

The comparison of personality types in patients with vascular headache and tension-type headache

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Abstract

Objective: This is a study to evaluate the personality types based on Myers-Briggs Type Indicator (MBTI) in patients with chronic vascular or tension-type headache. **Methods:** This was a cross-sectional study conducted on 210 patients with tension-type and vascular headache in the Mashhad city, northeast of Iran. Patients were selected through convenience nonprobability method from December 2010 to January 2012. They were asked to fill demographic questionnaire and MBTI. Data were analyzed with SPSS using Mann-Whitney U, Chi-square and Fisher exact test. **Results:** The mean age of participants was 33.7 ± 8.2 . Patients with vascular headache were mostly female, had higher levels of education, experienced more attacks per month and had shorter duration of headache until seeking treatment compared to the patients with tension-type headache. There was a significant difference in the distribution of personality types and frequency of each personality dimension between two groups. Patients with vascular headaches were significantly more introverted, sensing, thinking and judgmental, as compared to extraversion, intuitional, feeling, and perceiving among the tension-type headaches. **Conclusion:** Since there was a significant difference in the personality type of the different headache patients, further neuropsychological studies may throw light on the etiology of these chronic headaches.

INTRODUCTION

Headache is one of the most common medical complaints. The International Headache Society has published a classification system for different types of headaches. According to this classification, more common types of primary headaches include migraine, tension-type headaches, and cluster headaches. Other types of headaches are usually secondary to acute or chronic medical or psychiatric diseases.¹ As comorbidity of psychiatric disorders with different type of headache is high, the rate of psychiatric consultation in patients suffering from headache increases remarkably in recent years.^{1,2} The chronicity of many of these headaches is another challenging aspect of treatment, with relapse and remission in the clinical course.³ Thus, there is a need to study the factors that affect the initiation and chronicity of headache, the pathophysiology of which is still not clearly understood.⁴ There has been a number of studies to investigate the comorbidities of different types of chronic headaches, to predict the exacerbating factors and response to treatment.⁵⁻⁸ It has been shown that there is increased prevalence of certain personality

disorders in chronic headache^{2,9-12}, although the cause-effect relationship between the personality changes and headache is still unclear.¹³

Migraine (vascular) and tension-type headaches, both having significant disease burden^{1,14}, are associated with high rates of depression and some types of personality disorders.^{15,16} A number of studies have been conducted on personality types in these headaches, such as that showing the association with hysterical traits¹⁷⁻¹⁹, and harm avoidance with migraine and tension-type headaches.²⁰⁻²² However, others have found no association with abnormal personality traits in vascular headache, while there were some pathologies in tension-type headache.^{23,24} Thus, overall the relationship between personality disorders and migraine or tension-type headaches remains uncertain.

Myers-Briggs Type Indicator (MBTI) is a diagnostic tool which is used to evaluate personality types in both patients and healthy general population.²⁵⁻²⁷ MBTI is a personality inventory based on Jung's theory of psychological types.²⁸ This tool evaluates personality dimensions in 4 axes, from which 16 personality types are

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defined, which is different from many other tools used to assess personality.²⁹ Most of the personality inventories which were used in previous studies mentioned above^{5,6,8,20-22}, such as Minnesota Multiphasic Personality Inventory (MMPI) and Trait-Character Inventory (TCI), evaluate personality traits. It means that they define how much of a trait exists in the respondent, but MBTI aims to determine the respondent's personality type³⁰, which has been used in different psychiatric and psychosomatic disorders.³¹⁻³³ In this study, we aimed to evaluate personality types based on MBTI in patients with chronic vascular or tension-type headache.

METHODS

This is a cross-sectional study conducted on 105 patients each of tension-type headache and vascular headache in the Ghaem university hospital of Mashhad city, Iran. Mashhad is the second largest city located in northeast of Iran. Ghaem hospital is a referral center for neurologic diseases in the east of the country. Participants were selected through convenience nonprobability method from December 2010 to January 2012. The neurologists were asked to direct the patients who would like to participate in the to the investigators who were psychiatrists. Only patients who fulfilled the IHS-II criteria of vascular or tension-type headaches were included in the study; patients with mixed features of headache were excluded. Other inclusion criteria were: aged 18-60 years-old, headache duration of at least 6 months, do not have any major psychiatric disorders, do not consume any psychotropic drugs, an IQ \geq

100, absence of any sensory-motor disorder as confirmed by neurologists. The study subjects were required to sign a written informed consent. The subjects were asked to answer the researcher-made demographic questionnaire and MBTI as below.

Researcher-made demographic questionnaire

Other than personal information such as age, gender, education, and marital status, the questionnaire included information on the character, duration, and frequency of headache.

Myers-Briggs Type Indicator, Form M

This questionnaire was designed based on Jung's personality theory by Catherine Briggs and Isabelle Catherine Briggs-Myers.³⁴ In 1998, it was revised and "form M" was introduced. Form M is a Paper-and-pencil questionnaire which can be completed individually or in groups. It included 93 questions, 56 items in the form of statement sentence or two-choice questions and the other 47 items, in separate two-word form. The personality types based on this questionnaire are interpreted on the axes of introversion vs. extraversion, intuitional vs. sensing, feeling vs. thinking, and perceiving vs. judgmental. Each participant's personality type is classified based on each of the four dimensions with 16 personality types as in Table 1.

This questionnaire was translated into Persian and validated in Iran. The reliability of the whole questionnaire was 0.82 and the reliabilities of Introversion-Extraversion, Sensing-Intuitional,

Table 1: Types of personality based on Myers-Briggs Type Indicator (MBTI) according to four dimensions (Introversion-Extraversion, Sensing-Intuitional, Thinking-Feeling, Judgmental-Perceiving)

	Introversion				Extraversion			
	Sensing		Intuitional		Sensing		Intuitional	
	Thinking	Feeling	Thinking	Feeling	Thinking	Feeling	Thinking	Feeling
Perceiving	<i>ISTP</i>	<i>ISFP</i>	<i>INTP</i>	<i>INFP</i>	<i>ESTP</i>	<i>ESFP</i>	<i>ENTP</i>	<i>ENFP</i>
Judgmental	<i>ISTJ</i>	<i>ISFJ</i>	<i>INTJ</i>	<i>INFJ</i>	<i>ESTJ</i>	<i>ESFJ</i>	<i>ENTJ</i>	<i>ENFJ</i>

ISTP: Introversion-Sensing-Thinking-Perceiving, *ISTJ*: Introversion-Sensing-Thinking-Judgmental
ISFP: Introversion-Sensing-Feeling-Perceiving, *ISFJ*: Introversion-Sensing-Feeling-Judgmental
INTP: Introversion-Intuitional-Thinking-Perceiving, *INTJ*: Introversion-Intuitional-Thinking-Judgmental
INFP: Introversion-Intuitional-Feeling-Perceiving, *INFJ*: Introversion-Intuitional-Feeling-Judgmental
ESTP: Extraversion-Sensing-Thinking-Perceiving, *ESTJ*: Extraversion-Sensing-Thinking-Judgmental
ESFP: Extraversion-Sensing-Feeling-Perceiving, *ESFJ*: Extraversion-Sensing-Feeling-Judgmental
ENTP: Extraversion-Intuition-Thinking-Perceiving, *ENTJ*: Extraversion-Intuition-Thinking-Judgmental
ENFP: Extraversion-Intuition-Feeling-Perceiving, *ENFJ*: Extraversion-Intuition-Feeling-Judgmental

Table 2: The comparison of demographic variables in subjects with tension-type and vascular headache

	Variable	Tension-type Headache	Vascular Headache	P Value
Age		33.6±8.3	33.7±8.1	P=0.97*
Gender	Female	55	69	P=0.04**
	Male	44	30	
Education (years)	Less than high school diploma	45	12	P<0.001**
	Diploma	38	49	
	Post graduation	16	38	
Marital status	Single	19	16	P=0.84***
	Married	77	79	
	Divorced	3	4	

* T-test

** χ^2

***Fisher exact test

Thinking-Feeling, and Judgmental-Perceiving subscales were 0.72, 0.74, 0.77, and 0.75, respectively.²⁸

Data analysis

Results from the questionnaires were analyzed by SPSS software. Distribution of results was evaluated by Kolmogorov-Smirnov test and none of the variables of the study had normal distribution. Therefore, in order to analyze qualitative ordinal data and also quantitative non-normal distribution, Mann-Whitney U test was used and for nominal qualitative variables, Chi-square test or Fisher exact test was used.

RESULTS

Of the 210 study subjects with tension-type and vascular headaches, 12 questionnaires were incomplete, and excluded from further analysis. The demographic variables are shown in Table 2. The average age of the study subjects was 33.7 ± 8.2 and there was no significant difference in

the age between the tension-type and vascular headache groups. The patients with vascular headaches had significantly more females and higher levels of education as compared to patients with tension-type headaches. There was no significant difference in marital status between the two groups. Table 3 lists the duration and frequency of headaches in the two headache groups. As shown, the patients with vascular headache had more frequent headache, and was referred to physicians earlier than patients with tension-type headache.

Table 4 lists the frequency of each personality types according to MBTI in the tension-type and vascular headache. As there was large number of personality types, with some personality types seen in less than 5 patients, it was not possible to analyze each of the personality types statistically. We selected six personality types which were seen more frequently in 82.4% of our study subjects. Table 5 lists the frequency of these six personality types in the two headache groups. As shown, the difference was statistically significant.

Table 3: The comparison of duration of headache and number of headache attacks per month in subjects with tension-type and vascular headache

Variable	Tension-type Headache	Vascular Headache	P Value
Duration of the headache (month)	40.0±27.2	26.9±17.5	P<0.001*
Number of headache attacks (per month)	1.4±1.0	2.0±1.5	P=0.02*

*Mann Withney U

Table 4: The frequency of personality types according to MBTI in patients with tension-type and vascular headache

Variable	Tension-type Headache	Vascular Headache	Total	
Personality type	<i>INFP</i>	11	6	17
	<i>INFJ</i>	0	1	1
	<i>INTP</i>	0	1	1
	<i>INTJ</i>	0	4	4
	<i>ISFP</i>	1	1	2
	<i>ISFJ</i>	2	2	4
	<i>ISTP</i>	2	15	17
	<i>ISTJ</i>	5	34	39
	<i>ENFP</i>	36	3	39
	<i>ENFJ</i>	9	0	9
	<i>ENTP</i>	1	1	2
	<i>ENTJ</i>	0	2	2
	<i>ESFP</i>	5	1	6
	<i>ESFJ</i>	3	0	3
	<i>ESTP</i>	5	9	14
	<i>ESTJ</i>	14	19	33
	Total	94	99	193

INFP: Introversion-Intuition-Feeling-Perceiving, *INFJ*: Introversion-Intuition-Feeling-Judgmental
INTP: Introversion-Intuition-Thinking-Perceiving, *INTJ*: Introversion-Intuition-Thinking-Judgmental
ISFP: Introversion-Sensing-Feeling-Perceiving, *ISFJ*: Introversion-Sensing-Feeling-Judgmental
ISTP: Introversion-Sensing-Thinking-Perceiving, *ISTJ*: Introversion-Sensing-Thinking-Judgmental
ENFP: Extraversion-Intuition-Feeling-Perceiving, *ENFJ*: Extraversion-Intuition-Feeling-Judgmental
ENTP: Extraversion-Intuition-Thinking-Perceiving, *ENTJ*: Extraversion-Intuition-Thinking-Judgmental
ESFP: Extraversion-Sensing-Feeling-Perceiving, *ESFJ*: Extraversion-Sensing-Feeling-Judgmental
ESTP: Extraversion-Sensing-Thinking-Perceiving, *ESTJ*: Extraversion-Sensing-Thinking-Judgmental

Table 6 lists the comparison of the four dimensions of personality based on MBTI, (introversion vs. extraversion, intuitional vs. sensing, feeling vs. thinking, perceiving vs. judgmental), between the two headache groups.

As shown, there was a significant difference between the two groups in each personality dimension. In summary, the patients with vascular headaches were significantly more introverted, sensing, thinking, and judgmental, as compared to

Table 5: The comparison of 6 more frequent types of personality according to MBTI in subjects with tension-type and vascular headache

Variable	Tension-type Headache	Vascular Headache	Total (%)	% in all patients	P Value
Personality type	<i>INFP</i>	11	6	17 (10.7)	8.8
	<i>ISTP</i>	2	15	17 (10.7)	8.8
	<i>ISTJ</i>	5	34	39 (24.5)	20.2
	<i>ENFP</i>	36	3	39 (24.5)	20.2
	<i>ESTP</i>	5	9	14 (8.8)	7.3
	<i>ESTJ</i>	14	19	33 (20.8)	17.1
	<i>Total</i>	73	86	159 (100.0)	82.4
Total patients	94	99	193		

INFP: Introversion-Intuition-Feeling-Perceiving, *ISTP*: Introversion-Sensing-Thinking-Perceiving,
ISTJ: Introversion-Sensing-Thinking-Judgmental, *ENFP*: Extraversion-Intuition-Feeling-Perceiving
ESTP: Extraversion-Sensing-Thinking-Perceiving, *ESTJ*: Extraversion-Sensing-Thinking-Judgmental

* χ^2

Table 6: The comparison of frequency of four dimensions of personality based on MBTI (Introversion-Extraversion, Sensing-Intuitive, Thinking-Feeling, Judgmental-Perceiving) in subjects with tension-type and vascular headache

	Variable	Tension-type Headache	Vascular Headache	Total	P Value
Personality dimension	Introversion	21	64	85	P<0.001*
	Extraversion	73	35	108	
	Intuitive	57	18	75	P<0.001*
	Sensing	37	81	118	
	Thinking	27	85	112	P<0.001*
	Feeling	67	14	81	
	Judgmental	33	62	95	P<0.001*
	Perceiving	61	37	98	

* χ^2

being more extraversion, intuitive, feeling, and perceiving among the tension-headache group.

DISCUSSION

In our study patients, the patients with vascular headaches were mostly female (female to male ratio was 2.3), while there was no significant gender difference seen in the tension-type headache group (female to male ratio was 1.25). Most of the patients were in the fourth decade of their lives. The female preponderance of the vascular headache group, and the peak age at middle-aged adults in our patients is consistent with the known disease pattern of both types of headache.¹ Our patients with vascular headaches had higher frequency of attacks, and sought treatment earlier than the tension-type headaches. These are also consistent with what is known of the two types of headaches.¹ Moreover, the vascular headaches being episodic, would report higher headache frequency than patients with tension-type headaches.³⁵

Our study has shown that the patients with tension-type headaches manifested more extraversion, intuitive, feeling, and perceiving, in contrast to patients with vascular headaches, who were more introverted, sensing, thinking, and judgmental. Our results were consistent with previous similar studies on personality types among headache subjects reported in the literature. In a study on cluster and migraine headaches, high prevalence of sensing type was reported.³⁶ It has been reported that patients with vascular headaches were less capable of stress management³⁷, and there was association between susceptibility to psychosomatic symptoms, stresses and sensing personality type.^{6,36}

The studies on comorbidities of chronic headaches were also consistent with the present study. There has been reports of strong association between depression and vascular headaches^{1,37,38}, and between depression and introversion and sensing dimensions of MBTI test.³⁹ These findings are thus consistent with our results on vascular headaches. Obsessive-compulsive personality traits has also been reported to be more common in vascular headaches as compared to other types of headaches, especially chronic tension-type headaches.⁴⁰ People with obsessive-compulsive personality traits preferred more orderliness and were more satisfied if their deeds were organized and structured. They have judgmental spirit and were more controlling.⁴¹ This trait was equivalent to being judgmental in MBTI, which has higher prevalence in patients with migraine headaches in the present study. As for the four dimensions of personality types, there was no previous studies with results pertaining to decision-making (thinking vs. feeling), although there was a study showing that depression was related to feeling dimension, which apparently contradicted the thinking predisposition of our migraine subjects.³⁹ It has also been said that there was association of males with thinking and females with feeling style.⁴² Yet in this study, patients with vascular headaches were mostly females, and the association of the vascular headache subjects was with thinking decision-making style.

The results of the present study were largely comparable with studies using other personality inventories. In the studies that used Eysenck Personality Inventory and MBTI together, intuition dimension from MBTI inventory and neuroticism from Eysenck inventory showed contrary results. It

appeared that in these two inventories, the increase of scores in neuroticism was associated with the decrease of scores in intuition dimension.⁴³ On the other hand, there has been reports of high scores of neuroticism in Eysenck personality inventory and MMPI inventory in patients with migraine^{44,45}, which was consistent with the decrease in intuition dimension and the increase in sensing among our patients with vascular headaches. Moreover, in previous studies where patients with migraine were examined by MMPI, there was high degree of introversion. This was consistent the results obtained from the present study.⁴⁵

On the whole, the result of the present study was consistent with previous studies conducted on chronic headache, although in some studies, no specific personality difference were seen among the patients suffering from tension-type and vascular headaches^{46,47}, and even the chronicity of the pain was suggested as a mediator for occurrence of personality changes or psychopathology.^{48,49} According to the differences observed between vascular and tension-type headaches in this study, it appears that vascular and tension-type headaches have separate personality profiles based on Jung's personality dimensions theory, and the chronicity of the pain, which is observed in both types of headaches, does not seem to play important role in the results obtained from the present study. Although MBTI is not an inventory for clinical diagnosis, and we may not be able to use it during the diagnosis of headaches types, we can say that psychoanalytic personality assessment is very important in the comprehensive understanding of patients with headaches.

The four dimensions of personality in Jung's theory are dependent on patient's cognitive construct. Introversion dimension vs. extraversion dimension deals with individual's way of encountering and communicating with the world around him, intuition vs. sensing pays attention to the way of receiving information from the world around; feeling vs. thinking refers to the way an individual makes decision, and perceiving vs. judgmental deals with individual's life style and his attitudes toward the world. For this reason, the observed differences in personality profiles may reflect structural differences in neuronal pathways, which underlies the patient's personality construct. In view of the difference in the Jung's four types of personality dimensions among the subjects with tension-type and vascular headache, we may hypothesize that the neuronal pathways that are responsible for the formation of tension-type and vascular headaches are separate. There has

been a tendency to consider tension-type and vascular headaches as a spectrum, with the classic tension-type and vascular headaches forming the two ends of the spectrum. Yet within this spectrum, there are some mixed (or combined) types known as tension-vascular headaches.⁵⁰ The assumption of the etiological independence of tension-type and vascular headaches from the perspective of neuropsychiatry, as it is suggested based on the present study, is not congruent with the viewpoint considering these disorders within a spectrum. Hence there should be more studies on the neuropsychiatric bases of tension-type and vascular headaches.

This study is important for several reasons. First, there is no previous study on tension-type and vascular headaches using MBTI tool; Second, this study is based on criteria-based diagnosis. There is homogeneity of samples in each group in terms of diagnosis, and the number of analyzed patients. Yet, there are limitations in this study. First, although over 100 patients in tension-type and migraine groups were analyzed, there were not enough patients to evaluate all 16 types of personalities in the questionnaire. Second, there was no healthy control through which we could obtain the prevalence of the types of personalities in normal population. Another limitation was that the history of analgesics use and abuse was not included in the evaluation of the patients, while analgesics abuse can be related to personality profile.^{51,52}

In conclusion, since there is a significant difference in the personality profiles of the patients who suffer from tension-type and vascular headaches, it is appropriate that neuropsychological studies are conducted in patients with chronic headaches.

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