



Investigating the Effects of Adaptive Stability Model on Headache of Patients with Migraine

Asma Tarjoman¹, Milad Borji^{2,*}, Saeid Safari³ and Masoumeh Otaghi²

¹Student Research Committee, Ilam University of Medical Sciences, Ilam, Iran

²Department of Nursing, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran

³Department of Anesthesiology, Rasoul Akram Medical Center, Iran University of Medical Sciences, Tehran, Iran

*Corresponding author: Department of Nursing, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran. Email: borji_milad@yahoo.com

Received 2018 June 30; Revised 2018 September 12; Accepted 2018 September 26.

Abstract

Background: Patients with migraine always experience from pain. For this reason, the present study aimed at investigating the effect of adaptive stability model, as an indigenous model developed in Iran, on the headache of patients with migraine.

Methods: This was a semi-experimental study with post- and pre-intervention groups. The sample size composed of patients with migraine in the city of Ilam, who were assigned randomly to the experimental group (31 patients) and control group (33 patients). The tools used in this study included demographic features questionnaire, a checklist showing the duration and frequency of pain, and a pain evaluation tool. For the test group, the interventions were performed according to the adaptive stability care model, which was developed in Iran. The SPSS V.16 software, descriptive statistical tests (mean and standard deviation) and inferential tests (T-test and ANOVA) were used to analyze the data.

Results: Before the intervention, there was no significant difference between the mean severity, hours, and frequency of headache in the experimental and control groups ($P > 0.05$). However, after the intervention, the severity, headache, and headache hours of the patients in the experimental group was reduced compared to the control group and the reduction was statistically significant ($P < 0.0001$).

Conclusions: Given the fact that the implementation of the adaptive stability model, as a non-pharmacological and less expensive approach has proved to be significant, it is highly recommended for reducing pain in patients with migraine.

Keywords: Migraine, Headache, Adaptive Stability Model

1. Background

Pain is a multi-faceted phenomenon, which is composed of physical, psychological, social, and spiritual components. In fact, pain is an unpleasant psychological and physical experience, which is associated with real tissue injury. Those, who experience pain try to express their feeling by different words (1-3). Headache is one of the most common causes of physical pain, which results in problems for the patients, especially if it is persistent, recurrent, and severe (4-6). Migraine is just one type of pain, which has several negative effects on the patients' health (6, 7).

Migraine is the most common cause of headache, which accounts for 15% and 6% of pain in females and males, respectively (8). Migraine is a traumatic headache that can be categorized to three groups, known as classic migraine, common migraine, and variant migraine (9, 10). Headaches caused by migraine are one of the most common headache disorders, which are characterized as se-

vere, recurrent and occasional pain, sensitivity to sound and light, dizziness, and nausea. Disability is also reported in the later stages of this disorder (11-13). Accordingly, migraine is recognized as one of the most frequent and common causes of disability (14, 15), which influences functional tasks in patients (16).

Migraine changes the health of patients, so that the problems that are caused by migraines can reduce quality of life. The prevalence of migraine has been studied by several studies. In the study of Monfared et al. (17), 11.2% of headaches was related to migraine, and in the study of Fallahzadeh et al. (18), 12.3% were related to tension headaches, and in Khazaie et al.'s study migraine prevalence was 6.4% in males and 7.6% in females (19).

Nurses are supposed to manage pain in patients (20). Of the several methods for alleviating pain in patients, pharmacological and non-pharmacological methods are frequently used (21). Pharmacological meth-

ods are not considered economical methods as they are high-priced and have several side effects. However, non-pharmacological methods are recognized as the most effective methods for alleviating pain, some of which include nursing interventions (22), massage therapy (23), psychological interventions (24), tailored Web-based interventions (25), integrative nursing intervention (26), and music therapy (27). These are not highly priced methods and have no special side effects (28).

The adaptive stability model is one of the non-pharmacological nursing models, which has had positive effects on the patients' health in previous studies (29). The indigenous adaptive stability care model was developed by Radfar et al (30). This model aimed at helping the family of depressed patients in order to reach maximum consistency with minimum damage to the patient and his/her family. The adaptive stability model includes four stages, namely family status detection, desensitization, collaboration, and continuous exploration. In this model, family is the main contributor and interventions and care procedures are based on change in family attitudes and motivation (29, 30). Given the importance of migraine headaches and their role in patients' health, it is necessary to make the required interventions. For this purpose, the present study was conducted with the aim of evaluating the effect of adaptive stability model on patients with migraine in the city of Ilam.

2. Methods

This is a semi-experimental study with pre- and post-test groups. The sample size composed of patients with migraine in the city of Ilam, who were assigned randomly to experimental (31 patients) and control groups (33 patients). The entry criteria for the study included written consents provided by the patients, having migraine based on a neurologist's report, not having other physical and psychological diseases, and not taking other pharmacological and non-pharmacological treatments for pain management. The exit criteria encompassed causing any sort of crisis within the family and having any other disease affecting acceptance, such as trauma, etc.

In this study, the questioners attended the office and public health centers on a daily basis. In order to assign patients to test and control groups, the patients, who were willing to participate in the study were listed. Patients in the odd row were assigned to the control group, while those in the even row were assigned to the test group. In order to prevent bias, the data were inserted by someone other than team members. Then, the information (A and B) was inserted in the SPSS V.16 software.

The tools used in this study included demographic features questionnaire, a checklist showing the duration and frequency of pain, and a pain evaluation tool. These are recognized as the simplest and the most authentic tools for pain evaluation. Given the simplicity of these tools, the patients and their families were trained on how to use it and then the tools were completed by the patients (31). Validity and reliability of the tool were approved. All interventions were performed for 10 weeks. Additionally, the patients' families were contacted to inform them about the tool completion process (after a two-month intervention). The patients and their families were allowed to pose their questions, if they had any.

Having assigned the patients to control and test groups, the intervention was performed based on the adaptive stability model, which was developed in Iran. This model constitutes of different stages, which is shown in Table 1. Written consent provided by the patients with no intention to impose costs on patients and following the ethics code related to the study were among the most prominent ethical considerations. According to previous studies, 80 patients entered the study, while 16 patients were excluded.

SPSS V. 16, descriptive statistical tests (mean and standard deviation) and inferential tests (T-test and ANOVA) were used to analyze the data.

3. Results

The findings of the present study showed that in the experimental group, 20 (64.5%) were male and 11 (35.5%) were female, while in the control group, 23 (69.7%) were male and 10 (30.3%) were female. In terms of employment status, six (19.4%) were students, three (9.7%) were employed, 13 (41.9%) were unemployed, five (16.1%) were employees, and four (12.9%) were housewives. In the control group, three (9.1%) were students, nine (27.3%) were employed, 17 (51.5%) were unemployed, two (6.1%) were employees, and two (6.1%) were housewives. In marital status, 19 (61.4%) were single and 12 (38.7%) were married, yet 23 (69.7%) were single and 10 (30.3%) were married. Regarding the educational status of patients, four (12.9%) had graduate degrees, 23 (74.2%) had Bachelor's degrees, four (12.9%) had higher education, yet in the control group two (6.1%) had diploma education, 22 (66.7%) Bachelor's degree, and nine (27.3%) were educated. The mean age of the patients in the experimental group was 34.90 (5.28) and that of the control group was 34.30 (6.19).

According to the findings presented in Table 2 before the intervention, there was no significant difference between the mean severity, hours, and frequency of headache

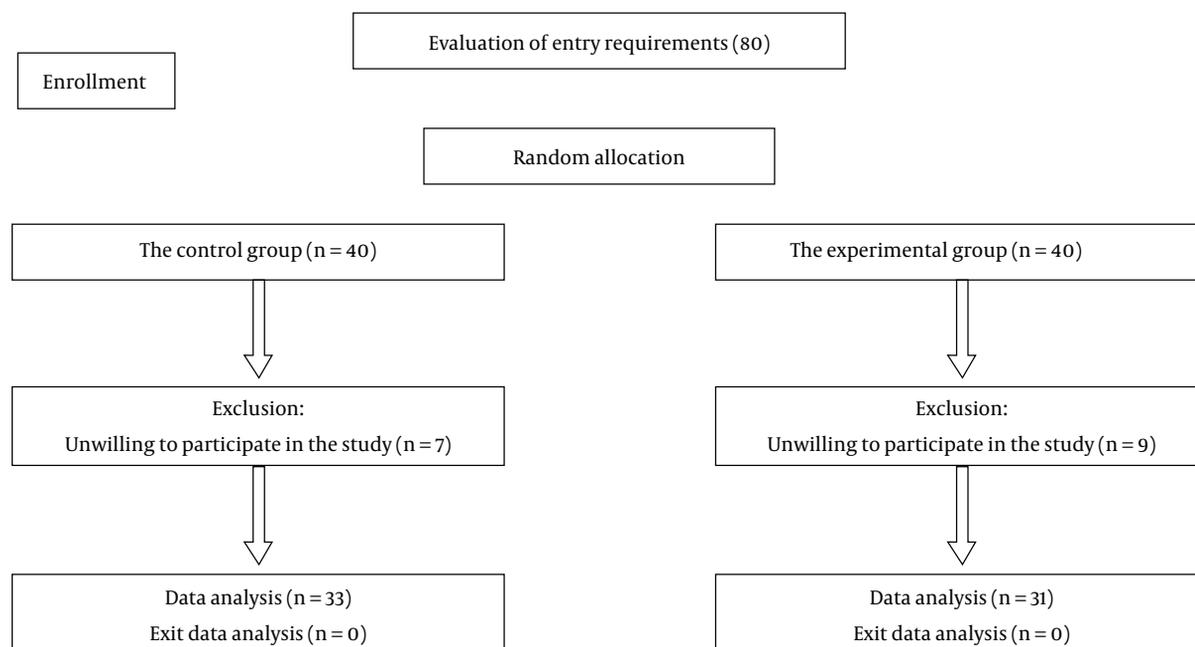


Figure 1. Clinical trial convolvement

in the experimental and control groups. However, after the intervention, severity and duration of headache in the experimental group was reduced compared to the control group after the intervention and the reduction was statistically significant ($P < 0.0001$). Also, in the control group after the intervention, mean headache severity had a significant decrease compared to before the intervention ($P < 0.0001$).

4. Discussion

Patients with migraine always suffer from pain (32-34). For this purpose, the present study aimed at investigating the effect of adaptive stability model, as an indigenous model developed in Iran, on the headache of patients with migraine. The findings showed that this model can reduce pain in patients with migraine to a great extent. The only study, in which the ASM model has been used, is a study by Esazadeh et al. (29), who aimed at evaluating the effect of ASM on pain alleviation in patients with depression. In the present study, the patients were assigned to test and control groups. The adaptive stability model includes four stages, namely family status detection, desensitization, collaboration, and continuous exploration. The findings indicated that the number of hospitalized patients decreased significantly six months after the implementation

of ASM, which shows the high efficacy of this model (30). This is in good agreement with the results of this research.

Different nursing interventions have been performed in order to reduce pain in patients. For instance, Ali showed that nursing interventions reduce pain in patients undergoing spinal anesthesia (35). In their study, Leroux et al. attempted to investigate the effect of nursing intervention on the quality of life and self-efficacy of the patients with migraine. They showed that these interventions proved useful and positive (36). In a systematic review study, Castillo-Bueno et al. emphasized that nursing interventions can reduce pain (21), which is consistent with the results of the current study.

In another non-pharmacological study on pain reduction, Hamedanizadeh et al. investigated the effect of a self-care program on headache indices in patients with migraine. In this study, four sessions were held based on the patients' self-efficacy needs. After the intervention, the number, duration, and severity of headache attacks in the control group decreased significantly compared to the test group, which is consistent with the results of this study (37).

One of the limitations of this study was the difficulty of collecting data and not collaboration with patients. To address this limitation, the benefits of this model were explained to patients and their participation was completely

Table 1. Intervention Stages According to the Adaptive Stability Model (30)

ASM Stages	Interventions Based on ASM Model
1) Family status detection	While the family members of the patients were around, different stages of ASM model was fully explained. The patients were willing to complete the study. The tools were also completed by the patients. This session, in which patients' families participated took 30 to 45 minutes. Patients were divided to groups of 5 to 6 people.
2) Desensitization	
A) Melting	Having informed the families, their attitudes towards the pain and alleviation was shifted from simple rules to better ones. These families were willing to change their attitudes. The nature of migraine was explained to the patients and their families. It was also emphasized that migraine pains are controllable provided that they cooperate with specialists. This session lasted for 30 to 45 minutes.
B) Changing	Families changed their attitudes. They believed that they could adapt themselves to the existing beliefs. The necessity of follow-up treatment was explained to them. This session also took 30 to 45 minutes.
C) Frosting	A new attitude was developed for pain management. This new belief was stabilized by the families. This new attitude became part of their beliefs. This session lasted for 30 to 45 minutes.
3) Collaboration	This process aimed to encourage the families to participate in patient care. The researcher helped the families provide the patients with appropriate care at home. They were also trained on how to speak to the patient, how to manage the pain and promote health. The researcher contacted the families and asked questions about the patient's health status. The families were also allowed to contact the researcher and ask their questions.
4) Continuous monitoring	The patients' families were continuously investigated. The researcher contacted the families once a week for a month in order to follow the training.

Table 2. Comparison of Severity, Duration and Frequency of Headache in Patients with Migraine Before and After the Intervention

Variable, Time	Experimental ^a	Control ^a	P Value
Headache severity			
Pre-test	7.97 ± 0.75	7.94 ± 1.02	0.91
Post-test	3.93 ± 1.06	6.12 ± 1.39	0.000
P value	0.001	0.001	-
Duration			
Pre-test	5.29 ± 1.06	5.79 ± 1.38	0.10
Post-test	3.29 ± 1.21	5.69 ± 1.40	0.000
P value	0.001	0.72	-
Frequency of headache			
Pre-test	11.58 ± 3.89	11.52 ± 2.97	0.94
Post-test	6.09 ± 1.42	10.24 ± 4.41	0.000
P value	0.001	0.18	-

^aValues are expressed as mean ± SD.

optional. One of the strengths of this study was the fact that the study used a new non-pharmacological intervention. This intervention is new and has many benefits for patients, as well as the construction of the country and is a

completely natural model, in accordance with the cultural conditions of Iran.

4.1. Conclusion

Given the fact that the implementation of the ASM model has had significant effects on the pain indices in patients with migraine, it is highly recommended as an affordable and non-pharmacological intervention to reduce pain. Since this model has not been widely used in different studies, it is recommended that researchers use this model as an indigenous model in researches and evaluate it on different diseases with various variables.

References

- Simon LS. Relieving pain in America: A blueprint for transforming prevention, care, education, and research. *J Pain Pall Care Pharmacother*. 2012;**26**(2):197-8. doi: [10.3109/15360288.2012.678473](https://doi.org/10.3109/15360288.2012.678473).
- Shirazi M, Manoochehri H, Zagheri Tafreshi M, Zayeri F. [Development and psychometric evaluation of chronic pain acceptance instrument in the elderly]. *Anesthesiol Pain*. 2015;**5**(2):33-47. Persian.
- de Siqueira SRDT. Existential meaning of patients with chronic facial pain. *J Relig Health*. 2018;**57**(3):1125-32. doi: [10.1007/s10943-018-0583-5](https://doi.org/10.1007/s10943-018-0583-5). [PubMed: [29455430](https://pubmed.ncbi.nlm.nih.gov/29455430/)].
- Hougaard A, Tfelt-Hansen P. Are the current IHS guidelines for migraine drug trials being followed? *J Headache Pain*. 2010;**11**(6):457-68. doi: [10.1007/s10194-010-0257-5](https://doi.org/10.1007/s10194-010-0257-5). [PubMed: [20931348](https://pubmed.ncbi.nlm.nih.gov/20931348/)]. [PubMed Central: [PMC3476229](https://pubmed.ncbi.nlm.nih.gov/PMC3476229/)].
- Katsarava Z, Manack A, Yoon MS, Obermann M, Becker H, Dommes P, et al. Chronic migraine: Classification and comparisons. *Cephalalgia*. 2011;**31**(5):520-9. doi: [10.1177/0333102410383590](https://doi.org/10.1177/0333102410383590). [PubMed: [21220376](https://pubmed.ncbi.nlm.nih.gov/21220376/)].
- Manack A, Turkel C, Silberstein S. The evolution of chronic migraine: Classification and nomenclature. *Headache*. 2009;**49**(8):1206-13. doi: [10.1111/j.1526-4610.2009.01432.x](https://doi.org/10.1111/j.1526-4610.2009.01432.x). [PubMed: [19438732](https://pubmed.ncbi.nlm.nih.gov/19438732/)].
- Schwedt TJ. Chronic migraine. *BMJ*. 2014;**348**:g1416. doi: [10.1136/bmj.g1416](https://doi.org/10.1136/bmj.g1416). [PubMed: [24662044](https://pubmed.ncbi.nlm.nih.gov/24662044/)].
- Ghaleiha A, Seyedian A, Mazdeh M, Seife Rabiee M, Zarabian M. [Correlation between migraine headaches and obsessive-compulsive disorder: A two year study]. *Tehran Univ Med J*. 2012;**69**(12):781-6. Persian.
- Stewart WF, Shechter A, Rasmussen BK. Migraine prevalence. A review of population-based studies. *Neurology*. 1994;**44**(6 Suppl 4):S17-23. [PubMed: [8008222](https://pubmed.ncbi.nlm.nih.gov/8008222/)].
- Lipton RB, Bigal ME, Diamond M, Freitag F, Reed ML, Stewart WF, et al. Migraine prevalence, disease burden, and the need for preventive therapy. *Neurology*. 2007;**68**(5):343-9. doi: [10.1212/01.wnl.0000252808.97649.21](https://doi.org/10.1212/01.wnl.0000252808.97649.21). [PubMed: [17261680](https://pubmed.ncbi.nlm.nih.gov/17261680/)].
- Hamid N, Mazarei R, PaK S. [Correlation between daily stresses and coping styles with mental health in patients with migraine headache]. *J Zanjan Univ Med Sci*. 2013;**21**(84):73-81. Persian.
- Chasman DI, Anttila V, Buring JE, Ridker PM, Schurks M, Kurth T, et al. Selectivity in genetic association with sub-classified migraine in women. *PLoS Genet*. 2014;**10**(5). e1004366. doi: [10.1371/journal.pgen.1004366](https://doi.org/10.1371/journal.pgen.1004366). [PubMed: [24852292](https://pubmed.ncbi.nlm.nih.gov/24852292/)]. [PubMed Central: [PMC4031047](https://pubmed.ncbi.nlm.nih.gov/PMC4031047/)].
- Mortazavi-Nasiri FS, Pakdaman S, Dehghani M. [The association of catastrophizing and pain-related anxiety with headache-related disability in patients suffering from migraine]. *J Res Behav Sci*. 2015;**13**(4):609-16. Persian.
- Buse DC, Rupnow MF, Lipton RB. Assessing and managing all aspects of migraine: Migraine attacks, migraine-related functional impairment, common comorbidities, and quality of life. *Mayo Clin Proc*. 2009;**84**(5):422-35. doi: [10.1016/S0025-6196\(11\)60561-2](https://doi.org/10.1016/S0025-6196(11)60561-2). [PubMed: [19411439](https://pubmed.ncbi.nlm.nih.gov/19411439/)]. [PubMed Central: [PMC2676125](https://pubmed.ncbi.nlm.nih.gov/PMC2676125/)].
- Headache Classification Committee of the International Headache Society (IHS). The international classification of headache disorders, 3rd edition (beta version). *Cephalalgia*. 2013;**33**(9):629-808. doi: [10.1177/0333102413485658](https://doi.org/10.1177/0333102413485658). [PubMed: [23771276](https://pubmed.ncbi.nlm.nih.gov/23771276/)].
- Carvalho GF, Florencio LL, Pinheiro CF, Dach F, Bigal ME, Bevilacqua-Grossi D. Functional balance deterioration on daily activities in patients with migraine: A controlled study. *Am J Phys Med Rehabil*. 2018;**97**(2):90-5. doi: [10.1097/PHM.0000000000000793](https://doi.org/10.1097/PHM.0000000000000793). [PubMed: [28682840](https://pubmed.ncbi.nlm.nih.gov/28682840/)].
- Ebrahimi Monfared M, Qasami K, Rezaei Ashtiani AR, Kazemeini E. [The study of epidemiologic, demographic and clinical characteristics in patients with migraine headache referring to neurology clinics of Vali-Asr and Imam Reza Hospitals in Arak city]. *Arak Med Univ J*. 2016;**19**(2):1-8. Persian.
- Fallahzade H, Alihaydari AA, Hoseini H. [Prevalence of migraine and tension headache in students of guidance schools in Yazd city, 2008]. *Razi J Med Sci*. 2010;**17**(76):52-61. Persian.
- Khazaie T, Dehghani Firoozabadi M, Sharifzadeh GR. [Prevalence of migraine and its relationship to educational performance in adolescents of Brijand city (2010)]. *J Birjand Univ Med Sci*. 2011;**18**(2):94-101. Persian.
- Shahriary S, Shiryazdi SM, Shiryazdi SA, Arjomandi A, Haghighi F, Vakili FM, et al. Oncology nurses knowledge and attitudes regarding cancer pain management. *Asian Pac J Cancer Prev*. 2015;**16**(17):7501-6. [PubMed: [26625752](https://pubmed.ncbi.nlm.nih.gov/26625752/)].
- Castillo-Bueno MD, Moreno-Pina JP, Martinez-Puente MV, Artilles-Suarez MM, Company-Sancho MC, Garcia-Andres MC, et al. Effectiveness of nursing intervention for adult patients experiencing chronic pain: A systematic review. *JBI Libr Syst Rev*. 2010;**8**(28):1112-68. doi: [10.1111/2475-01938924-201008280-00001](https://doi.org/10.1111/2475-01938924-201008280-00001). [PubMed: [27820209](https://pubmed.ncbi.nlm.nih.gov/27820209/)].
- Courtenay M, Carey N. The impact and effectiveness of nurse-led care in the management of acute and chronic pain: A review of the literature. *J Clin Nurs*. 2008;**17**(15):2001-13. doi: [10.1111/j.1365-2702.2008.02361.x](https://doi.org/10.1111/j.1365-2702.2008.02361.x). [PubMed: [18705780](https://pubmed.ncbi.nlm.nih.gov/18705780/)].
- Kukimoto Y, Ooe N, Ideguchi N. The effects of massage therapy on pain and anxiety after surgery: A systematic review and meta-analysis. *Pain Manag Nurs*. 2017;**18**(6):378-90. doi: [10.1016/j.pmn.2017.09.001](https://doi.org/10.1016/j.pmn.2017.09.001). [PubMed: [29173797](https://pubmed.ncbi.nlm.nih.gov/29173797/)].
- Berube M, Gelinac C, Choiniere M, Feeley N, Martorella G, Parent S, et al. The effect of psychological interventions on the prevention of chronic pain in adults: A systematic review protocol. *Syst Rev*. 2017;**6**(1):190. doi: [10.1186/s13643-017-0583-7](https://doi.org/10.1186/s13643-017-0583-7). [PubMed: [28934981](https://pubmed.ncbi.nlm.nih.gov/28934981/)]. [PubMed Central: [PMC5609012](https://pubmed.ncbi.nlm.nih.gov/PMC5609012/)].
- Martorella G, Gelinac C, Berube M, Boitor M, Fredericks S, LeMay S. The effect of tailored Web-based interventions on pain in adults: A systematic review protocol. *Syst Rev*. 2016;**5**:59. doi: [10.1186/s13643-016-0233-5](https://doi.org/10.1186/s13643-016-0233-5). [PubMed: [27072140](https://pubmed.ncbi.nlm.nih.gov/27072140/)]. [PubMed Central: [PMC4830009](https://pubmed.ncbi.nlm.nih.gov/PMC4830009/)].
- Papathanassoglou EDE, Hadjibalassi M, Miltiadous P, Lambrinou E, Papastavrou E, Paikousis L, et al. Effects of an integrative nursing intervention on pain in critically ill patients: A pilot clinical trial. *Am J Crit Care*. 2018;**27**(3):172-85. doi: [10.4037/ajcc2018271](https://doi.org/10.4037/ajcc2018271). [PubMed: [29716903](https://pubmed.ncbi.nlm.nih.gov/29716903/)].
- Ozer N, Karaman Ozlu Z, Arslan S, Gunes N. Effect of music on postoperative pain and physiologic parameters of patients after open heart surgery. *Pain Manag Nurs*. 2013;**14**(1):20-8. doi: [10.1016/j.pmn.2010.05.002](https://doi.org/10.1016/j.pmn.2010.05.002). [PubMed: [23452523](https://pubmed.ncbi.nlm.nih.gov/23452523/)].
- Probyn K, Bowers H, Mistry D, Caldwell F, Underwood M, Patel S, et al. Non-pharmacological self-management for people living with migraine or tension-type headache: A systematic review including analysis of intervention components. *BMJ Open*. 2017;**7**(8). e016670. doi: [10.1136/bmjopen-2017-016670](https://doi.org/10.1136/bmjopen-2017-016670). [PubMed: [28801425](https://pubmed.ncbi.nlm.nih.gov/28801425/)]. [PubMed Central: [PMC5629643](https://pubmed.ncbi.nlm.nih.gov/PMC5629643/)].
- Esazadeh N, Radfar M, Khalkhali H. [Adaptive sustainability model: A new approach to reduce readmission in depressed patients]. *J Nurs Midwifery Urmia Univ Med Sci*. 2016;**14**(5):417-25. Persian.

30. Radfar M. *Exploration the process of adaptation in the family of depressed patients and presenting the caring model for family [dissertation]*. Tehran: Tarbiat Modares University; 2013. Persian.
31. Mohammadtaheri F, Tavakol K, Gheysari R, Akhlaghdoost M. [The effectiveness of oral peppermint extract on migraine]. *J Anesthesiol Pain*. 2017;**7**(2):1-12. Persian.
32. Sonal Sekhar M, Sasidharan S, Joseph S, Kumar A. Migraine management: How do the adult and paediatric migraines differ? *Saudi Pharm J*. 2012;**20**(1):1-7. doi: [10.1016/j.jsps.2011.07.001](https://doi.org/10.1016/j.jsps.2011.07.001). [PubMed: [23960771](https://pubmed.ncbi.nlm.nih.gov/23960771/)]. [PubMed Central: [PMC3745030](https://pubmed.ncbi.nlm.nih.gov/PMC3745030/)].
33. Chakravarty A, Mukherjee A, Roy D. Migraine pain location: How do children differ from adults? *J Headache Pain*. 2008;**9**(6):375-9. doi: [10.1007/s10194-008-0075-1](https://doi.org/10.1007/s10194-008-0075-1). [PubMed: [18854921](https://pubmed.ncbi.nlm.nih.gov/18854921/)]. [PubMed Central: [PMC3452085](https://pubmed.ncbi.nlm.nih.gov/PMC3452085/)].
34. Panconesi A, Bartolozzi ML, Guidi L. Migraine pain: Reflections against vasodilatation. *J Headache Pain*. 2009;**10**(5):317-25. doi: [10.1007/s10194-009-0130-6](https://doi.org/10.1007/s10194-009-0130-6). [PubMed: [19499287](https://pubmed.ncbi.nlm.nih.gov/19499287/)]. [PubMed Central: [PMC3452097](https://pubmed.ncbi.nlm.nih.gov/PMC3452097/)].
35. Ali ZH. Effect of pre and post nursing intervention on the occurrence of tension headache among surgical patients undergoing spinal anesthesia. *J Anesth Clin Res*. 2012;**3**(223):2. doi: [10.4172/2155-6148.1000223](https://doi.org/10.4172/2155-6148.1000223).
36. Leroux E, Beaudet L, Boudreau G, Eghtesadi M, Marchand L, Pim H, et al. A nursing intervention increases quality of life and self-efficacy in migraine: A 1-year prospective controlled trial. *Headache*. 2018;**58**(2):260-74. doi: [10.1111/head.13178](https://doi.org/10.1111/head.13178). [PubMed: [28913825](https://pubmed.ncbi.nlm.nih.gov/28913825/)].
37. Hamedanizadeh F, Ebadi A, Zandi A, Kachuyee H. [Effectiveness of implementation of Orem self-care program on headache indices in migraineur]. *Trauma Mon*. 2010;**15**(3):155-61. Persian.