

Original Article

## Analgesic Usage Behaviours of Patients with Migraine

**Ilknur Ozkan, PhD, RN**

Assistant Prof. Akdeniz University, Faculty of Kumluca Health Sciences, Department of Internal Disease Nursing, Antalya, Turkey

**Feride Taskin Yilmaz, PhD, RN**

Assistant Prof. Cumhuriyet University, Health High School of Susehri, Department of Internal Disease Nursing, Sivas, Turkey

**Azime Karakoc Kumsar, PhD, RN**

Assistant Prof. Biruni University, Faculty of Health Sciences, Department of Internal Disease Nursing, Istanbul, Turkey

**Correspondence:** İlknur Özkan, Assistant Prof. PhD. RN Akdeniz University, Faculty of Kumluca Health Sciences, Department of Internal Disease Nursing 07350 Antalya, Turkey e-mail: ilknurozkan@akdeniz.edu.tr

### Abstract

**Objective:** The objective of this research was to determine analgesic usage behaviors of patients with migraine.

**Method:** In this descriptive and cross-sectional type research, 105 patients who applied to neurology polyclinic in a public hospital between the dates of 01 March- 30 June 2017, were diagnosed with migraine at least for 6 months and accepted to participate in the study were included. Data was collected by using Patient Identification Form, Visual Analogues Scale, Analgesic Usage Form and Migraine Disability Assessment Scale (MIDAS). In data evaluation, average, standard deviation, percentage distribution, chi-square and Fisher's exact chi-square test were used.

**Results:** It was determined that 58.1% of patients were at 4<sup>th</sup> stage according to MIDAS, one third of the patients (33.3%) were suffering from headache for 30- 90 days in the last three months and pain level of 29.5% of them were 9-10 point. It was stated that participants used non-steroidal anti-inflammatory drug (NSAIDs) firstly (70.8%) for headache attacks, 24.8% of them used analgesics four times a week and more and 66.7% of them used over the counter analgesics. While there is no difference between situations of getting information from nurses and doctors about the migraine, migraine types, pain level, using preventive medication against the migraine and type of analgesic used in patients with medication overuse or not ( $p>0.05$ ), it was determined according to MIDAS that patients with the migraine suffering from headache for 30- 90 days in the last three months and at 4<sup>th</sup> stage used analgesics more ( $p<0.05$ ).

**Conclusion:** It was determined in the research that important part of the patients with the migraine were suffering from pain very frequently at serious level, they commonly used NSAIDs as acute treatment and one fourth of them had behavior of analgesics overuse.

**Keywords:** Migraine, analgesics, medication overuse, over the counter drugs

### Introduction

Migraine is a chronic disease seen frequently between 20-55 years old most fertile years of life, having important economic impacts on society as well as adverse impacts on life quality. Researches show that migraine significantly limits work and school life, family- friend relationships and daily activities of the patients

during attacks and among attacks ( Ertaş et al., 2012; Landy et al., 2008; Smitherman et al., 2013; Altıntaş et al.; Steiner et al 2013; Vladic et al., 2017). Migraine is 7<sup>th</sup> disease among commonly seen chronic diseases in Global Burden of Disease Study (Steiner et al., 2013).

Although migraine is frequently seen and causes significant burden on people, it is a disease not

followed correctly and diagnosed wrongly (Lantéri et al., 2005; Lantéri et al., 2008). Migraine is also a disease accompanied by chronic pain therefore many patients with migraine try to deal with headache attacks with analgesics and other drugs themselves (Chagas et al., 2015). Anxiety for new coming migraine attacks leads to using drugs before starting of attack symptoms and it also leads medication overuse (Peres, Mercante & Guendler 2007). Medication overuse is determined as usage of simple analgesics for 15 days and more a month, usage of preparate combined with caffeine and analgesics, ergo types and triptans for 15 days and more a month (International Headache Society, 2013). Frequently and long term usage of these medications used in treatment of acute migraine attacks can lead to a paradoxical effect and worse headache rather than relieving it (Mehuys et al.,2012). The situation called as Medication Overuse Headache (MOH) and medication overuse are problems whose prevalence increases day by day in the world. It was shown in epidemiological studies that 4% of general society in Europe, North America and Asia used analgesics and migraine drugs excessively and 1% of them are MOH (Colas et al., 2004; Diener & Limmroth, 2004). Prevalence of MOH reaches 30-50% in headache centers giving tertiary healthcare service (Munksgaard & Jensen, 2014).

It is a fact that individuals having headache and especially with migraine can use analgesics excessively due to pain complaint, for this reason MOH can develop. Although migraine treatment is done by neurologists and family physician in practice, a multidisciplinary team mentality should be addressed for drug management. Doctors, nurses and pharmacists and patients should work together in this process. Nurses have important responsibilities in arranging implementation programs of prescribed drugs, giving information to patients about adverse impacts of usage frequency of the drugs and usage of analgesics overuse, assessing drug compliance and side effects with telephone interviews and regular controls (Gaul et al., 2011). And pharmacists have important roles in especially recording analgesics sold over the counter, reporting to the doctors, leading patients to the doctors, giving information to the patients about daily maximum doses they can take and regular analgesic usage can make headache chronic (Mehuys et al., 2012).

Researches assessing analgesic usage of the patients with migraine or other types of headache are very limited in Turkey and in the world. This study was done based on thoughts mentioned above and deficiencies in this field with the aim of guiding initiative programs which can be developed in order to assess analgesic usage of patients with migraine, provide healthcare personnel's to review awareness of patients with migraine about drug management, prevent MOH which can develop due to analgesics overuse.

## Method

### Aim

This research which was descriptive and cross-sectional was done with the aim of determining analgesic usage behaviors of patients with migraine.

### Participants

Target population of the research is 167 patients with migraine who applied to neurology polyclinic of a public hospital between the dates of 01 March- 30 June 2017, diagnosed with the migraine at least for 6 months according to 2004 criteria of International Headache Society (IHS), don't have verbal communication disability, not diagnosed with any psychiatric disease and accept to participate in the study. It was aimed to reach all of the target population at a particular time without doing participation selection. In this sense, 105 patients with migraine were included in sample.

### Data Collection

Data was collected by using The Patient Identification Form, Visual Analogues Scale, Analgesic Usage Form and Migraine Disability Assessment Scale (MIDAS).

**The Patient Identification Form:** This form includes 16 questions about personal information (age, gender, marital status, educational background, occupation, cigarette and alcohol consumption and presence of health insurance) and disease information (period of the disease, presence of other chronic diseases, having information about the disease, getting preventive treatment or not, general health perception and etc.) prepared in line with literature review by researchers.

**Visual Analogues Scale:** It is a very commonly used scale for assessing pain in daily practice and

pain level of the patients are scored between 0 (no pain) -10 (intense pain)

**Analgasic Usage Form:** Form prepared by researchers in line with literature review includes 12 questions about behaviors of patients with migraine such as analgesics and usage frequency, over the counter drug, keeping and hiding analgesics, consuming, reading drug prescription. In line with information obtained according to frequency of analgesic usage in this form, patients using analgesics more frequently than 15 days a month in the last three months were categorized as “analgesic overuse”.

**Migraine Disability Assessment Scale (MIDAS):** It was developed by Stewart et al. in 1999 and its Turkish validity and reliability were done by Ertaş et al. in 2004 (17).

MIDAS is a scale including 7 questions assessing pain level and disability regarding headache. MIDAS scale was designed in order to measure disabilities due to the migraine in 3 important activity fields such as work/ school, homework and familial / social activities. Questions are answered by taking into consideration the last three months. MIDAS is a commonly used scale clinically in assessing impacts of migraine on patients.

Before data collection, data forms were assessed in terms of understandability by 3 lecturers who were specialist in their fields of migraine and neurological diseases.

Pilot study was done with 20 patients with migraine after arrangement of data forms in line with expert opinions. As a result of this study, data collection instrument was shaped in line with feedbacks by assessing clear understandability of it by patients.

### Procedure

Data was collected by interviewing with patients face to face in a room freely by researchers. Researchers gave information about objective and importance of the study to the patients. Filling data forms lasted approximately 15-20 minutes.

### Ethics

Written permission was taken from the institution in which research was done before data collection. Besides, every patient who would participate in the study was informed about content of the study and voluntariness of

participation and their verbal consents were taken.

### Data Analysis

Data was interpreted in SPSS 22.0 package program. Average, standard deviation, percentage distribution were used in distribution of socio-economic and disease characteristics of the patients and chi-square and Fisher's exact chi-square test were used in comparison of qualitative data.

### Results

Age average of patients with migraine was  $32.45 \pm 9.65$  (min=26, max=54) and 65.7% of them were women, 52.4% of them were married, 36.2% of them were graduated from secondary school 27.6% of them were housewives and 48.6% of them were freelancers. 49.5 % of patients with migraine were still smoking and 22.9% of them were using alcohol (Table 1).

Average period of the disease in patients with migraine was  $6.26 \pm 3.99$  (min=1, max=20) years and it was determined that 11.4% of them had another disease diagnosed by doctor and 16.2 % of them used medicine regularly every day. 58.1% of the patients stated that they didn't go their regular health controls because of migraine and 33.3% of them stated that they applied to healthcare provider only when they had complaint.

Rates of the patients who stated they took information about the migraine from doctors and nurses were determined as 55.2%. It was determined when assessed according to MIDAS scores that 58.1% of them had headache at 4<sup>th</sup> stage and one third of them (33.3%) complaint about headache for 30-90 days in the last three months and pain level of 29.5% of them was 9-10 points. It was determined that 19% of patients with migraine took preventive treatment for migraine. Besides, 61.9% of participants assessed their general health state as medium level (Table 2).

When we examined analgesics used by patients with migraine during headache attacks, they were respectively NSAIDs (70.8%), paracetamol and combinations (21%), ergotamines (4.8%), and triptans (3.8%).

When we questioned frequency of analgesics usage of the patients, 24.8% of them stated that they used analgesics four times a week or more.

It was determined that 48.6% of the patients used analgesics and they stated because it relieved their pain, 66.7% of them used over the counter analgesics, almost all of them (98.1%) took analgesics from pharmacy.

Only a 21% of them read drug prescription before using analgesics and 41.9% of them kept analgesics in medicine cabinet. 14.3% of the patients stated that they experienced side effects of the analgesics and the most commonly encountered side effect was stomach ache/heartburn (Table 3).

While there was no difference between situation of taking information about migraine from nurses or doctors, migraine type, pain level, situation of using preventive drugs against migraine and migraine type used of patients with analgesic overuse or not ( $p>0.05$ ), it was determined that analgesic overuse was related to MIDAS stage and frequency of suffering from headache in the last three months ( $p<0.05$ ). According to this, it was determined that patients with migraine at 4<sup>th</sup> stage and suffering from headache for 30-60 days in the last three months used analgesics more (Table 4).

**Table 1. Socio-demographic Characteristics of Patients with Migraine (N=105)**

Characteristics	n	%
Age (Average±SS)	32.45±9.65	
<b>Gender</b>		
Female	69	65.7
Male	36	34.3
<b>Marital Status</b>		
Single	50	47.6
Married	55	52.4
<b>Educational background</b>		
Primary school	25	23.8
Secondary school	38	36.2
Higher education	42	40.0
<b>Working situation</b>		
Worker/Officer	21	20.0
Retired	4	3.8
Housewife	29	27.6
Freelancer	51	48.6
<b>Social insurance</b>		
Available	104	99.0
Absent	1	1.0
<b>Smoking habit</b>		
Smoking	52	49.5
Never smoked	53	50.5
Quitted	0	0.0
<b>Habit of using alcohol</b>		
Using	24	22.9
Never used	79	75.2
Not using anymore	2	1.9

**Table 2. Disease Characteristics of Patients with Migraine (N=105)**

Characteristics	n	%
<b>Period of the disease (Average <math>\pm</math>SS)</b>	6.26 $\pm$ 3.99 (min=1, max=20)	
<b>Presence of another chronic disease</b>		
Yes	12	11.4
No	93	88.6
<b>Situation of using medicine regularly every</b>		
Yes	17	16.2
No	88	83.8
<b>Situation of going regular health controls due to the migraine</b>		
Not going	61	58.1
They went when they had complaint	35	33.3
They went on periods which	7	6.7
They weren't said to go to control	2	1.9
<b>Situation of taking information from doctors or nurses about the migraine</b>		
Yes	58	55.2
No	47	44.8
<b>MIDAS</b>		
MIDAS STAGE I (0-5)	3	2.9
MIDAS STAGE II (6-10)	13	12.4
MIDAS STAGE III (11-20)	28	26.7
MIDAS STAGE IV (>20)	61	58.1
<b>Frequency of headache complaint in the last three months</b>		
2-14 days	42	40.0
15-29 days	28	26.7
30-90 days	35	33.3
<b>Pain level according to VAS</b>		
3-6	20	19.0
7-8	54	51.4
9-10	31	29.5
<b>Taking preventive treatment</b>		
Yes	20	19.0
No	85	81.0
<b>General health evaluation</b>		
Good	27	25.7
Medium	65	61.9
Bad	13	12.4

MIDAS: Migraine Disability Assessment, VAS: Visual Analogue Scale

**Table 3. Analgesics Usage Behaviors of Patients with Migraine (N=105)**

<b>Expressions</b>	<b>n</b>	<b>%</b>
<b>Type of analgesics used</b>		
NSAIDs	74	70.5
Paracetamol and combinations	22	21.0
Triptan	4	3.8
Ergotamine	5	4.8
<b>The reason why they chose this analgesic</b>		
Relieving pain	51	48.6
Recommendation of the doctor	30	28.5
Accessing it easily	24	22.9
<b>Frequency of analgesic usage</b>		
Four times a week or more	26	24.8
Once a week	27	25.7
Three times a week	49	46.6
Once a month	3	2.9
<b>Analgesic usage hour</b>		
On an empty stomach in the morning	2	1.9
After meal	10	9.5
Any time during the day	93	88.6
<b>Situation of taking analgesics from pharmacy without any medical examination</b>		
Yes	70	66.7
No	35	33.3
<b>Where analgesics were obtained</b>		
From pharmacy	103	98.1
Relatives/ Neighbours	2	1.9
Grocery/Supermarket	0	0
<b>Situation of reading drug prescription before using analgesics</b>		
Yes	22	21.0
No	83	79.0
<b>Where analgesics were kept</b>		
Medicine cabinet	44	41.9
In refrigerator	40	38.1
In any cabinet	19	18.1
Bag	2	1.9

NSAIDs: Non-Steroidal Anti-Inflammatory Drug

**Table 4. Comparison of Some Characteristics about Disease Information and Headache Level of the Patients with Migraine and Analgesics Overuse or not (N=105)**

Characteristics	Analgesics Overuse		Test
	Yes	No	
	n(%)	n(%)	
<b>Situation of taking information about migraine from nurses or doctors</b>			
Yes	15(25.9)	43(74.1)	X <sup>2</sup> =0.823
No	11(23.4)	36(76.6)	
<b>MIDAS</b>			
MIDAS Stage I (0-5)	1(33.3)	2(66.7)	X <sup>2</sup> =11.664 <b>p=0.009**</b>
MIDAS Stage II (6-10)	2(15.4)	11(84.6)	
MIDAS Stage III (11-20)	1(3.6)	27(96.4)	
MIDAS Stage VI (>20)	22(36.1)	39(63.9)	
<b>Frequency of headache complaint in the last 3 months</b>			
2-14 days	8(19.0)	34(81.0)	X <sup>2</sup> =6.748
15-29 days	4(14.3)	24(85.7)	
30-90 days	14(40.0)	21(60.0)	
<b>Pain level according to VAS</b>			
3-6	3(15.0)	17(85.0)	X <sup>2</sup> =1.972
7-8	13(24.1)	41(75.9)	
9-10	10(32.39)	21(67.7)	
<b>Taking preventive treatment against migraine</b>			
Yes	7(35.0)	13(65.0)	X <sup>2</sup> =1.390
No	19(22.4)	66(77.6)	
<b>Analgesic type used</b>			
NSAIDs	20(27.0)	54(73.0)	X <sup>2</sup> =1.972 <b>p=0.373</b>
Paracetamol and combinations	5(22.7)	17(77.3)	
Triptan	0(0.0)	4(100.0)	
Ergot	1(20.0)	4(80.0)	

MIDAS:Migraine Disability Assessment; VAS: Visual Analogue Scale; NSAIDs: Non-Steroidal Anti-Inflammatory Drug

## Discussion

Analgesic usage is very important in treatment of migraine which is commonly seen in neurological diseases nowadays. This research was done with the aim of determining analgesic usage behaviors of the patients with migraine and obtained findings were discussed in line with the literature.

MIDAS scale was used in order to measure disabilities due to migraine in three significant activity fields such as work/ school, homework and familial/ social activities in the research, MIDAS of 58.1% was determined as 4<sup>th</sup> stage (serious level restraint). Researches show that increase in level and frequency of migraine attacks limits management of daily activities, for this reason work, family and social life are affected negatively (Ertaş et al., 2012; Landy et al., 2008; Smitherman et al., 2013; Altuntaş et al.; Steiner et al 2013;Vladetic et al., 2017). It was also confirmed in this research in line with the literature, too that migraine lead to significant disabilities in life of patients.

It was determined in the research that 58.1% of the patients didn't go regular health controls although more than half of the patients had 4<sup>th</sup> stage (serious level restraint) MIDAS, one third of them had headache for 30-90 days in the last three months and pain level of one third of the patients was 9-10 points. It was also found in other studies that doctor follow-up rates of patients with migraine were less than 50% (Ertaş et al., 2012; Mehuys et al., 2012; Cerrahoglu, 2017, Shand et al., 2015). Research finding could stem from lack of knowledge about the disease of the patients and using personal skills to deal with problems.

It was determined in the research that more than half of the patients used over the counter drugs in migraine attacks as an acute treatment themselves. 48.6% of people who used over the counter drugs expressed that they used analgesics because they relieved their pain. In the study of Chagas et al (2015), it was determined that 34% of the patients used over the counter drugs in migraine attacks themselves although the place where the research was done was tertiary headache center and 63% of them showed effects of them as a reason why they used them (9). In the research conducted with 677 people diagnosed with migraine and tension-type headache by Mehuys et al.(2012), it was determined that 73% of the patients used over the

counter drugs, 27% of them used both prescription drugs and over the counter drugs, too. When we examined research done in Turkey, it was determined in the study of DemirkIran et al. (2006) that 62.3% of the patients used over the counter drugs during migraine attacks and in the study of Ertaş et al. (2012), 56.9% of the patients used over the counter drugs. These findings clearly show prevalence of using over the counter drugs themselves in patients with migraine. Nearly all of the patients with migraine using over the counter analgesics expressed that they bought analgesics from pharmacy. In the study of Chagas etl al. (2015), it was stated that 57% of patients with migraine bought analgesics from pharmacy. It is very important in preventing analgesic overuse and MOH that pharmacists record analgesics sold over the counter, inform patients about analgesics overuse in doubtful situations and MOH and encourage them about doctor consultation.

The most commonly used analgesic types in acute treatment of migraine attacks of the patients were stated as NSAIDs (70.8%), paracetamol and combinations (21%), ergotamines (4.8%) and triptans (3.8%) in the research. It was confirmed in a research done in Brazil having sixth biggest market of the world in analgesics production that dipyrone compounds were used firstly in acute treatment of headache. These were followed by dipyrone and paracetamol type analgesics respectively (Chagas et al., 2015). It was reported in a research done by Alvarezve et al. (2010) in Colombia that the most commonly used analgesics in acute treatment of headache were respectively simple analgesics, triptans, ergot types (especially ergotamine) and opioids. It was determined in a cohort study done with 216 patients by Zebeer et al. (2016) that many patients (46%) used different types of analgesics by changing them, 29% of them used simple analgesics, 20% of them used triptans, 6% of them used opioids and 4% of them used ergotamines (22). When research done in Turkey was examined, it was reported in a research done by Ertaş et al. (2012) that 19.3% of the patients used simple analgesics, 15.8% of them used combined analgesics, 41.4% of them used NSAIDs, 14.5% of them used ergots and only 2.9% of them used triptans in acute migraine treatment (1). The most commonly used drug in acute treatment of migraine attacks was

determined as NSAIDs (49.4%) in the research of Ulusoy et al. (2014). When research findings are taken into consideration, it can be said that analgesic types used for headache and usage frequency differ among countries. It is seen in this research and other studies done in Turkey that NSAIDs usage is very common and triptans are used at very low rates. Impact of triptans on pain during migraine attacks was proved with studies having big placebo controls and it was shown that they were the most effective drugs so far (Ferrari et al., 2001; Goadsby, Lipton & Ferrai 2002). It was shown that triptans were effective in 60% of the patients not responding to the NSAIDs (Diamond et al., 2004) and it was reported in the studies that triptan usage could be beneficial in terms of life quality and cost efficiency of patients with migraine (Colman et al., 2001; Lainez, Lopez & Pascual, 2005). The fact that attack frequency and analgesic usage behaviors of patients with migraine is assessed by doctors and nurses is very important in terms of starting appropriate treatment for patients and preventing analgesics overuse.

Medication overuse was determined as usage of simple analgesics 15 days a month or more, preparats combined with analgesics and caffeine, ergo types and triptans 10 days a month or more (International Headache Society, 2013). Analgesic overuse is one of the main reasons of chronic migraine and MOH. Medication overuse and MOH are problems increasing around the world (Ertaş et al., 2012; Chagas et al., 2015; Colas et al., 2004; Munksgaard & Jensen, 2014; Shand et al., 2015; Zeeberg et al., 2006; Donnet, 2009). It was determined in the research of Donnet et al. (2009) that 21.9% of the patients with migraine used analgesics excessively and analgesic overuse was determined in one third of patients with migraine (24.2%) in the research of Mehuys et al. It was also determined in the research done in Denmark that nearly half of the patients with chronic headache used analgesics excessively and they had MOH (Westergaard et al., 2015). It was confirmed in retrospective research of Inceoglu Kendir et al. (2009) that 34 of the patients (58%) used ergo types, 22 of them (39%) used NSAIDs, one of them used both ergo types and NSAIDs and one of them used triptans excessively in 58 patients with migraine, followed 2 years. MOH rate was reported as 10.9% in the same research. Analgesic overuse was confirmed in 38.3% of patients with migraine in a research done by Eruyar et al.

(2014) in Turkey. Analgesic overuse was also confirmed in 24.7% of the patients with migraine in this research, too. This rate is very serious and it makes us think that patients with migraine aren't sufficiently aware of analgesic overuse and other resistant headache which it can lead.

It was determined in the research that analgesic overuse was related with MIDAS stage and frequency of suffering from headache in the last three months ( $p < 0.05$ ). According to this, it was determined that individuals having headache complaint for 30-90 days in the last three months and at 4<sup>th</sup> stage used analgesics more. This situation makes us think that patients can be under risk in terms of MOH because analgesic usage increases with pain frequency.

It was determined that one third of the patients had headache complaint for 30-90 days in the last three months and more than half of them were at 4<sup>th</sup> MIDAS stage however only 19% of the patients stated that they took preventive treatment for migraine. When the studies done in various countries were examined, it was determined that prophylactic drug usage rates in patients with migraine were 12 % (Diamond et al., 2007) in USA, 14% (Cevoli et al., 2009) in Italy, 6% (Lucas et al., 2005) in France. Usage rate of preventive treatment in patients with migraine was determined as 4.9% in migraine prevalence research done by Ertaş et al. (2012) throughout Turkey. It was confirmed in the research of Eruyar et al. (2014) done in a headache polyclinic that 30.6% of the patients with migraine took preventive treatment. Preventive treatment is an indication in frequently seen attacks and its positive impacts on life quality of the patient was proved (Silberstein, Winner & Chmiel, 2000). It was determined in this research that patients didn't take preventive treatment effectively, they usually tried to deal with their attacks themselves by using over the counter analgesics which they thought as efficient although they experienced migraine attacks frequently and serious restrictions in daily life.

This research has some limitations. That its results can only be generalized for its own target population is a significant limitation because it was conducted with patients with migraine who accepted to join the study and applied to an only one public hospital at a certain time. Besides, information obtained about analgesic usage of the patients was based on self-notification.

Individuals having analgesic overuse were only assessed in the research, however MOH wasn't assessed.

### Conclusion

It was determined in the research that more than half of the patients had serious restrictions in their life due to the migraine, most of them used NSAIDs in migraine attacks, rate of triptans usage and preventive treatment was very low although rates of people living serious pain frequently were high, analgesic overuse seen in nearly one fourth of them and frequency of over the counter analgesic usage was common in patients. In this regard, healthcare professionals must be alert about analgesic overuse in patients with migraine and they can be under risk in terms of MOH. It is recommended that healthcare professionals give information about analgesic usage as well as disease and treatment to the patients after they are diagnosed with migraine and patients with migraine should be followed closely in order to prevent analgesic overuse and resistant headache stemming from it.

### References

- Altintas E., Karakurum Goksel B., Taskintuna N. & Sariturk Ç. (2015) The relationship between life events and quality of life in patients with headache overuse of drugs. *Arch Neuropsychiatr* 52: 233-239.
- Steiner T.J., Stovner L.J. & Gretchen L.B. (2013). Migraine: the seventh disable. *J Headache Pain* 14(1):1.
- Alvarez S.M.R., Garcia G.R.G. & Silva S.F.A. (2010). Headache due to excessive use of medicines: clinical and therapeutic implications. *Acta Neurol Colomb* 26(4):. 195-291.
- Cerrahoglu Sirin T. (2017) Clinical and sociodemographic characteristics of migraine patients admitted to Agri State Hospital, *Ege Journal of Medicine* 56(3): 128-134.
- Cevoli S., D'Amico D., Martelletti P., et al. (2009). Underdiagnosis and undertreatment of migraine in Italy: a survey of patients attending for the first time 10 headache centres. *Cephalalgia* 29: 1285-1293.
- Chagas O.F.P., Eckeli F.D., Bigal M.E., Silva M.O.A., & Speciali J.G. (2015) Study of the use of analgesics by patients with headache at a specialized outpatient clinic (ACEF). *Arq Neuropsiquiatr* 73(7): 586-592.
- Colas R., Munoz P., Temprano R., Gomez C. & Pascual J. (2004) Chronic daily headache with analgesic overuse: epidemiology and impact on quality of life. *Neurology* 62(8): 1338-42.
- Colman S.S., Brod M.I., Krishnamurthy A., Rowland C.R., Jirgens K.J. & Gomez-Mancilla B. (2001). Treatment satisfaction, functional status, and health-related quality of life of migraine patients treated with almotriptan or sumatriptan. *Clin Ther* 23: 127-145.
- Diamond S., Bigal M.E., Silberstein S., Loder E., Reed M., & Lipton R.B. (2004). Effectiveness of eletriptan in acute migraine: primary care for Excedrin nonresponders. *Headache* 44: 209-216.
- Diener H.C. & Limmroth V.I. (2004) Medication-overuse headache: a worldwide problem. *Lancet Neuro* 3(8): 475-83. 15.
- Demirkiran M.K., Ellidokuz, H. & Boluk A. (2006). Prevalence and clinical characteristics of migraine in university students in Turkey. *Thokou J.Exp. Med* 208: 87-92.
- Diamond S., Bigal M.E., Silberstein S., Loder E., Reed M & Lipton R.B. (2007). Patterns of diagnosis and acute and preventive treatment for migraine in the United States: results from the American Migraine Prevalence and Prevention study. *Headache* 47: 355-363.
- Donnet A., Minet M.L., Aucoin F. & Allaf B. (2009). Use and overuse of antimigraine drugs by pharmacy personnel in France: COTA Survey. *Headache* 49: 1014-1021.
- Ertas M., Baykan B., Orhan E.K., Zarifoglu M., Karli N., Saip S., Onal A.E. & Siva A. (2012). One-year prevalence and the impact of migraine and tension-type headache in Turkey: a nationwide home-based study in adults. *J Headache Pain* 13: 147-157. doi: 10.1007/s10194-011-0414-5
- Ertas M., Siva A., Dalkara T., Uzuner N., Dora B., Inan L., & Idiman F. (2004). Validity and reliability of the Turkish Migraine Disability Assessment (MIDAS) questionnaire. *Headache* 44(8): 786-93.
- Erucar E., Genc E. & Genc B.O. (2014). Demographic and clinical features of migraine patients in. *Selcuk Medical Journal*, 30(4): 162-164.
- Ferrari M.D., Roon K.I., Lipton R.B. & Goadsby P.J. (2001). Oral triptans (serotonin 5-HT<sub>1B/1D</sub> agonists) in acute migraine treatment: a meta-analysis of 53 trials. *Lancet* 358: 1668-1675.
- Gaul C., Visscher C.M., Bhola R., Sorbi M.J., Galli F., Rasmussen A.V., Jensen R., et al. (2001). Team players against headache: multidisciplinary treatment of primary headaches and medication overuse headache. *J Headache Pain* 12: 511-519.
- Goadsby P.B., Lipton R.B. & Ferrai M.D. (2002). Migraine: current understanding and management. *N Engl J Med* 346: 257-270.
- Headache Classification Committee of the International Headache Society (2013). The international classification of headache disorders, 3rd edition (beta version). *Cephalalgia* 33: 629-808.
- Inceoglu Kendir A., Beckmann Y., Secil Y., Eryasar G. & Basoglu M. (2009). Drug overuse clinical

- and therapeutic properties of headache. Turkey Clinics J Neur 4(3): 122-7.
- Lainez M.J., Lopez A. & Pascual A.M. (2005). Effects on productivity and quality of life of rizatriptan for acute migraine: a workplace study. *Headache* 45: 883-8890.
- Landy S.H., Runken M.C., Bell C.F., Higbie R.L. & Haskins L.S. (2011). Assessing the impact of migraine onset on work productivity. *JOEM* 53(1): 74-81. DOI: 10.1097/JOM.0b013e31812006365
- Lantéri-Minet M., Massiou H., Nachit-Ouinekh F., et al. (2007). The GRIM2005 study of migraine consultation in France. I. Determinants of consultation for migraine headache in France. *Cephalalgia* 27: 1386-1397.
- Lantéri-Minet M., Valade D., Géraud G., Chautard M.H. & Lucas C. (2005). Migraine and probable migraine. Results of FRAMIG 3, a French nationwide survey carried out according to the 2004 IHS classification. *Cephalalgia* 25: 1146-1158.
- Lucas C., Chaffaut C., Artaz M.A. & Lanteri-Minet M. (2005). FRAMIG 2000: medical and therapeutic management of migraine in France. *Cephalalgia* 25: 267-269.
- Mehuys E., Paemeleireb K., Van Heesc T., Christiaensd T., Van Bortele L.M., Van Tongelena I., De Bollea L., Remona J.P. & Bousserya K. (2012). Self-medication of regular headache: a community pharmacy-based survey. *European Journal of Neurology* 19:1093-1099. doi:10.1111/j.1468-1331.2012.03681.x
- Munksgaard S.B. & Jensen R.H. (2014) Medication overuse headache. *Headache* 54: 1251-57.
- Peres M.F., Mercante J.P. & Guendler V.Z. (2007). Cephalalgiaphobia: a possible specific phobia of illness. *J Headache Pain* 8(1): 56-59. DOI: 10.1007/s10194-007-0361-3
- Shand B., Goicochea M.T., Valenzuela R., Fadic R., Jensen R., Tassorelli C. & Nappi G. (2015). Clinical and demographical characteristics of patients with medication overuse headache in argentina and chile: analysis of the latin american section of COMOESTAS project. *The Journal of Headache and Pain* 16: 83.
- Silberstein S.D., Winner P.K. & Chmiel J.J (2003). Migraine preventive medication reduces resource utilization. *Headache* 43: 171-178.
- Smitherman T.A., Burch R., Sheikh H. & Loder E. (2013). The prevalence, impact, and treatment of migraine and severe headaches in the United States: a review of statistics from national surveillance studies. *Headache* 53(3): 427-36.
- Ulusoy E.K., Albayrak T., Sencan I., Sule B. & Abas H. (2014). Demographic and clinical features of migrain headache of women in relation to functional disability. *J Turgut Ozal Med Cent* 21(3): 196-201.
- Vladetic M., Janculjak D., Soldo S.B., Krali K. & Buljan K. Health-related quality of life and ways of coping with stress in patients with migraine. *Neurol Sci* 3: 295-301.
- Westergaard M.L., Hansen E.H., Charlotte G. & Rigmor H.J. (2015). Prescription pain medications and chronic headache in Denmark: implications for preventing medication overuse. *Eur J Clin Pharmacol* 71: 851-860.
- Zeeberg P., Olesen J. & Jensen R.(2006). Probable medication-overuse headache: the effect of a 2-month drug-free period. *Neurology* 66(12): 1894-8.