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The Association Between Defensive Styles and Early Maladaptive Schemas in Patients with Migraine Headaches

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Abstract

Background: Migraine is one of the main reasons for primary and secondary headaches worldwide and has significant effects on patients' life. Based on recent studies, psychological factors may affect the severity, frequency, and the duration of migraine attacks.
Objectives: The aim of this study was to investigate the relationship between defensive style and early maladaptive schemas in the patients with migraine headaches.
Methods: The sample size consisted of 75 (male and female) patients which was based on Cochran's formula. Among the clients who referred to neurology clinics, patients with migraine headaches were selected by convenience sampling, they completed defensive styles questionnaire (DSQ-40), Young's early maladaptive schemas (YSQ-SF), and Ahvaz migraine questionnaire (AMQ). Statistical analyses were conducted by correlation coefficient and stepwise regression.
Results: The results showed that there was a positive and significant relationship between immature defense style with the components including abandonment, mistrust, social isolation, emotional inhibition, defectiveness, failure, vulnerability, obedience, entitlement, insufficient self-control, enmeshment, and dependent and unrelenting standards. In addition, there was a negative and significant relationship between mature defensive style with the components namely social isolation and defectiveness. Neurotic defensive style was not compatible with any of the component schemas.
Conclusions: The results obtained from the current research indicate that early maladaptive schemas can act as the foundation of emotional and behavioral tendencies and defensive styles in the patients with migraine headaches.

Keywords: Defensive Style, Early Maladaptive Schemas, Migraine

1. Background

Migraine is a chronic headache disorder that affects approximately 12 percent of the general population. Migraine is a recurrent and throbbing headache with a moderate or severe power that lasts for 4 to 72 hours and can be exacerbated due to daily physical activity and is associated with nausea, vomiting, photophobia, or phonophobia. With a less prevalence than tension headaches, migraine headache is more intense and has a higher debilitating power. According to the world health organization (WHO), migraine headaches ranked the nineteenth among all causes of disability disorders, and the incidence of the attacks in women is 17% and in men is 6% annually (1).

Migraine headache is an independent disease and it can be associated with genetic brain stem dysfunction, impaired neurotransmitters, and pain-related modulating system (2). In addition, many studies show that stress, worry, and the assessment of response to small changes are the most important factors of migraine headaches (3).

Today, most researchers who study the psychological processes refute the specificity of body organs to justify physical symptoms and analyze physical symptoms from an interactive perspective such that most research underlines the interaction between psychological states and biological and social variables (4). One of the psychological variables of interest to researchers is early maladaptive schemas. A total of 18 early maladaptive schemas were introduced in five areas. First and foremost sphere is rejection and disconnection. People with such schema are not able to establish satisfying and secure attachment with others. The second area is impaired autonomy and performance. People who are in this area distance from the family and father and mother symbols and adopt independent functions. The third area is impaired limits. Defectiveness in internal boundaries, irresponsibility towards others, and long-term aimlessness are some features of this area. The fourth area is other-directedness. People in this category put great emphasis on satisfying the needs of others compared to their own needs and do it for approval, maintaining emotional connection, and avoiding punishment. The fifth area is over vigilance and inhibition. In

this area, extreme emphasis is put on suppressing spontaneous feelings, impulses, priorities and following the rigid and codified laws to the extent that it may even lead to the loss of happiness, joy, self-expression, relaxation, and close and healthy interpersonal relationships (5).

Young (1999) believes that maladaptive schemas in people can lead to experiencing negative events in life, and the presence of such events in a person's life leads to too much stress and dissatisfaction with life. People who mainly use wildly inconsistent schemas are more influenced by negative life events (6). Due to their importance in the conceptualization of mental disorders and treatment from a psychodynamic perspective, defense mechanisms have been under special and constant research and clinical attention. In the area of psychoanalysis, any mental disorder is associated with certain non-adaptive defense mechanisms and defense plays an important role in mental health (7). With this description, without identifying dominant defense styles, any attempt to do clinical formulation and determination of psychological status is insufficient (8).

Based on Vailent's hierarchical, Andrews, Singh and Bond (1993) classified 20 mechanisms into three styles including mature, immature, and neurotic defensive styles. Mature defensive style is an adaptive, normal, and efficient coping, while neurotic and immature style is immature and non-adaptive style is an inefficient and mal-adaptive coping. In addition, all humans use defense over time in a fixed form, though immature defense style may be converted into neurotic and mature style. Mature defense style can predict better physical and mental health over time. However, immature defense style is associated with many negative health indicators such as personality disorders and depression (9).

In this regard, nowadays, much research has been performed on the relationship between defensive style and early maladaptive schemas in abnormal groups both in physical and psychological fields, and relevant research has sought to compare such abnormal groups with healthy and normal groups. Doosalivand et al. (2012) showed that obese patients compared to healthy people benefit from higher normal scores in schemas such as sacrifice and emotional inhibition (10). Yousefi (2014) also showed that there was a significant difference between patients with functional gastrointestinal disorders and healthy people in terms of early maladaptive schema limitations, especially in the areas such as disrupted limitation and vigilance (11).

Van, Dekker, Peen, Abraham, and Schoevers (2009) examined the predictive value of defensive style on the outcome of psychotherapy in patients with depression and showed that patients who improved from depression had more mature defense function (12). Furthermore, a meta-analysis showed that defensive profile in patients with major depression compared to the control group is in the form of lower grades relevant to mature defensive style and higher scores of immature and neurotic defense style (13). In the research performed by Carvalho et al. (2013), immature defensive style and mature defensive style had a higher and lower association with depressive symptoms, respectively (14).

In general, numerous studies have supported this hypothesis and the investigations have found that physical and psychological health is significantly associated with defense mechanisms. In this regard, the present article aims to investigate the relationship between defensive style and early maladaptive schemas in patients with migraine headaches.

2. Materials and Methods

The current research is of a correlational type. The sample size was 75 patients (male and female) who were selected randomly based on Cochran's formula. Based on a neurologist diagnosis and Ahvaz migraine headaches questionnaire, among the patients who referred to neurology clinics, the sample was selected by convenience sampling. It should be noted that Ahvaz migraine headaches questionnaire was filled before neurologist examination.

Data collection was done using early maladaptive schemas questionnaire devised by Young (1998), defensive style questionnaire devised by Andrews, Singe and Bond (1993), and Ahvaz migraine questionnaire (AMQ). In addition, the correlation coefficient and stepwise regression were used to analyze the data.

2.1. Young's Schema Questionnaire-Short Form (YSQ-SF)

The questionnaire is a 75-item tool to assess early maladaptive schemas ranked over 6-point Likert scale. Young (1998) devised this questionnaire based on the original form of the questionnaire (205-item form); the questionnaire measures 15 early maladaptive schemas. Each 5 items of the questionnaire measure a schema. The overall score for each scale is calculated through the mean items of the scale. Higher scores reflect more maladaptive schemas. In the research performed by Young (1994), reliability coefficients for the 15 subscales using Cronbach's Alpha ranged from 0.83 to 0.96 (15). In addition, Welburn, Coristine, Dagg, Pontefract, and Jordan (2002), based on an available Canadian sample, confirmed the questionnaire's validity and reliability (16). Davandari, Ahi, Akbari, and Mahdiyan (2009) standardized this questionnaire in Iran and reported a reliability value of 0.6 to 0.87. This questionnaire

takes advantage of some measures including psychological distress, self-esteem, psychological vulnerability to depression, personality disorder symptoms, and good convergent validity (17).

In the current research, the reliability of the subscales was calculated using Cronbach's alpha, based on which for the components including emotional deprivation, abandonment/instability, mistrust/abuse, social isolation/alienation, defectiveness/shame, failure, dependent/incompetent, vulnerability to illness, enmeshment/ undeveloped self, obedience, self- sacrifice, emotional inhibition, unrelenting standards, entitlement/ grandiosity, insufficient self- control, the values are equal to 0.82, 0.80, 0.82, 0.79, 0.85, 0.88, 0.77, 0.82, 0.77. 0.82, 0.87, 0.73, 0.81, 0.77, 0.70, 0.61, and 0.74 respectively.

2.2. Defensive Style Questionnaire (DSQ-40)

The questionnaire is based on defenses' hierarchical model, it was devised by Andrews, Singe, and Bond in 1993 and is comprised of 40 items in 9-point Likert scale (from strongly agree to strongly disagree), and evaluates 20 defense mechanisms at three levels including mature, neurotic, and immature (18). Defensive style questionnaire in Iran was evaluated and standardized by Heidrinasab and Shoayri (2010) (19). The validity of defense style questionnaire was evaluated through test - retest and Cronbach's alpha. Alpha reliability coefficient was based on the students in study groups and gender groups who were sampled, and defensive styles were determined as well. The highest overall alpha in male students was 0.81 and the lowest total alpha in female students was 0.69. In the defensive styles, the highest alpha is related to immature style (0.72) and the lowest is related to neurotic style (0.50) (18). In the current research, Cronbach's alpha of immature, mature, and neurotic styles were 0.7, 0.54 and 0.53, respectively.

2.3. Ahvaz Migraine Questionnaire (AMQ)

This questionnaire is a 25-item scale that was devised by factor analysis by Najarian (1994). The scale's items are comprised of four options including never, rarely, sometimes, and often which are scored based on the values 1, 2, 3, and 4, respectively. A score of 75 was considered AS cut point. Ahvaz migraine questionnaire's reliability based on internal consistency and re-test was reported to be 0.80 and 0.80. In addition, to assess the validity of Ahvaz migraine questionnaire, Najarian (1995) utilized the concurrent implementation of this scale, (HADS) (Zigmond and Snaith, 1982), Minnesota multiphasic personality inventory (MMPI), and Ahvaz aggression questionnaire. The coefficients obtained are 0.50, 0.46, and 0.49, respectively, at the level $P > 0.05$. Shirzadi et al. (2002) calculated the reliability coefficients of Ahvaz migraine scale using internal consistency for all subjects and the result obtained was r = 0.88 (20). In the current research, also, the reliability of the questionnaire by Cronbach's alpha was obtained as 0.82.

3. Results

Participants ranged in age from 20 to 58; the mean age of the participants was 30.02 years (SD = 6.82 years); 25% of the participants were male and 75% were female; 19% were single and 81% were married; 49% of the participants were high school graduates and 51% were university graduates (Table 1).

Table 1. Demographic Information of the Sample (n = 75)

Variables	Frequency N (%)
Age (year)	
20 - 32	28 (37%)
33 - 45	25 (33%)
46 - 58	22 (30%)
Sex	
Male	19 (25%)
Female	56 (75%)
Marital status	
Single	14 (19%)
Married	61 (81%)
Education	
High school graduates	37 (49%)
University graduates	38 (51%)

The relationship between defensive styles and components of maladaptive schemas was obtained by Pearson correlation. The results are presented in Table 2.

According to Table 2, the immature defense style is associated with elements of abandonment (r = 0.361), mistrust (r = 395), social isolation (r = 0.309), emotional inhibition (r = 310), defectiveness (r = 0.378), failure (r = 0.326), vulnerability to illness (r = 435), obedience (r = 0.339), entitlement (r = 330), insufficient self-control (r = 308) ($P < 0.01$), enmeshment (r = 273), dependent (r = 0.275), unrelenting standards (r = 0.242), ($P < 0.05$).

In addition, mature defensive style has a negative and significant relationship with social isolation (r = -0.244), ($P < 0.05$), and defectiveness (r = -0.303), ($P < 0.01$). Neurotic defensive style is not associated with any of the components of maladaptive schemas.

Furthermore, in order to predict the score of defensive style based on the components of maladaptive schema, stepwise regression was used whose results are presented in Tables 2 and 3.

According to the results obtained from the regression model analysis, vulnerability and entitlement as a block (F

Table 3. Stepwise Regression Results of Immature Style upon Schema Components[a]

Model	B	Std. Error	Beta	t	Sig.	R	R^2
(Constant)	78.311	8.783		8.916	0.001		
Vulnerable	1.563	0.450	0.372	3.471	0.001	0.487	0.237
Entitlement	1.098	0.519	0.227	2.114	0.038		

[a] F = 11.172; P = 0.001.

= 11.172; P = 0.001; df = 2) were good predictors of immature style, whereas other scales did not give a significant additional contribution to the prediction of immature style.

According to Table 4, stepwise regression results showed that defectiveness (F = 7.402; P = 0.008; df = 1) was a good predictor of mature style, whereas other scales did not give a significant additional contribution to the prediction of mature style and were excluded.

In the case of the neurotic style, none of the components were able to predict neurotic style independently and did not enter the equation.

4. Discussion

The current research sought to investigate the relationship between defensive styles and early maladaptive schemas in patients with migraine headaches. The results showed that the immature defense style had a significant and positive relationship with the components including abandonment, mistrust, social isolation, emotional inhibition, defectiveness, failure, vulnerability to illness, obedience, entitlement, insufficient self-control, enmeshment, dependent and unrelenting standards. In addition, there was a significant negative relationship between mature defensive style with social isolation and defectiveness. Neurotic defensive style was also incompatible with any of the component schemas. This finding is consistent with the findings obtained from other research (11, 14, 21, 22).

To explain these findings, it could be said that defense mechanisms distort the reality and the extent of the distortion of reality in immature and neurotic defenses is more than mature defenses. If the cognitive distortions of a defense become lesser, its conscious awareness is further reduced and therefore less effort is made to deal with cognitive distortions. Thus, defense mechanisms change man's self-recognition, reduce self-knowledge and awareness of conflicts, and influence emotions in conflict with our beliefs. Thus, defense mechanisms, particularly the ones that are more immature, hinder a person's perception of reality and deprive him of the possibility of rational and effective defense. Research has shown that people with mental disorders and defensive style are immature and non-adaptive, and defensive style of non-clinical population is more mature (23).

The research results indicate that among the three afore-mentioned defense mechanisms, people with migraine headaches mainly use neurotic and immature defense mechanisms. The use of immature and neurotic defense mechanisms can increase anxiety, insomnia, depression, and overall general health deterioration. In contrast, use of a mature defense mechanism can improve the general health of people with migraine headaches (24). In addition, the results of the research carried out by Marino, Fanny and Lorenzi (2010) on people with migraine showed that most people with migraine headache suffer from depression, anxiety disorders, panic and phobias, and people who suffer from neurotic disorders use more immature and neurotic mechanisms than mature ones (25).

In the field of maladaptive schemas, there are generally five core human emotional needs that must be met and failure in accomplishing these needs leads to the formation of early maladaptive schemas. The requirements include: 1- Secure attachments to others (including security, stability, nurturing, and acceptance); 2- Independence, competence and sense of identity; 3- Freely expressing the needs and acceptable emotions, 4-Spontaneity, 5- Realistic restrictions and self-inhibition (self-control).

Patients, when faced with challenging situations, usually experience too much emotional distress. Such conditions cause a sense of (a lack of control over one's position) and consequently their anxiety and helplessness increase. These people choose wrong strategies and use immature defense mechanisms such as oppression, denial, and somatization in abundance to get rid of negative emotions and feelings caused by these situations. In fact, one of the reasons for somatization among these individuals is the sense of control which they do by converting the psychological phenomena to physical symptoms (such as headache) (26).

On the other hand, the family history of people with migraine headaches betokens the presence of cynical opinionated parents and sometimes with sadistic orientation. In such families, expressing emotions is not allowed and children are permanently punished for what is considered as inappropriate behavior. As a result of such education

Table 4. Stepwise Regression Results of Mature Style upon Schema Components[a]

Model	B	Std. Error	Beta	t	Sig.	R	R^2
(Constant)	50.730	2.267		22.378	0.001	0.303	0.092
Defectiveness	-.630	.232	-.303	-2.721	0.008		

[a] F = 7.402; P = 0.008.

by parents, children do not gain opportunities for individual self-esteem and personal growth and doubt their own competence. Since such people suppress all their emotions and sexual drives are considered socially taboo, they do not have the experience of social control and cannot express their feelings and are unprepared in this regard. Consequently, they use head and neck muscles to refrain from entering the prohibited areas and change the direction of the stress of dealing with taboo emotions (27). In fact, it can be inferred that family environment of people with migraine headaches is such that their five basic emotional needs are not fulfilled in childhood resulting in the formation of early maladaptive schemas and one may use immature defense styles for having a sense of control. This not only leads to anxiety and emotional turmoil but also individuals show their emotions and stuff as physical symptoms (headache). Therefore, it is no unexpected result to know that there is a significant positive relationship almost between the entire incompatible schematics with immature defense style in individuals with migraine headaches.

As mentioned, early maladaptive schemas are arisen due to not satisfying basic emotional needs in childhood. In order to adapt with schemata, patients present incompatible responses and coping styles at early life to avoid experiencing strong and frustrating emotions and this usually leads to the continuation of schemata (5). Defense mechanisms are also involuntary subconscious processes that are evoked in response to the perceived psychological risk and are used to reduce anxiety (28). Research has also shown that anxiety is very common among patients with migraine and such emotions are one of the most important factors causing migraine (29).

In addition, many studies have proven that there is a relationship between early maladaptive schemas and negative psychological states such as depression and anxiety (16). In the current research, the immature defense style had a significant positive correlation with all the early maladaptive schemas except self-sacrifice.

Moreover, the research findings showed that people with dominant behavioral inhibition system use immature defense mechanisms more (30). Behavioral inhibition system leads to anxiety, inhibition, and passive avoidance in response to signs of punishment and new stimuli, and is known as anxiety system. Two behavioral inhibition system components are passive avoidance and extinction. Passive avoidance component indicates a lack of activity or surrender of a person to avoid punishing, and extinction component reflects stopping behaviors that are not rewarded in the aftermath (31). Heponiemi, T. (2004) also stated that the high sensitivity of behavioral inhibition system can make the patient prone to emotional distress in stressful situations and this emotional distress is one of the risk factors triggering reasons of migraines (29). Studies have also proved that people with migraine headaches have a stronger retention system compared to healthy people (2). The relationship between immature defense style with behavioral inhibition system as well as active behavioral inhibition system in patients with migraine headaches indicates that these findings are consistent with that of the present research and patients with migraine headache have a higher average in immature defense style.

In addition, although maladaptive schemas that are formed in childhood in order to deal with problems and negative life events have a good performance in that specific era, their use in the future is maladaptive, because the perception of the world is not similar to childhood. The presence of these schemas during adolescence leads to maladaptive ways of coping with problems and is a threat to the well-being of people. Activation of early maladaptive schemas leads to negative assessment and interpreting stimulus in a negative and threatening form (5). This causes a person who is under stressful situations to evaluate his ability negatively, and then get involved in a passive and maladaptive coping strategy (32). On the other hand, activation of the early maladaptive schemas produces a great deal of negative and unpleasant emotions (5). The body of research shows that early maladaptive schemas are inefficient mechanisms that directly or indirectly lead to psychological distress (33). Using immature defense styles, people are trying to come up with the emotional turmoil caused by the excitation of schemata, and since a person feels comfortable with his own schemata, he seeks to survive and perpetuate it using immature defense growth styles and the result is experiencing more emotional distress. In fact, the use of immature and neurotic

defense mechanisms not only cannot solve the problems but also can exacerbate emotional problems and negative effects on one's health. Therefore, the use of immature and neurotic defense mechanisms can cause more anxiety and distress, more relapses, and may pave the way for causing or exacerbating psychosomatic diseases such as migraine headaches (24).

The results obtained from the current research indicate that early maladaptive schemas may underpin emotional, behavioral, and defensive styles used in the patients with migraine headaches. This means the more maladaptive schemas are shaped in these people, the more they use immature defense styles in dealing with problems and emotions, and the result is emotional distress and more anxiety which may cause migraine headaches. Thus, it is suggested that therapists utilize necessary psychological interventions to improve inconsistent schemata of the people with migraine headaches and more mature defense styles.

Footnotes

Authors' Contribution: Mohammad Babamiri and Atefe Bashiri Nejadian conceived and designed the study, collected the data, performed the satatistical analysis, and drafted the manuscript. Reza Johari Fard revised it critically for important intellectual content. All authors read and approved the final manuscript.

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Table 2. Correlation Between Defense Styles and Schema Components

Mean (SD)		Insufficient Self-control	Entitlement/ Grandiosity	Unrelenting Standard	Emotional Inhibition	Self-Sacrifice	Obedience	Enmeshment/ Undeveloped Self	Vulnerability to Illness	Dependent/Incompetent	Failure	Defectiveness/ Shame	Social Isolation/ Alienation	Mistrust/ Abuse	Abandonment/ Instability	Emotional Deprivation
		13.41 (5.87)	16.34 (5.07)	19.73 (5.55)	13.52 (6.13)	17.97 (6.51)	10.17 (5.01)	11.76 (6.98)	9.88 (5.85)	9.14 (4.85)	10.00 (5.66)	8.30 (5.20)	9.24 (5.12)	11.41 (6.04)	13.66 (6.70)	13.10 (6.59)
Immature Style	111/70 (59/24)	0.308[a]	0.330[b]	0.242[b]	0.310[a]	0.180	0.339[a]	0.273[b]	0.435[a]	0.275[b]	0.326[a]	0.378[a]	0.309[a]	0.395[a]	0.361[a]	0.133
Mature Style	45/49 (10/81)	-0.124	-0.140	-0.062	-0.113	-0.011	-0.115	-0.184	-0.213	-0.123	0.204-	-0.303 [a]	-0.244 [b]	-0.125	-0.170	-0.059
Neurotic Style	44/01 (11/19)	0.023	-0.221	0.110	-0.007	0.125	0.078	0.120	0.013	0.036	0.032	-0.009	-0.060	0.006	0.101	-0.107

[a] P< 0.01.
[b] P< 0.05.