Research Paper: Alexithymia and Self-Efficacy With Pain Perception in Women With Migraines: A Cross-Sectional Study

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ABSTRACT

Background: Pain perception in individuals with migraine is very important and is influenced by various factors. The aim of this study was to investigate the role of alexithymia and self-efficacy with pain perception in women with migraine.

Materials & Methods: This cross-sectional study was performed in women with migraine referred to medical centers in Rasht in 2021. Using convenience sampling method, 160 women with migraines participated in the study and answered the demographic information questionnaire, Toronto Alexithymia Scale (TAS-20), General Self-Efficacy Scale (GSE) and McGill Pain Questionnaire (MPQ). Data was analyzed using Pearson correlation coefficient and linear regression model.

Results: Of total, 152 women responded to the questionnaire (response rate= 95%). The mean age of study participants was 32.86±8.5 years. Pain perception was negatively associated with self-efficacy (r= -0.28; P=0.001) and positively associated with alexithymia (r= 0.20; P=0.001). The results of linear regression also showed that self-efficacy and Externally-Oriented Thinking (EOT) subscale explained 13% of the variance in pain perception.

Conclusion: Self-efficacy and externally-oriented thinking were significant contributors of pain perception in women with migraine. These variables can be considered for adopting coping strategies in patients experiencing migraine pain.

Keywords: Alexithymia, Self-efficacy, Pain perception, Migraine

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1. Introduction

Migraine is a chronic neurological disease and potentially debilitating with episodic attacks. It affects 1 in 7 people worldwide and is the second leading cause of disability in life expectancy [1]. Its peak prevalence is in the age group of 18 to 44 years and it is more common in women than men [2]. The etiology of this disease remains unknown and several risk factors, including hormonal fluctuations in women trigger migraine attacks [3]. However, both environmental and genetic factors appear to play an important role in the development of migraine [4]. It is well-knwon that psychological factors also play a role in migraine attacks [5]. The perception of pain in individual with migraines is a very important issue, because the perception of pain is not only dependent on the intensity of pain but also there are different psychological factors that affect their perception and interpretation of pain intensity [6]. Pain is a multifaceted mental experience that, if persists, can be considered as a debilitating disease and affects many aspects of patients' quality of life [7].

Review of previous studies indicate that self-efficacy is an effective factor in pain perception [8-10]. Self-efficacy is a concept derived from social cognitive theory and plays an important role in a person's daily performance and affects his decision, behavior and cognition [11]. Self-efficacy is related to the ability of self-regulation and control one's own destiny [12]. Self-efficacy plays an essential role in coping ability and performance on a large scale because it is directly related to coping skills and has an effective role in how to cope with pain [13]. In fact, it can be said that high self-efficacy can play an effective role in applying problem-based coping strategies and reduce pain perception [9].

Other migraine-related psychological factors that may affect the perception of migraine induced pain include alexithymia. alexithymia is a risk factor for symptoms of psychological pathology and low well-being and its evaluation is always one of the concerns of researchers and experts [14]. Alexithymia is a personality trait that occurs in a wide range of psychiatric and physical disorders and is involved in the mechanism of several physical illnesses [15]. People with alexithymia misinterpret normal bodily stimuli, are unable to recognize emotions and express their thoughts and feelings, have high expectations of others, but are reluctant to satisfy the needs of others. Emotional helplessness manifests itself through physical complaints, and in medical procedures, they seek treatment for physical symptoms. Accordingly,

some studies have shown that alexithymia is associated with the perception of pain and psychotic symptoms [16, 17]. In a study, it was shown that the score of alexithymia in girls with migraine were higher than their non-migraine peers [18]. But in another study, the scores of patients with migraine and the control group on the alexithymia scale were not different from each other [19]. Given the controversies between the studies, identifying the factors involved in the perception of migraine pain is very important, because the development of appropriate psychological interventions without considering the identification of the factors involved cannot be very effective. Also, due to the fact that this disease is more common in women than men, in order to identify a more detailed study, this study was performed only on women. Accordingly, this study was conducted to investigate the relationship between alexithymia and self-efficacy with pain perception in women with migraine.

2. Materials and Methods

Study type and study population

This cross-sectional study was conducted in the statistical population of women with migraine referred to medical centers in Rasht in 2021. Sample size were calculated based on the result of a pilot study for the pain score in 40 women with migraine and the obtained standard deviation of 3.50, significance level of 0.05, and precision of 0.6. According to the Chow et al. formula [20] the estimated sample size was 130 individuals. In order to increase the validity of the study for two independent variables (alexithymia and self-efficacy) 30 additional samples were added and a total of 160 women with migraine were calculated. Using convenience sampling method from the sample were selected from Guilan Pain Clinic, Dr. Kashiri Clinic and Imam Reza Clinic of Poursina hospital from February 23 to August 6, 2021. Inclusion criteria were: diagnosis of migraine headache by a neurologist based on third edition of the International Classification of Headache Disorders (ICHD-3), age range of 18 to 50 years, and having at least a diploma. Exclusion criteria were: experience of head trauma, dissatisfaction with completing questionnaires, alcohol or drug addiction, and other physical and mental illnesses based on the patient's own statements.

Research instruments

Data were collected using demographic information questionnaire, Toronto Alexithymia Scale (TAS-20), General Self-Efficacy Scale (GSE), and McGill Pain Questionnaire (MPQ). Demographic information includ-

ed age, education, employment status, city of residence, marital status and number of children. TAS-20 was designed by Bagby et al. [21] for evaluating alexithymia. The scale included 20 questions in three subscales. Difficulty Identifying Feeling (7 items), Difficulty Describing Feelings (5 items) and Externally-Oriented Thinking (8 items). The scoring of this scale was based on the 5-point Likert type scale from completely disagree (score 1) to completely agree (score 5); Score ranges from 20 to 100, and higher scores indicate higher alexithymia. This questionnaire has been validated in the Iranian sample, the validity was confirmed by the confirmatory factor analysis method with three scale factors and its reliability has been reported by the internal consistency and Cronbach's alpha of 0.73 [22]. In current study Cronbach's alpha was calculated as 0.71. GSE has 10 questions and a one-factor structure. Response format for General Self-Efficacy Scale was as follow: 1 = Not at all true 2 = Hardly true 3 = Moderately true 4 = Exactly true. Range of scores is between 10 and 40, and higher scores indicate higher self-efficacy [23]. In the Iranian sample, the concurrent validity coefficient between the GSE and the Rosenberg Self-esteem Scale was 0.30 and its reliability was calculated by internal consistency method ($\alpha=0.80$) [24]. In the present study the Cronbach's alpha was 0.81. MPQ included 78 items in in four subscales of sensory, affective, evaluative, and miscellaneous category. The minimum score in this test is 0 and the maximum is 78, and the higher score indicates the perception of more pain in the individual [25]. In the Iranian sample, the content validity of this questionnaire has been approved by experts and its reliability was calculated by internal consistency method ($\alpha=0.85$) [26]. In this study, the reliability of this questionnaire was calculated by internal consistency method by calculating Cronbach's alpha for the patient group ($\alpha=0.71$).

Data were collected in the clinics after explaining the objectives of the research and receiving informed consent from the participants. The questionnaires were given to the patients and they answered them within a maximum of 25 minutes. Participation in this study was voluntary and individuals answered questions with full knowledge of the objectives of the study.

Statistical analysis

Data analysis was performed using SPSS statistical software version 21. Qualitative data were described using frequency and percentage and quantitative data were reported based on mean and Standard Deviation (SD). Normality assumption was assessed using skewness index; a value between -2 and +2 was considered as normal distribution. Independent t-test and one-way Analysis of Variance (ANOVA) were used to compare demographic information and pain perception scores. Linear regression analysis was used to evaluate the role of independent predictors of pain perception.

3. Results

Of total 160 questionnaires, 152 were completed by the participants (response rate= 95%); the mean age of study participants was 32.86±8.5 years. Demographic information and pain perception score of the study participants is presented in Table 1.

Most of the participants were married (52%), had associate and bachelor education (54.6%), freelance job (31%) and had no children (48%); There was no significant association between pain perception and demographic information (P>0.05). Table 2 shows the mean scores of the study variables. All of the research variables had normal distribution (P>0.05).

The results of Pearson correlation (Table 3) showed that pain perception was negatively associated with self-efficacy (r=-0.28, P=0.01) and positively associated with alexithymia (r= 0.20, P=0.01).

The role of independent association of self-efficacy and alexithymia with pain perception was explored using two linear regression modeling strategies. In the first model, self-efficacy and alexithymia scores were considered as independent variables. Only self-efficacy was independently associated with pain perception. The mean score of pain perception decreased by 0.15 per a unit increase in self-efficacy score (B coefficient=-0.15, 95% CI: -0.25, -0.05; P=0.02). The model accounted for 10% of variation in the pain perception score. In the second model, the three subscales score of DIF, DDF, and EOT replaced with the total alexithymia. Self-efficacy was independently associated with pain perception. In addition to self-efficacy score (B coefficient=-0.17, 95% CI: -0.27, -0.07; P=0.01) the EOT was independently associated with pain perception. The mean score of pain perception increased by 0.14 per a unit increase in EOT score (B coefficient=0.12, 95% CI: 0.02, 0.22; P=0.02). The second model accounted for 13% of variation in the pain perception score.

4. Discussion

The aim of this study was to investigate the relationship between alexithymia and self-efficacy with pain perception in women with migraine; self-efficacy had a

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Table 1. Demographic information and the scores of pain perception in the study participants (n= 152)

Variables		No. (%)	Pain Perception	
			Mean±SD	t/F (P)
Age-group (years)	18-32	80(52.6)	19.88±3.43	-0.914(0.362)
	33-50	72(47.4)	20.40±3.50	
Marital status	Single	64(42.1)	19.48±3.51	1.001(0.394)
	Married	79(51.9)	20.43±3.45	
	Divorced and widow	9(6.0)	20.72±3.28	
Education level	Diploma	33(21.7)	20.24±3.68	0.276(0.759)
	Associate and bachelor	83(54.6)	20.19±3.20	
	Postgraduate education	36(23.7)	19.57±4.10	
Employment status	Housewife	22(14.5)	19.39±3.57	1.184(0.320)
	Student	41(27.0)	20.62±3.71	
	Government job	39(25.7)	20.07±3.03	
	Retired	3(2.0)	22.66±2.88	
	Freelance	47(31.0)	19.73±3.75	
Number of children	Zero	73(48.0)	19.53±3.19	1.761(0.140)
	One	38(25.0)	20.36±3.57	
	Two	34(22.4)	20.61±3.86	
	Three and more	7(4.6)	22.83±2.50	

SD= Std. Deviation; t= Independent-samples t-test; F= One-way Analysis of Variance (ANOVA).

negative and independent association with pain perception. Our results on the association of self-efficacy with pain perception is consistent with studies by Firth et al. [8], Sánchez et al. [9], and Fisioterapia et al. [10]. Self-efficacy refers to the extent to which a person believes in his / her ability and has self-confidence that he / she can handle various issues. This belief causes the person to put aside extreme excitement and avoid pain and to deal with pain in a problem-oriented way, thus reducing the person's perception of pain [26]. Also, in many cases, because pain relief is virtually impossible and the person needs to continue living with the pain, self-efficacy causes the person to accept the pain as an unchangeable subject and, nevertheless, to continue the life [8].

In this study total alexithymia score measured by TAS-20 was not related to the migraine pain while the alexithymia domain of EOT score predicted the pain perception. This finding shows that the less the perception of emotions, the greater the perception of pain; The finding of lack of association between total score of alexithymia and pain perception is consistent with previous studies by Lankes et al. [16], Porcelli et al. [17] and Zebardast and Shafieetabar [18]; In explanation, it can be argued that people with high levels of EOT focus on their own and others' objective emotions and do not attempt to understand complex emotions. For this reason, the expression of emotions objectively increases in the form of perception of pain in them; Accordingly, it is possible for unfamiliar emotions to be expressed to them in the form of physical pain [27]. In this study, there was no significant relationship between DIF and DDF with pain perception; In fact, it is inferred that the perception and description of emotions in women with migraines is not related to the perception of pain; But the objective interpretation of emotions is related to pain perception.

Table 2. The scores of pain perception, alexithymia and self-efficacy

Variables	Mean±SD	Range	Skewness Value
Pain perception	20.13±3.46	12-28	-0.03
Sensory	25.98±4.74	13-42	0.10
Affective	8.57±1.91	5-14	0.34
Evaluative	1.71±0.78	0-3	-0.37
Miscellaneous	9.84±2.36	4-15	-0.09
Alexithymia	58.52±11.49	29-88	0.12
DIF	21.99±6.19	8-35	-0.02
DDF	14.48±4.44	5-25	-0.001
EOT	22.04±5.54	8-37	0.03
Self-efficacy	27.18±5.53	15-40	-0.09

SD= Std. Deviation; DIF= Difficulty Identifying Feeling; DDF= Difficulty Describing Feelings; EOT= Externally-Oriented Thinking.

Table 3. Pearson correlation coefficient of study variables

Variables	Pain Perception	Sensory Pain	Affective	Evaluative	Miscellaneous
Alexytimia r (p)	0.20(0.01)	0.03(0.66)	0.17(0.03)	-0.16(0.04)	0.21(0.01)
DIF r (p)	0.05(0.53)	0.00(0.91)	0.09(0.25)	-0.16(0.04)	0.05(0.51)
DDF r (p)	0.15(0.06)	0.05(0.50)	0.12(0.14)	-0.09(0.23)	0.15(0.05)
EOT r (p)	0.24(0.0001)	0.02(0.80)	0.15(0.05)	-0.07(0.35)	0.05(0.01)
Self-efficacy r (p)	-0.28(0.0001)	-0.02(0.74)	-0.25(0.01)	-0.09(0.23)	-0.17(0.03)

DIF= Difficulty Identifying Feeling; DDF= Difficulty Describing Feelings; EOT= Externally-Oriented Thinking.

It can be assumed that different aspects of alexithymia are related to the ability to regulate emotions and to perceive negative and painful stimuli, so it can be inferred that alexithymia due to impaired emotion regulation can affect pain perception [28]. In this regard, previous studies indicate that re-evaluation in the process of emotion regulation leads to a decrease in non-verbal and verbal indicators of pain [16]. Therefore, it is inferred that alexithymia can increase pain perception in migraine patients due to its high association with physicalization and difficulty in emotion perception. In this study, no significant relationship was found in other subscales of alexithymia (e.g. DIF and DDF) and pain perception; One possible reason could be the small sample size; Because the TAS-20 has been validated in a large sample size. The results of linear regression also showed that self-efficacy and EOT subscale explained only 12% of the variance in pain perception. As a result, the role of other factors should be considered in future studies. This study suffered from some limitation including non-random sampling resulting in decreasing the generalizability of the findings, use of self-reported questionnaires and cross-sectional nature of the study that prohibit and temporal association between the study variables.

5. Conclusion

In this study, we found that pain perception in people with migraines is affected by self-efficacy and EOT; Accordingly, it is suggested that in order to improve the health of these people in the development of treatment programs, these variables should be considered. Because low self-efficacy and high EOT can play an effective role in weakening effective coping, increasing physicalization and difficulty in regulating emotion, which in turn is effective in perceiving pain.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the National Ethics Committee of Islamic Azad University -Rasht Branch (Code: IR.IAU.RASHT.REC.1400.005). Also, all ethical prin-

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ciples such as receiving informed consent, confidentiality of personal information and authority to participate in research have been observed.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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