Prevalence of Tension-Type Headache in Individuals Aged between 18-65 Years in the Eastern Parts of Turkey

Türkiye’nin Doğusunda 18-65 Yaş Arası Bireylerde Gerilim Tipi Başağrısı Prevalansı

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Abstract

Objective: Although tension-type headache (TTHA) is one of the most frequently encountered diseases in the general population, relatively few studies have been conducted on this health condition. The published data are limited on the frequency of TTHA in Turkey, and no studies to date have been initiated on the prevalence of TTHA in the city of Erzurum or the Eastern Anatolian Region.

Materials and Methods: The study was conducted using in-depth interviews from 1972 individuals from city of Erzurum. TTHA was queried in patients with a history of headache, according to the International Classification of Headache Disorders diagnostic criteria, and the frequency of TTHA was investigated.

Results: A total of 1972 patients were enrolled in this study. The frequency reached a peak between the ages of 40-49 years (35%), and it significantly declined after the age of 49. During an examination (palpation), cranial muscle sensitivity was detected in 33% of the patients.

Conclusion: The frequency of TTHA has been identified as 22.3% in patients between the ages of 18-65. The frequency of tension type headache in the city of Erzurum was lower than that in the general population of Turkey.

Key Words: Tension-type headache, prevalence, clinical features, demographic characteristics

Özet


Sonuç: 18-65 yaş arası gerilim tipi baş ağrısı sıklığı %22,3 olarak belirlendi. Erzurum ilinde genel populasyonda gerilim tipi baş ağrısı görülme sıklığı TürkİYE ortalamalarına göre düşük olarak tespit edildi.

Anahtar Kelimeler: Gerilim tipi baş ağrısı, prevalans, klinik özellikleri, demografik karakteristikler

Introduction

Although there are many studies on the prevalence of headache, only a few have focused on the most frequent subgroup, the tension-type headache (TTHA). The prevalence rate differed across multiple studies, with a 70% variation due to the heterogeneous diagnostic criteria used and also due to differences in the age and gender distribution of the sample groups. In our case, the diagnostic criteria were defined by ICHD-2, and we used a consistent standardization procedure to determine the prevalence of headache in the general population. Most of the population-based studies have been conducted with questionnaires, phone interviews or letters, and the IHS diagnostic criteria have not been used, as personal interviews are costly and time-consuming [1].

Clinical experience and studies have shown that tension-type headache is more frequently seen in women (male/female ratio 1:6) than men, that it commonly occurs in the third- fourth decades and that it declines with age. There is little research on the prevalence of TTHA in the Turkish population, and no studies have been performed to determine the prevalence in the city of Erzurum [2, 3].

We determined the regional prevalence, clinical features, demographic characteristics and the contribution of environmental factors for TTHA in Eastern Anatolia.
**Materials and Methods**

The number of inhabitants in the city of Erzurum and in its central area is 367,250 (182,971 males and 184,279 females), according to records from the address-based census in 2010. The mean prevalence of TTHA has been identified as 31.7% in an age group 15-55 years in a previous headache prevalence study with a sample size of 1,018 patients (calculated to reach a 99% confidence interval), and we aimed to recruit a comparable sample size to achieve statistically significant data. The 6 investigators who participated in the present study were experienced in headache and had been trained by the school of health sciences. The study was conducted using in-depth interviews in the patients’ homes, and a systematic sampling method was used. The aim of the study was briefly explained to the individuals before the interview, and the questionnaire was applied to those who gave their consent.

The diagnosis of tension-type headache was made using ICHD-2 diagnostic criteria. We included only subjects who had experienced ten or more attacks in a lifetime that had lasted from 30 minutes to 7 days each and were accompanied by at least two of the following four pain characteristics: non-pulsating quality, mild-to-moderate intensity, bilateral location, and non-aggravation by routine physical activity. Symptoms could not include nausea or vomiting, but could include either phonophobia or photophobia.

The study was conducted in 2 steps: a pre-screening form was used in the first step, and a total of 1,972 patients were evaluated. The socio-demographic features of the recruits (age, marital status, educational status, economical status, personal medical history, profession) were analyzed, and those who suffered from headache were detected.

A total of 441 individuals among those who suffered from headache fulfilled the TTHA criteria of the ICHD-2, and these people completed a standard questionnaire aimed at delineating the clinical characteristics of the headache (age of onset, frequency, duration, characteristics of the pain, location, severity, accompanying symptoms, triggering factors). The questionnaire was developed by the ICHD-2 based upon diagnostic criteria of TTHA and was applied to the selected individuals. The study was approved by the institutional ethics committee.

**Statistical Analysis**

Data were recorded as percentages, means and standard deviations. The statistical evaluations were performed with the software ‘Statistical Package for the Social Sciences’ (SPSS) version 20. A chi-square test was used for the comparison of the data, and p<0.05 was considered to be the threshold of statistical significance.

**Results**

The study was initiated with the screening of 1,972 individuals who were between 18-65 years of age. A total of 441 patients (22.3%) were diagnosed as having TTHA, of which 25% were women (272 cases) and 19% were men (169 cases). The gender distribution as stated was thus 62.4% female sufferers and 37.5% male sufferers. The ratio of female to male was 1.6/1. The gender difference in the prevalence of TTHA was statistically significant (p<0.0001) (Figure 1). TTHA was most prevalent among people aged between 40-49 years (35%). A significant decline was observed after the age of 49. A total of 9.5% of patients with TTHA were illiterate, 30.6% were primary school graduates, 10% were junior high
school graduates, 23.5% were high school graduates, and 26.5% were college graduates. TTHA was more prevalent in graduates of primary school and college (Table 1). The professions of the patients were as follows: 63.5% unemployed-housewife, 30.4% employed (civil servant, worker, free-lance), and 6.3% students. Among the accompanying symptoms, the most frequently observed symptoms were a loss of appetite in 17.7% of the patients, followed by 7.2% nausea, 2.5% photophobia, and 3.1% phonophobia (Figure 2). The type of headache described was squeezing-pressurizing in 145 patients (32.8%), and thumping in 166 patients (37.6%). Bilateral headache has been reported in 84.6% of the patients, whereas only 2% described their headaches as unilateral. The pain symptom was variable, sometimes unilateral and sometimes bilateral in 13.6% of the cases. The severities of the headaches could be segmented into three groups as follows: mild in 49.7% of the patients, moderate in 45.1% and severe in 5% of the patients. Episodic TTHA was detected in 87% of the patients, while 12.9% had chronic TTHA. Most patients with chronic TTHA (68.4%) or episodic TTHA (60.6%) were females (p=0.04). In terms of medication, 31.9% reported taking analgesics, 40.3% reported visiting a physician for the treatment of TTHA previously, and 59.6% had not undergone any medical consult (Table 2). The frequency of cranial muscle sensitivity was 33.3% in patients with TTHA, with a ratio of 48.2% for chronic presentation and 30.9% for episodic cases (p<0.05) (Figure 3).

Table 1. Distribution of frequency and percentage of sociodemographic characteristics of patients with TTHA according to gender

<table>
<thead>
<tr>
<th></th>
<th>Total n (%)</th>
<th>Women n (%)</th>
<th>Men n (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals included in the study (%)</td>
<td>1972 (100%)</td>
<td>1086 (55.1%)</td>
<td>886 (44.9%)</td>
<td></td>
</tr>
<tr>
<td>Mean Age of Participants (Year)</td>
<td>41.3±11.8</td>
<td>40.1±13.7</td>
<td>42.7±13.4</td>
<td></td>
</tr>
<tr>
<td>Number of Individuals with headache</td>
<td>945 (47.9%)</td>
<td>562 (51.7%)</td>
<td>383 (43.2%)</td>
<td></td>
</tr>
<tr>
<td>Number of Patients with TTHA</td>
<td>441 (22.3%)</td>
<td>272 (25%)</td>
<td>169 (19%)</td>
<td></td>
</tr>
<tr>
<td>Mean age of patients with TTHA (Year)</td>
<td>40.4±11.2</td>
<td>41.0±10.6</td>
<td>39.6±12.3</td>
<td></td>
</tr>
<tr>
<td>Number of ETTHA Cases</td>
<td>384 (19.4%)</td>
<td>233 (21.3%)</td>
<td>151 (17%)</td>
<td></td>
</tr>
<tr>
<td>Number of CTTHA Cases</td>
<td>57 (2.8%)</td>
<td>39 (3.5%)</td>
<td>18 (2%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education (%)</th>
<th>Total n (%)</th>
<th>Women n (%)</th>
<th>Men n (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Illiterate</td>
<td>42 (9.5%)</td>
<td>29 (6.5%)</td>
<td>13 (2.9%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2. Primary</td>
<td>135 (30.6%)</td>
<td>115 (26%)</td>
<td>20 (8.1%)</td>
<td></td>
</tr>
<tr>
<td>3. Middle</td>
<td>44 (10%)</td>
<td>20 (4.5%)</td>
<td>24 (5.4%)</td>
<td></td>
</tr>
<tr>
<td>4. High School</td>
<td>104 (23.5%)</td>
<td>68 (15.4%)</td>
<td>36 (8.1%)</td>
<td></td>
</tr>
<tr>
<td>5. College</td>
<td>117 (26.5%)</td>
<td>41 (9.2%)</td>
<td>76 (17.2%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economical status</th>
<th>Total n (%)</th>
<th>Women n (%)</th>
<th>Men n (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Low</td>
<td>166 (37.6%)</td>
<td>94 (21.3%)</td>
<td>72 (16.3%)</td>
<td>0.03</td>
</tr>
<tr>
<td>2. Medium</td>
<td>258 (58.5%)</td>
<td>169 (38.3%)</td>
<td>89 (20.1%)</td>
<td></td>
</tr>
<tr>
<td>3. Good or High</td>
<td>18 (4%)</td>
<td>10 (2.3%)</td>
<td>8 (1.8%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Groups (Year)</th>
<th>Total n (%)</th>
<th>Women n (%)</th>
<th>Men n (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 15-29 years</td>
<td>68 (15.1%)</td>
<td>37 (8.2%)</td>
<td>31 (7%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2. 30-39 years</td>
<td>135 (31%)</td>
<td>72 (16.3%)</td>
<td>63 (14.3%)</td>
<td></td>
</tr>
<tr>
<td>3. 40-49 years</td>
<td>154 (35%)</td>
<td>114 (26%)</td>
<td>40 (8.9%)</td>
<td></td>
</tr>
<tr>
<td>4. 50-65 years</td>
<td>85 (19.3%)</td>
<td>50 (11.3%)</td>
<td>35 (8%)</td>
<td></td>
</tr>
</tbody>
</table>

TTHA: tension-type headache; ETTHA: episodic tension-type headache; CTTHA: chronic tension-type headache

Table 2. Analgesic use in patients with TTHA-frequency and percentage distribution of visits to physicians

<table>
<thead>
<tr>
<th>Analgesic use</th>
<th>Visit to physician</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>72</td>
<td>106</td>
<td>178 (40.3%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>69</td>
<td>194</td>
<td>263 (59.6%)</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>141 (31.9%)</td>
<td>300 (68%)</td>
<td>441 (100%)</td>
<td></td>
</tr>
</tbody>
</table>

TTHA: tension-type headache
Discussion

In previous published data, the one year prevalence of TTHA was reported to be between 21.7% and 86.5% in the general population in prevalence studies [4, 5]. According to the Multicenter Epidemiology of Headache in Turkey Study (2007), the one year prevalence of TTHA was determined at 31.7% between 15-55 years of age, with a gender distribution of 31.3% women and 32.1% men [1]. We found a lower prevalence of TTHA compared to the Epidemiology of Headache in Turkey Study (31.7% vs. 22.3%). This difference may be due to the methodology as well as to the geographical location, the climate of Erzurum, or its socio-economic and environmental factors differing from Turkey in general.

Kaynak Key et al. [4] have applied a questionnaire to 2226 individuals aged between 17-21 (14.2% in men and 22.7% in women). The prevalence of TTHA was found to be 20.3% [4]. In our study, we found the prevalence of TTHA to be 16.5% in individuals between ages 17-21 (25% in men and 12.9% in women), which is somewhat lower. The sample size differences may have contributed to this difference. Although some age groups may vary, the typical ratio of male/female is 4/5 [4]. We also found a significantly higher dominance for women in our study.

When we evaluated the frequency of TTHA in different age groups, it was highly prevalent in the 40-49 age group (34.5%) and least prevalent in those over 50 (14.4%). The highest prevalence was observed in patients between ages 29-50 (29.7%). In an article by Takeshima et al. [6] from Japan, the prevalence was 21.8% from 15-29 years, 26.8% from 30-39 years, 26.5% from 40-49 years, 21.5% from 50-59 years and 17.8% in those 60 years and older [6]. Similar results have
been found in other studies on TTHA [7, 8]. As we found in our research, TTHA was mostly seen in the 3rd-4th decades and showed a decline after those ages. Although TTHA is known to be more frequently encountered in the adult age groups, it is more prevalent in younger age groups when all studies are taken into consideration. A high number of studies in which only younger age groups were included may have caused such a discrepancy.

Corrêa et al. [9] did not find a relationship between the frequency of headache and level of income (53% of patients with headache were in the lower and 47% in the middle and higher levels of income) [9]. Queiroz et al. [5] evaluated the consumption of electricity to obtain socio-economic data and found a significant difference in favor of higher frequency of headache with higher electricity consumption among the 4 groups (higher economic level group) [10]. Zarifoglu et al. [2] divided the individuals into two groups (rural and urban) in terms of socio-economic levels and found the frequency of TTHA to be 18.2% and 19.3%, respectively, without a significant difference. The level of income of 90% of the individuals in our study was below 2.637 TL (we used 2500 TL), which was the level of poverty for a family of four people (4). We divided the individuals into 3 groups to determine the level of income (low level, <1000 TL, mid-level between 1000-2500 TL and high level>2500 TL). The frequency of TTHA was 23.7%, 21.8%, and 18.5%, respectively.

Lyngberg et al. [11] did not find a significant association between the frequency of TTHA and level of education. Kaynak et al. [4] however, observed an increase in the frequency of TTHA with increasing level of education (<5 years of education: 18.8%, >11 years of education: 26.5%) in their study, which was conducted in Turkey. TTHA was most prevalent (25%) in individuals whose level of education was only primary school graduation and was least prevalent in the illiterate group (17%). To reiterate, we found a prevalence of 20% in college graduates. TTHA was relatively frequent in housewives in our study (22%), which was an interesting finding that could reflect the fact that most women living in Erzurum City are housewives.

The main diagnostic criteria for TTHA are as follows: a bilateral headache of 30 min-7 days duration, which is not affected by physical activity, without accompanying nausea, vomiting, photophobia or phonophobia, of pressing-squeezing type. Although photophobia, phonophobia and nausea were present among the diagnostic criteria, these are very rarely seen in patients. A bilateral pressing-squeezing type headache is more typical of and specific for TTHA [12].

In the study by Chen et al. [3] conducted with women living in Kayseri, a headache of pressing-squeezing type was observed in 38% of patients with TTHA (episodic, 39.6%, chronic, 34.7%), while the remainder of the patients (62%) had thumping symptoms. The headache was bilateral in 70.1% of patients with episodic TTHA and 73.6% of those with chronic TTHA [4]. Takeshima et al. [6] had calculated the frequency of throbbing pain in patients with TTHA as 13.1% in episodic TTHA and 18.9% in chronic TTHA. While the pain was bilateral in 32.6% of patients with episodic TTHA, bilateral pain was seen in 43.4% of patients with chronic TTHA. The pain was felt on the whole head in 5.7% and 19.7% of patients with episodic and chronic TTHA, respectively. A total of 30.9% and 41% of patients complained of pain in terms of the occipital-neck location in [6]. In our study, 31.7% of patients with episodic TTHA and 39.6% of those with chronic TTHA had pressurizing-squeezing type headache, where 41% of patients with episodic TTHA and 12% of patients with chronic TTHA had a throbbing headache. Of all patients with TTHA, 28.5% had both throbbing and pressurizing-squeezing type headache, 84% of the patients had bilateral, and 13.5% had unilateral headache along with bilateral pain.

The presence of accompanying nausea, vomiting, photophobia or phonophobia was reported by 9.7% of patients with episodic TTHA, and 50% of those with chronic TTHA in a population-based study from Singapore [8]. In another study from Japan, the presence of one or all symptoms of nausea, vomiting, photophobia or phonophobia was found in 11.3% of episodic TTHA and 24.5% of chronic TTHA patients [6]. Photophobia, phonophobia and nausea were found in 2%, 2.3% and 6.5% (respectively) of the patients with episodic TTHA in our study, while these frequencies were 5.1%, 8.6% and 12% in those with chronic TTHA.

The frequency of episodic TTHA was reported as 26.9% (18.1% in males and 35.2% in females), and that of chronic TTHA as 2.6% (1.1% in males and 3.9% in females) by Lavados et al. [13] in their study from Chile. Lu et al. [14] had found the frequency of chronic TTHA as 3.2% (1.9% in males and 4.3% in females). Takeshima et al. [6] had calculated the frequency of episodic TTHA as 19.6% (14.7% in males and 23.7% in females), and the frequency of chronic TTHA as 2.1% (1.5% in males and 2.7% in females) [6]. The frequency of episodic TTHA in individuals aged 7-21 years was reported as 18.4% (13.4% in males and 22.7% in females) and the frequency of chronic TTHA was 1.8% (0.7% in males and 2.8% in females) in Turkey [4]. In all of these studies, the yearly prevalence was investigated. We found the frequency of episodic TTHA as 19.4% (17.0% in males and 21.3% in females) and the frequency of chronic TTHA as 2.9%. The rare episodic TTHA form was observed more frequently in males (32.5%) in comparison with females (26.3%) in patients with TTHA. However, the chronic TTHA form was more prevalent in females (14.6%) in comparison with males (10.6%).

Of all patients with TTHA, 59.5% reported never visiting a physician, and 50.7% of those who had visited a physician
were diagnosed as having TTHA. It is reported in the literature that 50% of all patients with a primary headache and more than 80% of male and female patients with TTHA did not visit a physician. In Turkey, 38% of the patients with headache had never visited a physician. We found a higher rate of physician visits due to TTHA in our study compared to other studies, which may be due to awareness among the participants. A total of 32.1% of patients with TTHA reported using analgesics. Muscle factors are reported to play an important role in the development of TTHA. Cranial sensitivity is defined as the pain that occurs upon pressing on the muscles and is the best documented common clinical finding in patients with episodic and chronic TTHA [15]. Epidemiologic studies in which cranial sensitivity is investigated are relatively few in the literature. We found the frequency of cranial muscle sensitivity to be 33.3% in patients with TTHA in our research. Pericranial muscle tenderness was present in 30.9% of patients with episodic TTHA and 48.2% of patients with chronic TTHA. The frequency, location, and characteristics of headache are in accordance with other reports in the literature.

In conclusion, TTHA is the most commonly encountered primary headache. It may present with various combinations of neurological findings. Our present study showed that TTHA is even more prevalent in women. It is more frequently seen in individuals with a low level of income and among college graduates. We found a lower prevalence of TTHA in Erzurum City (which is located in Eastern Anatolia Region) in comparison with other regions of Turkey. Among possible reasons for such a difference from the entirety of Turkey are methodological differences, geographical location, the climate of Erzurum City, differences in socio-economic factors and environmental factors.

Ethics Committee Approval: Ethics committee approval was received from the institutional ethics committee.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.


Conflict of Interest: No conflict of interest was declared by the authors.

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