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# Awareness of Migraine Among Primary Care Physicians in Turkey: A Regional Study

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## ABSTRACT

**Introduction:** Migraine is a primary headache that involves genetic and environmental factors. In studies conducted in different countries, migraine was shown to be underdiagnosed, treated insufficiently, and highly related to disability. The primary aim of this study was to identify the competence in making a diagnosis of migraine by primary care physicians who provide basic health care to patients.

**Methods:** Primary care physicians (266 individuals) working in the primary health service centers located within the borders of Kayseri province were included in our study. The research was conducted by using techniques such as face-to-face meetings with the primary care physicians and by participants filling in questionnaires. A neurologist evaluated the questionnaire form. The information provided by the participants was evaluated according to the migraine without aura diagnostic criteria prepared by the International Headache Society (ICHD-3 Beta).

**Results:** Only 10.5% participants were able to give the complete diagnostic criteria of migraine without aura. The most well-known properties were unilateral (53.4%) and pulsating headaches (47%).

**Conclusion:** This study showed that educational programs are required regarding migraines for primary care physicians, supported by complete educational material.

**Keywords:** Migraine, primary care physician, awareness, public health

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## INTRODUCTION

Migraine is a primary headache disorder that is most commonly characterized by recurrent headaches described as a bio-psychosocial phenomenon with different genetic and environmental etiologies. Many physicians all over the world are inadequately educated on migraine,

even though migraine has been known since 1955 by the Vahlquist criteria. Recently, both the national headache societies and international headache societies have prepared certain educational programs not only for primary care physicians but also for neurologists (1,2,3).

Statistical data have revealed that migraine is the third reason for global disability by causing apparent incapacity (4). In the United States, about 6% men and 18% women get a migraine in a given year, with a lifetime risk of about 18% and 43%, respectively (2,5). In Europe, migraine affects 12%–28% people in a period of their lives, with about 6%–15% adult men and 14%–35% adult women getting at least 1 migraine yearly (6). It has been estimated that migraine is the most costly neurological disorder in the European Community, costing more than €27 billion per year (7,8). In the United States, the direct cost of migraine on the economy reaches up to $17 billion per year (2).

Migraine diagnosis is based on signs and symptoms in history taking and the characteristic features of headaches (7). Generally, neuroimaging tests are not necessary to diagnose migraines (8,9). It is believed that a substantial number of people with migraines remain undiagnosed.

In this study, we aimed to understand the basic knowledge of primary care physicians on the subject of migraines and to evaluate the main scope of future educational programs.

## METHODS

This study was conducted in November and December 2014 by primary care physicians. Ethics committee of Erciyes University approvals and the necessary permissions for the study were obtained from the Kayseri Public Health Directorate. All primary care physicians (371) who were working within the Kayseri provincial borders were asked to participate in our study. Since it was aimed to include all physicians, sampling was not done. An information approval form outlining the aim of the study was signed by primary health care physicians who agreed to participate; a related questionnaire form that comprised 18 questions was given. Thereafter,

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face-to-face application of the questionnaire was done. Out of the primary care physicians contacted, 59 people did not accept to participate and 46 physicians could not participate because of various reasons (on leave, report, foreign duty, etc.); therefore, the study was completed by a total of 266 primary health care physicians (participation ratio: 71.7%).

The reminding option was not provided for migraine diagnosis criteria in the questionnaire. The questions asked were open-ended, and the physicians were requested to write down their answers. Participants were asked to give the diagnostic criteria for migraine without aura, and answers were evaluated by a neurologist experienced in headaches according to the migraine without aura diagnostic criteria according to the ICHD-3 Beta guidelines (Table 1) (9). According to the answers, each criterion was taken into consideration one by one. Accordingly, a participant who completely wrote all the criteria was classed as "knows exactly."

### Statistical Analysis

Statistical analysis was conducted using the Statistical Package for the Social Sciences 15.0 program (SPSS Inc; Chicago, IL, USA). A $p<0.05$ value was accepted as statistically significant. In the comparison of groups, the chi-square and t tests were used.

## RESULTS

The study was completed with the participation of 266 primary health care physicians (participation ratio: 71.7%). Out of these, the average age was 44.3 years [44.3±5.88 (min: 24; max: 66)]. It was found that 87.2% of the primary health care physicians graduated before 2001. The demographic data of the primary health care physicians are given in Table 2.

**Table 1.** Migraine without aura diagnostic criteria (ICHD-3 Beta)

| Migraine without aura diagnostic criteria (ICHD-3 Beta) |
|---|
| A. At least five attacks1 fulfilling criteria B–D |
| B. Headache attacks lasting 4–72 h (untreated or unsuccessfully treated) |
| C. Headache has at least two of the following four characteristics: |
| 1. unilateral location |
| 2. pulsating quality |
| 3. moderate or severe pain intensity |
| 4. aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs) |
| D. During headache at least one of the following: |
| 1. nausea and/or vomiting |
| 2. photophobia and phonophobia |
| E. Not better accounted for by another ICHD-3 diagnosis. |

Criteria of knowing exactly: Those who gave all A,B,C1-4 and D1-2 criteria

**Table 2.** Socio-demographic data of the participants

| Sociodemographic characteristics | Number | % |
|---|---|---|
| Gender | | |
| Male | 184 | 69.2 |
| Female | 82 | 30.8 |
| Marital status | | |
| Married | 244 | 91.7 |
| Single | 22 | 8.3 |
| Graduation year | | |
| Those who graduated before 1990 | 51 | 19.2 |
| Those who graduate between 1991-2000 | 181 | 68.0 |
| Those who graduated after 2001 | 34 | 12.8 |
| Total | 266 | 100.0 |

**Table 3.** The distribution of participants' responses related to migraine in themselves (n=266)

| Variables (n=266) | Number | % |
|---|---|---|
| Have you received a diagnosis of migraine? | | |
| No | 244 | 91.7 |
| Yes | 22 | 8.3 |
| Have you ever experienced a migraine attack? | | |
| No | 226 | 85.0 |
| Yes | 40 | 15.0 |
| Do any of your family members suffer from migraine? | | |
| No | 216 | 81.2 |
| Yes | 50 | 18.8 |
| Distribution of migraine in family members (n=50) | | |
| My mother | 18 | 6.8 |
| My father | 1 | 0.4 |
| Brothers and sisters | 15 | 5.6 |
| My children | 1 | 0.4 |
| My partner | 15 | 5.6 |

Only 8.3% of the participating primary health care physicians had made a migraine diagnosis before. In addition, 15% stated that they personally had experienced a migraine attack (Table 3).

The participant physicians were asked to write open-ended answers to the questions "How is migraine diagnosis made"? In their answers, one third of physicians reported that other instrumental investigations (brain screening or laboratory inspections) are required beside the anamnesis data of the patient.

In the questionnaire, primary health care physicians were asked what criteria are needed for migraine without aura as an open-ended question. Table 4 tabulates these responses. The most well-known characteristic symptom is that the pain has a unilateral and throbbing property, whereas the duration of migraine attack and increase of headache with physical activity are the least known characteristics. The percentage of primary health care physicians that knew all the criteria for migraine diagnosis was determined to be 10.5% (Table 4) (Figure 1).

Further, approximately one-third (33.1%) of the physicians reported that additional investigations have called for migraine without aura diagnoses. In addition, two-thirds of the physicians reported that 1–10 patients were diagnosed with migraine weekly.

When the participants were asked to evaluate their theoretical education and clinical training sources about migraine, 55.6% physicians stated that the education given about migraines in their respective medical faculties was insufficient. In addition, 80.8% physicians reported that they had requested for education about migraines (Table 5).

With regard to being completely informed about the migraine diagnostic criteria, a significant difference was not observed between the groups ($p>0.05$). Also, there was no difference between age, gender, martial status, graduation year, having a migraine, having or not having a family member suffering from migraine. Further, no significant difference was obtained on opinions regarding the sufficiency of pre-graduation education, receiving postgraduate or vocational training about migraine, distribution of educational areas according to the place they were educated, or distribution of educational areas according to people on knowing the condition well ($p>0.05$).

**Table 4.** Distribution of cases who know the criteria for migrain without aura (n= 266)

| The diagnostic criteria for migraine without aura | | Knowing | | Not knowing | |
|---|---|---|---|---|---|
| | | Number | % | Number | % |
| A | At least 5 migraine attacks | 46 | 17.3 | 220 | 82.7 |
| B | Pain lasting for about 4-72 hours | 41 | 15.4 | 225 | 84.6 |
| C1 | Unilateral headache | 141 | 53.0 | 125 | 47.0 |
| C2 | Throbbing characteristic | 125 | 47.0 | 141 | 53.0 |
| C3 | Mild or severe form of headache | 106 | 39.8 | 160 | 60.2 |
| C4 | Increase in headache with physical activity | 49 | 18.4 | 217 | 81.6 |
| D1 | Presence of nausea or vomiting | 121 | 45.5 | 145 | 54.5 |
| D2 | Presence of photophobia or phonophobia | 111 | 41.7 | 155 | 58.3 |
| E | Criteria of knowing exactly: Those who write all A,B,C1-4 and D1-2 criteria | 28 | 10.5 | 238 | 89.5 |

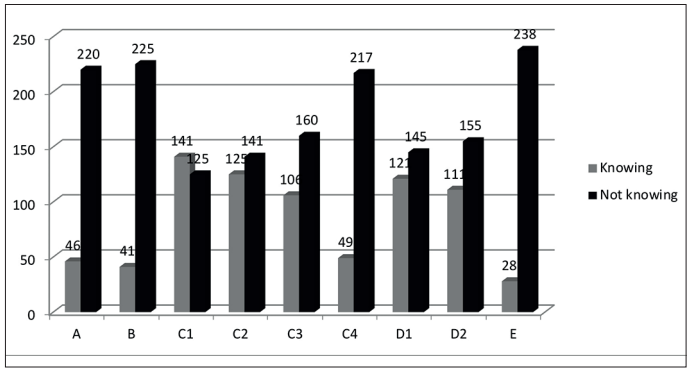



**Figure 1.** Distribution of cases who know the criteria for migraine without aura (n=266)

**Table 5.** Distribution of participants informed about migraine according to information resources evaluation (n=266)

| Education on migraine | Number | % |
|---|---|---|
| Is the level of education in graduate school about migraine headaches sufficient? | | |
| No | 148 | 55.6 |
| Yes | 118 | 44.4 |
| Have you received any training since graduation? | | |
| No | 210 | 78.9 |
| Yes | 56 | 21.1 |
| Where and how did you receive training? (n=56) | | |
| From the public health directorate | 4 | 7.0 |
| From the university | 3 | 5.0 |
| From the doctors room | 5 | 9.0 |
| From congresses and symposia | 18 | 33.0 |
| Through distance learning | 26 | 46.0 |
| Do you want to receive training in migraine? (n=266) | | |
| Yes | 215 | 80.8 |
| No | 51 | 19.2 |

It was found that 80.8% of those who considered themselves insufficiently informed about the subject expressed a desire to be trained about migraines and headaches.

## DISCUSSION

In this study, it was found that the rate of "making a correct migraine diagnosis" among primary health care physicians is rather low. The rate of primary health care physicians who are knowledgeable about the necessary criteria for migraine diagnosis was only 10.5%. On the basis of these results, we reached the conclusion that migraine patients received the right diagnosis only just at the lowest level in primary health care services. The data we obtained also show a similarity with the results of studies conducted in other countries (4,6).

A clinic-based study conducted in Turkey indicated that the prevalence of migraine in neurology outpatient clinics was found to be 24.9% (5). Despite its high prevalence and proven disability for patients, migraine remains underdiagnosed and undertreated in clinical performance, even in neurology practice. A study conducted in Asian countries showed that only 58.6% of migraineurs had received a physician diagnosis of migraine before the study and many patients were not satisfied with their current migraine management (10).

In a study conducted in England, it was found that 70% patients who sought help from primary health care physicians because of primary headache complaints did not get the right diagnosis (11). In a regional study conducted in Sweden, it was shown that the right diagnosis could not be made at a high percentage in patients having primary headache and even a discriminative diagnosis could not be performed (12). Results similar to these were also observed in studies conducted in Germany, Switzerland, the USA, and Taiwan (2,3,4,13,14).

Some of the variability of migraine awareness among physician recognition of migraines may be explained by the methodological differences of previous studies, including varying population samples and differing methods of ascertaining migraine recognition. Recognition rates are likely to increase with the use of closed or multiple-choice questions that already suggest the term "migraine" compared to open questions. Therefore, we did not use any multiple-choice questions in our questionnaire. The questions asked were open-ended, and the physicians were asked to write down openly. We think that this method may account for the low rate of correct migraine diagnosis in our study.

Further, in our study, one-third (33.1%) of the primary health care physicians expressed the view that laboratory inquiry and brain screening are necessary for migraine diagnosis. In another study, it was shown that more than 80% primary health care physicians want cranial magnetic resonance screening, and a high percentage of patients are not referred to specialists (13). This causes patients to receive a late diagnosis, resulting in wasteful health costs for the country. Furthermore, many unrecognized migraineurs are lacking effective treatments, and they frequently consult their physicians for headaches. This not only leads to a waste of medical resources but also increases the social and economic burden (14).

The Landmark Study conducted in European and US clinical practices revealed that about 1 in 4 migraine sufferers failed to be diagnosed by physicians (15). Li et al. (16) showed that only 13.5% migraineurs reported a physician diagnosis of migraine in China, which is significantly lower than that reported by the Landmark Study. In fact, the lack of recognition

for migraine symptoms (especially in physicians) is a major contributing factor toward underdiagnosis. Therefore, there is an urgent need to increase migraine awareness in clinical practice and better vocational training for neurologists-the decision makers in migraine diagnosis.

### Study Limitations

Our study can be evaluated as having 3 limitations. First, the questionnaire was required to be completed in the written form by primary health care physicians during the interview. This method could cause certain gaps in the recalling efficiency of participants at that time. Second, the number of participants in our study was less than that in other studies. However, it presents accurate data when the knowledge of physicians on migraines is taken into consideration. Third, our study is a regional study, so it cannot comprehensively reflect the migraine diagnosis ability of all the primary health care physicians in the entire country.

### Strengths of the Study

Although the number of participants in our study was less than that in other studies, it is still important because of the fact that it reached 71.7% of the primary health care physicians in a large province such as Kayseri. With regard to the method, since the migraine knowledge of physicians was enquired and evaluated with open-ended questions without the reminding option, it presents clearer data in terms of their knowledge and shows what is asked to determine migraine in anamnesis.

In conclusion, our study, with these properties, is the first in Turkey and shows the necessity of migraine disease awareness among primary health care physicians. For the solution of this serious public health problem that is rather important in terms of our country, ensuring a high diagnostic rate can be achieved by providing periodic vocational training to primary health care physicians about primary headache, particularly about migraine. In addition, vocational training programs to raise public awareness about migraine symptoms should be done by official institutions. As a professional liability of primary care physicians, patients suffering from severe headaches should be encouraged to visit neurology clinics.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Erciyes University School of Medicine.

**Informed Consent:** The Participant approval form was obtained in this study

**Peer-review:** Externally peer-reviewed.

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**Conflict of Interest:** The authors declare that there is no conflict of interest.

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