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Observational Report

Prevalence and Characteristics of Headache in Khoramabad, Iran

Parviz Bahrami, MD[1], Hatam Zebardast, MD[1], Mohammad Zibaei, MD[1], Mina Mohammadzadeh, MD[1], and Neda Zabandan, MD[2]

From: Neurology Department, Khoramabad University of Medical Sciences, Lorestan, Iran; 2Farzan Clinical Research Institute, Tehran, Iran

Dr. Bahrami is Assistant Professor of Neurology, Department of Neurology, Lorestan University of Medical Sciences(LUMS),Khorramabad, Iran. Dr. Zebarast is with the Department of Parazitology, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran. Dr. Zibaei and Dr. Mohammadzadeh are medical doctors with Lorestan University of Medical Sciences (LUMS), Khorramabad, Iran. Dr. Zabandan is with the Farzan Clinical Research Institute, Tehran, Iran.

Address correspondence: Parviz Bahrami, MD Neurology Department, Lorestan University of Medical Sciences, Khorramabad, Iran. Email: drbahrami2003@yahoo.com

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Background: Headache is a prevalent and disabling condition affecting people in all age groups worldwide, leading to low job performance and quality of life with a significant economic burden on societies.

Objective: We evaluated headache prevalence and characteristics and some probable associated factors in patients referring to neurology specialist clinics.

Study Design: Cross sectional study

Setting: Clinics of Khoramabad and also those referring to the emergency department of Khoramabad University Hospital.

Methods: One thousand patients with a chief concern of headache were assigned to the study. All patients filled out a structured questionnaire to gather demographic information and data on headache characteristics and associated factors, including past medical and psychiatric history, history of oral contraceptive pill (OCP) use, nonsteroidal anti-inflammatory drug (NSAID) overuse, and menstruation.

Results: The total prevalence of primary headaches was 78.2%, with migraine (with and without aura) being the most prevalent type with a prevalence of 41.6% followed by tension type headache found in 31.6% of the study population. Primary headaches were significantly more common in women and younger age groups. Factors found associated with a significantly higher prevalence of primary headaches were lower economic level, higher educational level, occupation, OCP use and NSAIDs overuse. Secondary headaches, with a total prevalence of 20.1%, significantly increased in older age groups and higher economic levels and were significantly less prevalent in higher educational levels.

Limitations: The study population is not quite representative of the general population of Iran.

Conclusion: Results highlight the impact of socioeconomic factors on headache epidemiology in a developing country and demonstrate that OCPs and NSAIDs overuse might have an effect on the distribution of primary headaches. Further multicenter studies are needed to evaluate headache epidemiology in the whole country.

Key words: headache, prevalance, migraine, tension-type headache

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Headache, as the most common neurologic symptom, is considered a painful, disabling condition affecting all age groups worldwide. According to the findings of Stovner et al (1) the total prevalence of active headache disorders is 46% in the adult population with tension type headache (TTH) commonly diagnosed in 42% of adult patients and migraine in 11%. This highly prevalent disorder is shown to have a major impact on patients' job performance and quality of life, leading to an economic burden on society (1,2).

Headache might be commonly underdiagnosed and undertreated in some societies. It is believed that there is a regional difference in headache epidemiology, and studies in developing countries demonstrate a significant socioeconomic impact in characteristics of headache disorders (1,3). Besides demographic data, some other factors might have an impact on headache characteristics including drug history, oral contraceptive pills use (OCPs) and nonsteroidal anti-inflammatory drugs use (NSAIDs), medical history, and psychiatric history of the patients (4-7).

There is a lack of knowledge about headache epidemiology and its associated factors in developing countries (8) and data on the subject is scarce in Iran. In this study we aim to determine the characteristics of headache disorders and associated factors in patients referring to private neurology clinics and also the emergency department of a university hospital in Khoramabad, the central city of Lorestan province, Iran.

Methods

This cross sectional study was carried out at Khoramabad, Lorestan, Iran from March 2010 through August 2010. The study population consisted of all patients presenting to private neurology clinics in Khoramabad and also those referring to the emergency department of Khoramabad University Hospital with a chief concern of headache during these 6 months. Patients were evaluated with a detailed history followed by a complete physical examination performed by a neurologist. In order to gather demographic data and possible associated factors and characteristics of their headache, each patient was asked to complete a structured questionnaire. In those patients with a clinical suspicion of an underlying disease (secondary headache) appropriate paraclinical methods such as a brain computed tomography scan, brain magnetic resonance image, or electroencephalogram were performed. Demographic information in the questionnaire included age, sex, marital status, occupation, educational level, and economic level. Educational level was categorized as illiterate, primary school, secondary school, high school, and university degrees. Economic level was grouped as low, intermediate, and high according to monthly income. Occupation options were asked as university student, school student, self-employment, employee, worker, housewife, retired, or unemployed. The questionnaire also contained questions investigating the characteristics of headache, including its site, duration, frequency in a month, onset, severity, quality, interval between episodes, relieving and aggravating factors, associated symptoms including photophobia and phonophobia, and possible related conditions, such as a family history of headache, past medical or psychiatric history, history of taking OCP, or menstruation (i.e., change in frequency or severity of headache during menstruation periods), and NSAIDs overuse-related headaches. Final diagnoses were made using International Headache Society criteria.

The study protocol was approved by the Ethics Committee of Khoramabad University of Medical Sciences. All patients gave written informed consent before participating in the study. Statistical analysis was performed using SPSS software version 18.0 (IBM Corporation, Armonk, NY). Descriptive statistics were calculated and data are presented as proportions and percentages. The significancy of differences was investigated using Chi-square test. A level of $P < 0.05$ was considered as significant.

Results

A total of 1,000 patients (747 women and 253 men, age range 20-80 years) were investigated during the study period. The majority of patients were in the age range of 30-39 years with a prevalence of 29.4% (n = 294) followed by the age range of 20-29 years with a prevalence of 26% (n = 260); the least frequent age group presenting with headache were those younger than 20 years old with a 3.6% prevalence (n = 36). Most patients were married (78.2%). Housewives and employees were the most common occupations among the study population with a total prevalence of 76.2% (n = 762). In terms of educational level, most patients had a high school degree with a prevalence of 32% (n = 320) followed by illiterate patients (21.8%) and those with university degrees (19.7%). Of the studied patients, 36.2% were categorized as being in a high economic level, 29.1% in an intermediate level, and 34.7% in a low level.

The most common type of primary headache diagnosed in our study population was migraine headache (with and without aura) with a total prevalence of 41.6% (migraine without aura, 33.8%; migraine with aura, 7.8%). TTH was the second most common type with a prevalence of 34.1%. Cluster headache was diagnosed in 3% of the patients. In general, 78.7% of patients were diagnosed to have primary headaches while secondary headaches made up for

20.1% of all the cases with psychiatric disorders and hypertension-related headache being the most common underlying causes with a prevalence of 4.8% for psychiatric disorders and 2% for hypertension-related headache. Sinusitis, meningitis, and intracranial hemorrhage were next in secondary headache etiologies with prevalence of 1.8% for sinusitis, 1.8% for meningitis, and 1.6% for intracranial hemorrhage. Three other headache types, including cerebrovascular attacks, neuralgia, and postictal headaches had equal prevalence of 1.2%. Other etiologies were rare with lower than 1% frequencies, such as temporomandibular joint defect, optic neuritis, coital headache, renal failure related headache, etc. (Fig. 1).

In our study population of patients presenting with headache, there were significantly more women patients than men, with a *P* value of < 0.001. Primary headaches were more common than secondary headaches in both sexes, however, most cases of primary headaches were in women than men (82.2% versus 62.5%). Among primary headaches, TTH and migraine were more common in women and cluster headache was more common in men. The frequency of primary headache showed a decreasing trend with age, while secondary headaches seem to increase significantly with age, particularly after 50 (*P* < 0.001). However, the age group younger than 20 showed a somewhat higher prevalence of secondary headaches in comparison to the 20-29 age group, with meningitis and sinusitis being the most common underlying causes (Fig. 2). Neuralgia was most common in patients in the age group 40-49 years (3%). The frequency of cluster headache increased with age, reaching to a peak at 30-39 years old (*P* < 0.001) and then began to decrease. In terms of patients' occupations, primary headaches were mostly seen in university students, workers, housewives, and employees, and secondary headaches were diagnosed more in retired, self-employed, unemployed, and school student patients. The prevalence of neuralgia was found to be significantly higher among housewives in comparison to other occupations (*P* < 001).

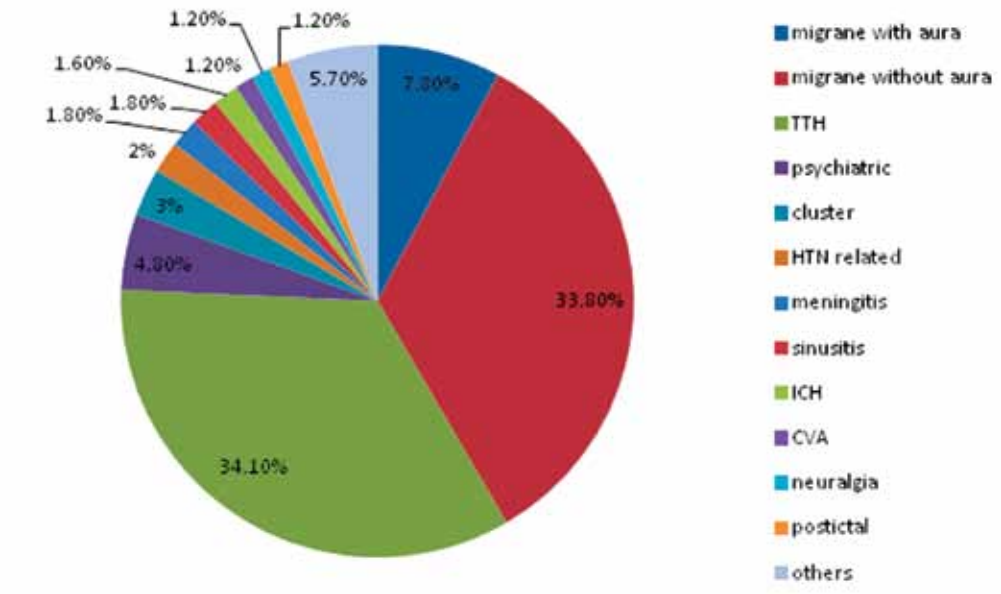

Fig. 1. *Distribution of headache etiologies in the study population.*

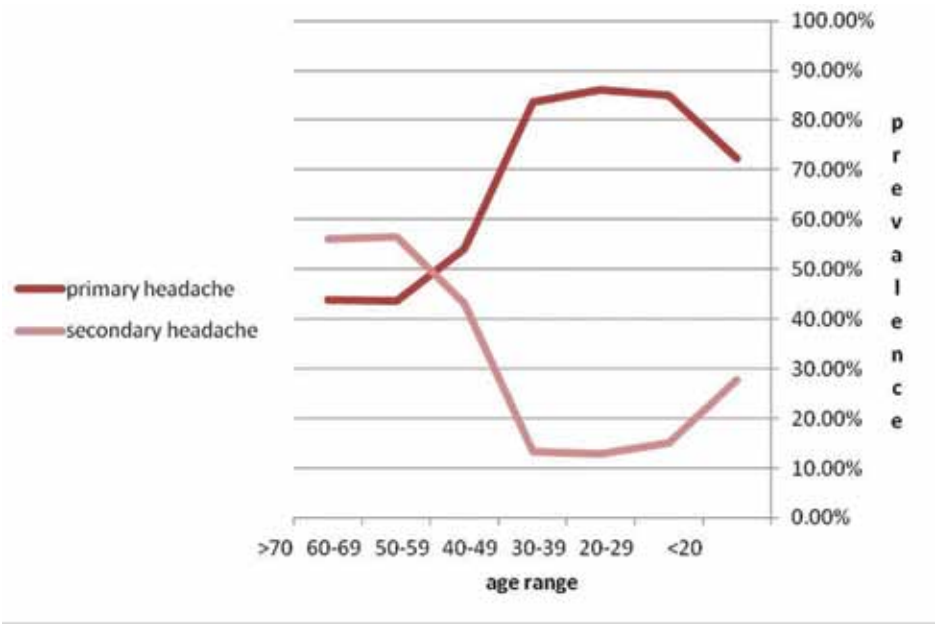

Fig. 2. *Changes in prevalence of primary and secondary headaches with age.*

In general, the prevalence of primary headaches increased and secondary headaches decreased with educational level. Neuralgia significantly decreased with educational level ($P < 0.001$).

The frequency of primary headaches seemed to decrease in higher economic levels while secondary headaches increased with economic level. Neuralgia also increased significantly with a higher economic level ($P < 0.001$).

Primary headaches were significantly higher in patients taking OCPs than those not taking them (89% versus 79.5%, $P < 0.001$). The frequency of TTH was significantly more common in patients using OCPs ($P < 0.001$) but migraine didn't show much difference. Cluster headache was lower in those using OCPs and neuralgia was higher in this group, however the differences were not found to be significant.

In patients who overused NSAIDs, primary headaches were significantly higher than those who didn't overuse them (84% versus 71%, $P < 0.001$). In addition, migraine and TTH were more common in NSAID overuse, but the frequency of cluster headache, neuralgia, and secondary headaches were lower in this group.

In patients whose headache seemed related to their menstruation periods, the total prevalence of primary headaches was found to be 99.5%, and in comparison to those unrelated to menstruation, migraine headaches were more common, while TTH was almost the same and cluster headaches were less common in this group. Table 1 summarizes the characteristics of the study population regarding the type of headache.

Discussion

In this study we investigated characteristics of patients presenting to neurology clinics and emergency departments with a chief concern of headache. The majority of our patients were women, a statistically significant difference. Consistent with other studies, this finding reflects the fact that primary headaches are more common in women. Women also

have a higher tendency to consult with a doctor for their symptoms in comparison with men. Most of our study population was between 20-40 years old (6,9). These findings demonstrate age and sex dependent differences in the prevalence of TTH and migraine as shown in previous studies. A decreasing pattern was found in primary headache with age, while secondary headache seemed to increase significantly in older patients due to more underlying diseases, which is consistent with the findings of Tanganelli in Italy (10). As expected, neuralgia had the highest prevalence in middle age (40-49) and the peak prevalence of cluster headache was 30-39 years. According to our results, more than 75% of our patients had primary headaches, with migraine (with and without aura) being the most common type at 41.6% followed by TTH diagnosed in 34.1%. Consistent with our findings, Murtaza et al (9), in a retrospective study in Pakistan, showed migraine headache as the most common type, with a prevalence of 81% followed by TTH diagnosed in 23%. However, several studies have reported a different prevalence of headache types, which might be due to different methodologies used, as well as cultural and population characteristics of the studied patients. In Japan, Toshikatsu et al (11), in their study of 418 patients with headache, found a prevalence of 39.9% for primary headaches, with TTH being the most common type (30.8%) followed by migraine (9.1%). Katsarava et al (3), in a study on the prevalence and risk factors of headache in the Republic of Georgia, found a prevalence of 37.3% for TTH and 15.6% for migraine. Stovner et al (12), in their review, reported a prevalence of 60% for TTH and 15% for migraine in Europe. Quesada-Vázquez et al (13), in their study of a rural population in Cuba, found a prevalence of 44.72% for primary headaches, with TTH being the most prevalent type at 25.56%, followed by migraine at 16.94%.

Our results demonstrated that the prevalence of primary headaches is significantly higher in lower economic levels while secondary headaches are found mostly in higher economic levels, which is explained by underlying diseases, particularly cerebrovascular events, being more common in this group. This finding is consistent with other studies (3). Regarding patients' occupation, we found housewives to have the highest prevalence of primary headache, probably because most of our patients were married women and most of this group are housewives in this province of Iran. However, among other occupations, those involved with more complicated intellectual and physical activities, including university students, workers, and employees, were found to have significantly more primary headaches in comparison with other occupations, such as self-employment, retired, or unemployed. Other studies also have demonstrated a high prevalence of primary headaches in such groups, with more focus on school and university students (14-15). Secondary headaches were more prevalent in retired, self-employed, and unemployed patients.

Educational level was found to affect headache prevalence with a significantly increasing pattern in the prevalence of primary headache and a decreasing pattern in the prevalence of secondary headaches in higher educational levels, probably due to more intellectual activity and work pressure in this group and also the fact that most of patients with higher education are young, among whom primary headaches are more common. More attention paid to self-care in this group also leads to a lower possibility of underlying causes for headache, and therefore a low prevalence of secondary headaches. These findings together highlight the impact of socioeconomic factors on headache epidemiology, particularly in developing countries as mentioned previously in other studies.

A rather high percentage of our patients reported overuse of NSAIDs, and in this group primary headaches were significantly higher, with migraine being the most common type (41.6%). In this vicious cycle, patients with headaches, particularly migraine, begin to use over-the-counter drugs—most commonly NSAIDs—frequently and incorrectly and this may lead to a paradoxical effect in which the medication causes headaches instead of relieving them (5).

Headaches are known side effects of OCP use (4). In our study we also found a significantly higher prevalence in primary headaches (both migraine and TTH) among women using OCPs. The prevalence of TTH and migraine didn't differ significantly in this group. Menstruation-related headaches were mostly primary headaches with most of them diagnosed as migraine.

Among underlying causes of secondary headaches, psychiatric disorders were the most common, consistent with Marlow et al (6) and Okumura et al (10) investigations in which depression was shown to be a prevalent cause of headache.

In this study, we investigated the patients referring to a neurology specialist or emergency depart-

ment. Considering the fact that there is a lack of appropriate patient reference system in Iran, many patients with headache might have remained undiagnosed. On the other hand, this study was carried out in a province of Iran with special cultural and socioeconomic characteristics; therefore, the study population is not quite representative of the general population of the country. Further multicenter studies are needed to evaluate headache epidemiology in the whole country. However, in this study we investigated headache prevalence and characteristics in 1,000 patients presenting with headache, and evaluated the impact of demographic and socioeconomic parameters and some other associated factors including OCP use, NSAIDs overuse, past medical and psychiatric history, and menstruation.

Conclusion

In conclusion, results showed that migraine is the most common type of primary headache in our province and socioeconomic factors (occupation, educational level, economic level) have a significant impact on headache epidemiology. OCP, menstruation and NSAIDs significantly affect the prevalence of headache types and positive past psychiatric history was the most common underlying cause for secondary headaches. Further multicenter studies are needed to evaluate headache epidemiology in the whole country.

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