

1           **Can patients who apply to tertiary care with headache for the first time be**  
2                           **managed in primary care? - A cross-sectional study**

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4   **Background/Aim:** Headache is one of the most common neurological symptoms. It  
5   adversely affects daily life, reduces the workforce, and has high health costs. Managing  
6   this symptom in primary care will free up secondary and tertiary health services to  
7   better treat patients who need follow-up by specialists. In the present study, we aim to  
8   show the rate at which this problem can be solved in primary care for patients who  
9   applied tertiary care services with a headache for the first time.

10   **Materials and Methods:** Our research is a cross-sectional study of 207 patients who  
11   applied to the neurology clinics for the first time with headache. Two questionnaires  
12   were prepared by the researchers. IBM SPSS 21 was used for statistical analysis, and  
13   the level of significance was  $p < 0.05$ .

14   **Results:** The opinions of the patients on the evaluability of headache in primary care  
15   were compared. Family physicians and neurologists gave similar responses about the  
16   disease management, at a rate of 96.6%, this was found to be statistically significant and  
17   shows strong agreement. Both groups of physicians thought that 70% of patients, on  
18   average, who applied to the neurology clinics with headache for the first time could be  
19   managed in primary care. However, only 9.2% of the patients share this opinion with  
20   physicians. Primary headache cases constitute most of the cases that are thought to be  
21   solved in primary care. It was revealed that the number of patients seeking primary care  
22   with this complaint was lower than expected.

1 **Conclusion:** Patients with headache applied tertiary care instead of primary care for  
2 different reasons. Both neurologists and family physicians stated that most patients  
3 evaluated in tertiary care could be managed in primary care.

4 **Keywords:** Primary care, headache, family physician

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## 6 **1. Introduction**

7 Headache, one of the most common reasons for consulting a physician, is a  
8 social and economic problem that causes a decrease in the quality of life, an increase in  
9 the level of incapacity to work of individuals, and an increase in health expenditures. It  
10 is the health problem that physicians most frequently encounter and it often affects  
11 patients and their relatives.

12 According to the International Headache Society, headaches are categorized as  
13 primary, secondary, neuropathy, and other [1]. Primary headaches comprise 90% of  
14 headaches [2].

15 “Red flags,” which are significant issues to be considered in secondary  
16 headaches, should be well known. Anamnesis is the most important element in  
17 diagnosing a patient with a headache. The first step in evaluating complaints correctly is  
18 to differentiate between primary and secondary headaches. With a correct anamnesis,  
19 most patients can be diagnosed, treated, and referred to the appropriate specialty.

20 The percentage of people who have experienced a headache at least once in their  
21 lifetime is above 90% [3]. It is one of the top ten reasons to see a family doctor [4].  
22 Other common reasons that may lead to secondary headaches are acute/chronic

1 sinusitis, ear infections, and hypertension [5]. At neurology outpatient clinics, two-  
2 thirds of patients have headache complaints. One-third go to neurology outpatient  
3 clinics with only headache complaints [6].

4 It would be best for the first evaluation of headache patients to be done by the  
5 family physician, who knows the patient better, is more available, and can take a  
6 holistic approach. This may also help prevent polypharmacy and unnecessary advanced  
7 examinations. For the health system to function well, it is important to evaluate  
8 headache complaints that can be managed in primary care, since there are so many  
9 headache patients in neurology outpatient clinics. These clinics offer secondary and  
10 tertiary care with little time per patient and transportation challenges. Managing  
11 headaches in primary care will enable specialists to do better follow-up with patients  
12 who do need secondary and tertiary care.

13 In light of this, we aimed to determine the rate at which patients who went to the  
14 neurology outpatient clinic of Ankara City Hospital for the first time with headache  
15 complaints could be followed up and treated in primary care. Furthermore, we aimed to  
16 reveal the differences in disease management by asking the opinions of branch  
17 physicians, family physicians, and patients.

## 18 **2. Materials and Methods**

19 Our research is a cross-sectional study. The study population consists of 207  
20 patients who were older than 18 years of age who were admitted to the neurology  
21 outpatient clinics of Ankara City Hospital for the first time between 01.02.2020 and  
22 31.03.2020 with headache complaints. In five outpatient clinics, there are on average 60  
23 patients per day. During our study, a pandemic was declared due to the COVID-19

1 outbreak, and the number of active outpatient clinics was reduced to two and the  
2 average number of patients was 25. The number of patients with headache applied for  
3 the first time, which was 6-7 after this date, has decreased to 2-3. To calculate the  
4 number first-time headache patients we used the G-Power 3.1.5 program. The minimum  
5 sample size was calculated to be 172 with a medium effect size of 0.05- $\alpha$  error  
6 probability, 0.95 power (1- $\beta$  error), and two degrees of freedom for the goodness of fit  
7 test.

8           The data collection process was started after obtaining approval E-19-204 from  
9 Ankara City Hospital No. 1 Clinical Research Ethics Committee on 24.12.2019. Our  
10 study was conducted in accordance with the Declaration of Helsinki.

11           Informed consent was obtained from all patients before starting the  
12 questionnaire. When patients were called to the examination room, they were first asked  
13 about their symptoms, and they had headaches, and if this was their first time at the  
14 clinic. The admission number of the patients who applied for the first time was written  
15 in the “patient number” part of the questionnaire. Imaging examinations were  
16 categorized at the patient’s and physician’s request, and after the appropriate category  
17 was marked, the imaging method was noted. Afterward, it was noted which  
18 International Statistical of Diseases and Related Health Problems (ICD) code was used  
19 by the physician for the diagnosis/pre-diagnosis. The neurologist’s recommendation  
20 was noted: follow-up, control, examination, medication, or consultation. After the  
21 examination of the patient was completed, the assistant researcher filled in the ‘family  
22 physician researcher’s opinion’ on whether the patient could be evaluated in primary.  
23 The ‘neurologist’s opinion’ section of the questionnaire was directed to the relevant  
24 branch physician, and one of the options was marked: yes, no, or not sure. After the

1 patient left the room, the patient's informed consent was received and the patient was  
2 asked if the headache could be treated in primary care, and the second form was used. It  
3 took approximately two minutes to fill out the questionnaire.

4 The main groups we compare are the patient group with primary and secondary  
5 headache. The multiple groups we compare are the opinions of family physicians,  
6 neurologists, and patients on whether headache can be evaluated in primary care.

7 Statistical analysis was conducted using IBM SPSS 21.0. Descriptive statistics  
8 are presented as number and percentage. Measurement data were evaluated with the  
9 Kolmogorov–Smirnov test and histograms for compliance with normal distribution and  
10 are presented with mean and standard deviation values because they have normal  
11 distributions. The chi-square test and Fisher's exact test were used to compare count  
12 data in the statistical evaluation and the Student's t-test was used in paired groups  
13 because they had normal distributions. The Bonferroni correction was applied to detail  
14 the significance between the categories and determine which groups had a relationship.  
15 The consistency between the two approaches was examined by Cohen's Kappa test.  
16 Type I error level was accepted at 0.05.

### 17 **3. Results**

18 The mean age of the 207 patients was  $40.98 \pm 13.41$  years; 65.2% were female  
19 and 34.8% were male. Most patients had state health insurance (SHI), were high school  
20 graduates, and lived in the city center (Table 1).

21 When the patients were classified according to the headache category, 52.7% of  
22 the patients had a primary headache and 47.3% had a secondary headache. When  
23 examined according to the specific classification, the most common type of primary

1 headache was a tension headache and the most common secondary headache was a  
2 headache due to diseases of the face and head structures (Table 2).

3 The attitudes and behaviors of the participants regarding their examination and  
4 results are summarized in Table 3. Only 58.0% of patients had gone to their family  
5 physician before. When the reasons for this were examined, 30.8% of the patients stated  
6 that they did not have family physicians or did not know the family physician.

7 The relationship between the family physicians', neurologists', and the  
8 participants' opinions regarding the evaluability of headache in primary care and the  
9 diagnostic categories is detailed in Table 4. In Table 5, the evaluability status of the  
10 patients in primary care is compared. There was strong agreement between neurologists  
11 and family physicians.

12 We compared the sociodemographic characteristics of the patients, the reason  
13 for going to the family physician, if they followed physician's recommendations, and  
14 their satisfaction with the recommendations. Females went to the family physician more  
15 than males, they followed recommendations more often, and were more satisfied with  
16 the recommendations.

17 The specialty of the family physician positively affected the applications, the  
18 implementation, and satisfaction with the recommendations. Of the participants whose  
19 family physician had a specialty, 91.5% had previously been to the family physician  
20 with a headache and 67.3% of the participants whose family physician did not have a  
21 specialty had previously applied to the family physician with a headache.

22 The sociodemographic characteristics of the participants and the family  
23 physician's opinion on the evaluability of the patient in primary care were compared.

1 The family physician researcher thought that compared to other age groups, patients  
2 over 65 years of age who seek care with headaches are less likely to be evaluated in  
3 primary care. This is also statistically significant. The family physicians stated that the  
4 headaches of participants from outside the province could be evaluated in primary care  
5 at a statistically significantly lower rate in comparison with the other groups.

#### 6 **4. Discussion**

7 Although most of the patients included in the study had a primary headache  
8 according to the headache diagnostic classification, the rate was lower than reported in  
9 the literature [7,8]. We think that the reason for this is that secondary headache  
10 disorders are more frequent, require faster diagnosis and treatment, and can cause more  
11 serious problems during the COVID-19 pandemic.

12 More than half of the patients included in the study stated that they had  
13 previously consulted their family physician mostly to acquire an analgesic prescription.  
14 In a study conducted by Durmuş et al., the rate of seeking primary care before hospital  
15 care for headaches was 24.6% [9]. In the dissertation of Ayazoğlu, prescribing was in  
16 the first place among the reasons for applying to family health centers [10]. In our  
17 study, the rate of analgesic use was high and the rate of referral to the family physician  
18 of patients with headache was higher than in the general population. We think that the  
19 reason for this is that people go to primary care to acquire analgesics rather than to be  
20 diagnosed.

21 Patients with headaches may be advised to avoid triggers and make lifestyle  
22 changes. Positive changes in the main etiology of secondary headache causes may be  
23 obtained with appropriate recommendations [11,12]. In the present study, it was notable

1 that the rate of recommending lifestyle changes was quite low. We think that family  
2 physicians, who are one of the most important elements of preventive health services  
3 and who know patients better, should recommend lifestyle changes more frequently.

4 The questionnaires showed that most patients followed doctors'  
5 recommendations but fewer patients were satisfied with the recommendations. In a  
6 study carried out by Berberoğlu et al., 82.8% of patients were satisfied with treatments  
7 by family physicians [13]. Another study by Durmuş et al. had a similar result, 80.7%  
8 [9]. On this issue, our study including partially satisfied agrees with the literature.

9 The reasons for not going to a family physician are examined were that the  
10 patients do not know the family physician or did not have one. In the study by Durmuş  
11 et al., 15.1% of individuals did not know their family physicians [9]. The reason for the  
12 high rate in our study may be that it was performed among patients who were admitted  
13 to a tertiary care hospital and that foreign patients seek tertiary care more frequently  
14 than primary care. Another reason was that the examination facilities were regarded as  
15 insufficient. Güven et al. showed that 78.4% of patients regarded family health center  
16 facilities as insufficient. In the same study, 47.7% of the patients found the knowledge  
17 level of their family physicians insufficient and 28.4% thought that their problems could  
18 not be solved [14]. These rates are similar to those in our study. Since there was hospital  
19 staff, at a rate of 10.9% in our study, there were patients who could not seek primary  
20 care. This is due to the fact that the hospital in which the study was conducted has a  
21 high number of personnel and these personnel cannot leave the institution where they  
22 work during working hours.



1           Laboratory examinations were requested by the neurologist in the majority of the  
2 patients, which showed that most of them could be examined in primary care. It was  
3 statistically significant that all cases that could not be examined in primary care were  
4 secondary headaches.

5           One-quarter of the patients made imaging requests, mostly by patients with  
6 primary headache. In the study by Ay et al., 92.9% of the magnetic resonance imaging  
7 (MRI) results in headache patients were normal [15]. In the presence of alarm  
8 symptoms, an imaging method should be requested as well as a detailed history and  
9 neurological examination [16]. We think that imaging may have been requested because  
10 the patients requested it, in order to avoid malpractice and because imaging methods  
11 were available, since the study was performed in a tertiary care hospital [17].

12           Treatments administered to patients and resulting in medication were mostly  
13 given for prophylaxis and included beta-blockers, amitriptyline, selective serotonin  
14 reuptake inhibitor, serotonin norepinephrine reuptake inhibitor, flunarizine (calcium  
15 channel blocker), and topiramate. Simple analgesics, nonsteroidal anti-inflammatory  
16 drugs (NSAIDs) were used most commonly as analgesic treatment. Medications  
17 administered by the neurologist can also be prescribed by the primary care physician,  
18 who can also arrange the necessary treatment for prophylaxis, especially for primary  
19 headaches. By applying the appropriate treatment for prophylaxis, the frequency of  
20 attacks can be reduced, workforce loss can be prevented, and medication overuse can be  
21 prevented by reducing the use of analgesics.

22           In the patient group in which the disease process resulted in consultation, most  
23 of the diagnoses were secondary headaches. Although not specified in the table, the

1 consulted departments were cardiology first, then psychiatry, otolaryngology, physical  
2 therapy, and rehabilitation. The reasons for consultation were essential hypertension,  
3 major depression, generalized anxiety disorder, chronic sinusitis, and musculoskeletal  
4 problems. All patients could be easily diagnosed and treated in primary care. The fact  
5 that these patients directly seek tertiary care, and even more than one specialty, reduces  
6 the accessibility of health services to patients in need.

7         The relationship between the family physicians', neurologists' and the  
8 participants' own opinions regarding the evaluability of headache in primary care and  
9 the diagnostic categories was examined. The family physician's opinion was that most  
10 patients could be evaluated in primary care. Such a high rate of admitting patients with  
11 treatable problems to the study's tertiary care hospital may be due to inadequate family  
12 practice. In Yıldız's dissertation, the opinion of the family physician in primary care  
13 was "yes" at a rate of 43.2% [18]. The study by Berberoğlu et al., at different outpatient  
14 clinics, showed that the problems of 56.1% of the patients could be solved in primary  
15 care [13]. The reason why this rate was higher in our study may be the fact that the  
16 study was conducted at a single clinic and on a more specific subject. According to the  
17 family physicians' opinion about treating headaches in primary care, most of those who  
18 said "yes" were in the group with a primary headache, which was statistically  
19 significant. According to these results, the problems of patients with a primary headache  
20 can be resolved in primary care at a higher rate. The "I am not sure" includes patients  
21 who are thought to have a primary headache, but who may require additional imaging  
22 due to age, other symptoms, or having started medications such as topiramate and  
23 carbamazepine, which cannot be prescribed by the family physician.

1           In the status of evaluability in primary care, neurologists agree with family  
2 physicians. Branch physicians also think that these problems can be resolved in primary  
3 care at a high rate. In their study, Yıldız et al. found that the relevant branch physician  
4 could evaluate the case in primary care 44.3% of the time [18]. The higher rate in our  
5 study may be because the subject is ‘headache.’ Most of the patients whose complaints  
6 were thought to be resolved were in the group with a primary headache, which was  
7 statistically significant.

8           The relationship between the patients opinions and those of family physicians  
9 and neurologists was found to be statistically significant. A very high proportion of the  
10 patients, which the family physician researcher considered to be evaluable in primary  
11 care, believed that their problem could not be evaluated in primary care or they were not  
12 sure. This is due to the lack of trust in primary care and physicians’ knowledge. For this  
13 reason they request examination by a specialist and additional examination requests,  
14 since referral chain practice has not been established in Turkey. After patients were  
15 informed that their complaints could be solved in primary care, some wanted to change  
16 their answer from “no” to “I’m not sure.” From these data, we can conclude that  
17 patients do not know how much comprehensive treatment their family physicians can  
18 provide. On the other hand, family physicians’ fear of malpractice, patient density, and  
19 restrictions on some medications that can be used for headache according to Health  
20 Practice Statement rules limit what physicians can do.

21           Neurologists reported that all of the patients who stated that their complaints  
22 could be evaluated in primary care, almost all of the patients who stated that they were  
23 not sure, and almost half of the patients who stated that their problems could not be  
24 solved in primary care could in fact be managed in primary care.

1           The limitations of our study include the following: the low number of patients,  
2 switching to the appointment system due to pandemic measures on the dates when the  
3 questionnaire was used and restricting the number of patients, which affected  
4 demographic data, the fact that secondary care admittances could not be evaluated  
5 because the study was conducted in a tertiary care hospital, the fact that pain intensity  
6 and frequency were not included in the evaluation.

7           In our study, the opinions of family physicians and neurologists were similar to  
8 the patients who applied to tertiary care for the first time with headache complaints  
9 about the evaluability in primary care. According to neurologists and the family  
10 physicians, most patients who asked for tertiary care could be managed in primary care,  
11 and tertiary care was unnecessary for the first-time headache patients.

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## 1 References

- 2 1. Olesen J. Headache Classification Committee of the International Headache  
3 Society (IHS) the international classification of headache disorders, 3rd edition.  
4 Cephalalgia. 2018; 38 (1): 1–211. doi/10.1177/0333102417738202
- 5 2. Rasmussen B. Epidemiology of headache. Cephalalgia. 1995; 15 (1): 44–67.  
6 doi/10.1046/j.1468-2982.1995.1501045.x
- 7 3. Robbins MS, Lipton RB. The epidemiology of primary headache disorders.  
8 Seminars in Neurology. 2010; 30 (2): 107–119. doi: 10.1055/s-0030-1249220
- 9 4. Ponka D, Kirlew M. Top 10 differential diagnoses in family medicine: Headache.  
10 Canadian Family Physician. 2007; 53 (10): 1733.
- 11 5. Kernick D, Stapley S, Hamilton W. GP's classification of headache: Is primary  
12 headache underdiagnosed? British Journal of General Practice. 2008; 58 (547):  
13 102–104. doi: 10.3399/bjgp08X264072
- 14 6. Baykan B. Başağrıları ve diğer kranyofasyal ağrılar. In: Emre M, (editor).  
15 Nöroloji Temel Kitabı. Ankara: Güneş Tıp Kitapevleri; 2013. pp. 131–132 (in  
16 Turkish).
- 17 7. Robbins MS, Lipton RB. The epidemiology of primary headache disorders.  
18 Seminars in Neurology. 2010 Apr; 30 (2): 107-119. doi: 10.1055/s-0030-  
19 1249220
- 20 8. Aksel S. Baş ağrısı epidemiyolojisi. In: İÜ Cerrahpaşa Tıp Fakültesi Sürekli Tıp  
21 Eğitimi Etkinlikleri. Istanbul, Turkey, 2002. pp. 9–14 (in Turkish).

- 1 9. Durmuş H, Timur A, Yıldız S, Çetinkaya F. The satisfaction of the people about  
2 family medicine who admitted to outpatient clinics of Erciyes University  
3 Hospital. *Türk Aile Hekimliği Dergisi*. 2018; 22 (1): 2–11 (in Turkish).  
4 doi: 10.15511/tahd.18.00102
- 5 10. Ayazoğlu C. Ankara Şehir Hastanesi'ne başvuran hastaların aile hekimlerine  
6 bakışı, MD, Ankara Şehir Hastanesi, Ankara, Turkey, 2020 (in Turkish).
- 7 11. Lenaerts ME. Alternative therapies for tension-type headache. *Current Pain and*  
8 *Headache Reports*. 2004; 8 (6): 484-488. doi: 10.1007/s11916-004-0071-3
- 9 12. Bendtsen L, Evers S, Linde M, Mitsikostas DD, Sandrini G et al. EFNS guideline  
10 on the treatment of tension-type headache - Report of an EFNS task force.  
11 *European Journal of Neurology*. 2010 Nov; 17 (11): 1318-1325. doi:  
12 10.1111/j.1468-1331.2010.03070.x
- 13 13. Berberoglu U, Eskiocak M. Edirne Devlet Hastanesi'nin kimi polikliniklerinde  
14 verilen birinci basamak sağlık hizmetlerinin boyutları. *Toplum ve Hekim*. 2000;  
15 3 (15): 199 (in Turkish).
- 16 14. Güven EA, Aycan S. Ankara'da bir üniversite hastanesine başvuranların mevcut  
17 aile hekimliği sistemi ve sevk uygulaması hakkında düşünceleri. *ESTÜDAM*  
18 *Halk Sağlığı Dergisi*. 2018; 3 (3): 1–11 (in Turkish).
- 19 15. Ay H, İnanç Y, Doğantürk T, Kocatürk Ö. Nöroloji polikliniğine baş ağrısı  
20 yakınması ile başvuran hastalarda kraniyal manyetik rezonans görüntüleme (mrg)  
21 tetkiki istenmeli midir ? *Fırat Tıp Dergisi*. 2015; 20 (2): 92–95 (in Turkish).

- 1 16. Holle D, Obermann M. The role of neuroimaging in the diagnosis of headache  
2 disorders. *Therapeutic Advances in Neurological Disorders*. 2013; 6 (6): 369–  
3 374. doi: 10.1177/1756285613489765
- 4 17. Demir MC. Radyolojik görüntüleme isterken doktorların göz önünde  
5 buldukları durumlar, MD, Hacettepe University, Ankara, Turkey, 2016 (in  
6 Turkish).
- 7 18. Yıldız N. Ankara’da üçüncü basamak bir eğitim ve araştırma hastanesinin kulak  
8 burun boğaz fizik tedavi ve rehabilitasyon ile dermatoloji polikliniklerine  
9 başvuran hastaların birinci basamakta takip ve tedavi edilebilirliğinin  
10 araştırılması, MD, Ankara Numune Training and Research Hospital, Ankara,  
11 Turkey, 2016 (in Turkish).

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1 **TABLES**

2 **Table 1.** Sociodemographic characteristics of the participants.

		Total		Primary HA <sup>o</sup>		Secondary HA		P*
		n	%	n	%	n	%	
Age group	<b>18-34</b>	73	35.3	49	67.1	24	32.9	<b>0.001</b>
	<b>35-49</b>	76	36.7	40	52.6	36	47.4	
	<b>50-64</b>	48	23.2	19	39.6	29	60.4	
	<b>65+</b>	10	4.8	1	10.0	9	90.0	
Sex	<b>Female</b>	135	65.2	78	57.8	57	42.2	<b>0.043</b>
	<b>Male</b>	72	34.8	31	43.1	41	56.9	
Educational status	<b>Illiterate</b>	15	7.2	7	46.7	8	53.3	0.899
	<b>Primary education</b>	69	33.3	36	52.2	33	47.8	
	<b>High school</b>	83	40.2	46	55.4	37	44.6	
	<b>University and above</b>	40	19.3	20	50.0	20	50.0	
Social security	<b>SHI<sup>i</sup></b>	198	95.7	103	52.0	95	48.0	0.627
	<b>Private</b>	4	1.9	3	75.0	1	25.0	
	<b>Foreign nationality</b>	4	1.9	2	50.0	2	50.0	
	<b>None</b>	1	0.5	1	100.0	0	0.0	
Place of residence	<b>Province</b>	122	58.9	70	67.4	52	42.6	0.171
	<b>District-village</b>	73	35.3	35	47.9	38	52.1	
	<b>Out of the province</b>	12	5.8	4	33.3	8	66.7	

3 \*Chi-square test, <sup>o</sup>HA: Headache, SHI<sup>i</sup>: State health insurance



1 **Table 2.** Headache diagnosis classification of the participants.

		n	%
<b>Primary headaches</b>	<b>Total</b>	<b>109</b>	<b>52.7</b>
	Tension-type headache	47	43.1
	Migraine	45	41.3
	Cluster headache and other trigeminal autonomic headaches	13	12.0
	Other primary headaches	4	3.6
<b>Secondary headaches</b>	<b>Total</b>	<b>98</b>	<b>47.3</b>
	Related to diseases of the face and head structures	20	20.4
	Due to the effect or discontinuation of medications	13	13.3
	Due to psychiatric diseases	8	8.2
	Due to homeostasis disorder	8	8.2
	Due to cranial or cervical vascular diseases	5	5.1
	Other	44	44.8

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- 1 **Table 3.** The comparison of the attitudes, behaviors, examination and result
- 2 characteristics of the participants regarding their application to family medicine and
- 3 headache diagnostic categories.

		Total		Primary HA <sup>i</sup>		Secondary HA		p
		n	%	n	%	n	%	
Previous application to FP*	<b>Yes</b>	120	58.0	64	53.3	56	46.7	0.819
	<b>No</b>	87	42.0	45	51.7	42	48.3	
FP recommendation	<b>LSC**+Follow-up</b>	9	7.5	7	77.8	2	22.2	0.275
	<b>Medication</b>	79	65.9	39	49.4	40	50.6	
	<b>Advanced examination</b>	22	18.3	11	50.0	11	50.0	
	<b>Refferal</b>	10	8.3	7	70.0	3	30.0	
Implementing the FP's recommendations	<b>Yes</b>	88	.9	45	51.1	43	48.9	0.755
	<b>No</b>	4	3.4	2	50.0	2	50.0	
	<b>Partially</b>	27	22.7	16	59.3	11	40.7	
Being satisfied with FP's recommendations	<b>Yes</b>	27	22.7	15	55.6	12	44.4	0.067
	<b>No</b>	29	24.4	10	34.5	19	65.5	
	<b>Partially</b>	63	52.9	38	60.3	25	39.7	
The reason for not	<b>I do not have /I do not know a</b>	28	30.8	14	50.0	14	50.0	

applying to FP	<b>family physician</b>							0.884
	<b>Examination facilities are insufficient</b>	26	28.6	13	50.0	13	50.0	
	<b>I do not think he can solve my problem</b>	27	29.7	16	59.3	11	40.7	
	<b>Because he thinks more attention to him will be paid in the hospital/ Hospital staff</b>	10	10.9	5	50.0	5	50.0	
Laboratory request	<b>Is checked at FHC<sup>o</sup></b>	137	95.8	73	53.3	64	46.7	<b>0.012</b>
	<b>Cannot be checked at FHC</b>	6	4.2	0	0.0	6	100.0	
Imaging request	<b>Patient's request</b>	34	25.2	24	70.6	10	29.4	<b>&lt;0.001</b>
	<b>Physician's request</b>	101	74.8	36	35.6	65	64.4	

Imaging method	<b>MRI<sup>a</sup></b>	122	90.4	59	48.4	63	51.6	<b>0.005</b>
	<b>CT<sup>b</sup>/DOPPLER /EEG<sup>d</sup></b>	13	9.6	1	7.7	12	92.3	
Result	<b>Control/Follow -up</b>	11	5.3	0	0.0	11	100.0	<b>&lt;0.001</b>
	<b>Examination</b>	66	31.9	25	37.9	41	62.1	
	<b>Medication</b>	90	43.5	81	90.0	9	10.0	
	<b>Consultation</b>	40	19.3	3	7.5	37	92.5	

1 \*FP: Family physician, \*\*LSC: Lifestyle change, <sup>i</sup>HA: Headache, <sup>o</sup>FHC: Family Health

2 Center, <sup>a</sup>MRI: Magnetic Resonance Imaging, <sup>b</sup>CT: Computed Tomography, <sup>d</sup>EEG:

3 Electroencephalography

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1 **Table 4.** The relationship between the opinions of family physicians, neurologists and  
 2 patients on the evaluability of the headache in primary care and the diagnostic  
 3 categories.

		Total		Primary HA <sup>i</sup>		Secondary HA		p*
		n	%	n	%	n	%	
FP*s'opinion	<b>Yes</b>	148	71.5	96	64.9	52	35.1	<b>&lt;0.001</b>
	<b>No</b>	40	19.3	7	17.5	33	82.5	
	<b>Not sure</b>	19	9.2	6	31.6	13	68.4	
Neurologists' opinion	<b>Yes</b>	143	69.1	92	64.3	51	35.7	<b>&lt;0.001</b>
	<b>No</b>	54	26.1	14	25.9	40	74.1	
	<b>Not sure</b>	10	4.8	3	30.0	7	70.0	
Patients' opinion	<b>Yes</b>	19	9.2	14	73.7	5	26.3	<b>0.004</b>
	<b>No</b>	107	51.7	45	42.1	62	57.9	
	<b>Not sure</b>	81	39.1	50	61.7	31	38.3	

4 <sup>i</sup>:Headache, \*: Family physician.

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- 1 **Table 5.** The comparison of the evaluability statuses of the patients in primary care with  
 2 each other.

		FP*'s opinion						Patient's opinion					
		Yes		No		Not sure		Yes		No		Not sure	
		n	%	n	%	n	%	n	%	n	%	n	%
<b>Neurologist's opinion</b>	<b>Yes</b>	143	96.6	0	0.0	0	0.0	19	100.0	51	47.7	73	90.2
	<b>No</b>	3	2.0	40	100	11	57.9	0	0.0	49	45.8	5	6.1
	<b>Not sure</b>	2	1.4	0	0.0	8	42.1	0	0.0	7	6.5	3	3.7
		<b>κ: 0.829 p&lt;0.001</b>						<b>κ: 0.141 p&lt;0.001</b>					
<b>FP's opinion</b>	<b>Yes</b>	-	-	-	-	-	-	19	100.0	56	52.4	73	90.2
	<b>No</b>	-	-	-	-	-	-	0	0.0	39	36.4	1	1.2
	<b>Not sure</b>	-	-	-	-	-	-	0	0.0	12	11.2	7	8.6
		<b>κ:0.141 p&lt;0.001</b>											

3 \*:Family physician

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