number of headache attacks.

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