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## Investigating the Epidemiology of Migraine Pattern of Patients in Shiraz and Comparing it with the Global Pattern

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### ABSTRACT

The most common reason for visiting clinics in the world is headache, and migraine, as one of the most common chronic headaches, is a disorder affected by environmental and genetic factors. Classic migraine (with aura) and common migraine (without aura) are clinically more common in the population. Migraine mainly has symptoms such as throbbing and throbbing headache attacks accompanied by nausea, fear of light and sound, and recovery with rest. This study investigated the migraine pattern in 90 patients referred to Walfajr Health Center in Shiraz through questionnaires and statistical analysis and compared it with the global pattern in terms of epidemiological characteristics. According to the results, migraine is more common in women and ages before 40. The results also indicated that migraine without aura is more frequent than migraine with aura. All these findings are in line with the global pattern. According to similar studies, it could be argued that there is no significant difference between the migraine pattern in the population of patients studied in Iran and the global pattern despite the climatic differences between this population and other parts of the world, indicating the insignificant effect of nutrition, race, and other regional characteristics on the migraine pattern.

**Keywords:** Epidemiology of migraine, Headache, Migraine, Aura, Patients in Shiraz, and Epidemic.

### INTRODUCTION:

The most common reason for visiting clinics in the world is headache, which occurs in all age groups (Alshimmery *et al.*, 2009). Headache accounts for 1 to 2% of visits to the emergency department and up to 4% of visits to doctors' offices (BR M. Harrisons, 2012). Headaches are caused by tension, displacement, inflammation, vascular spasm, or expansion of pain-sensitive structures in the head and neck (Burch, 2019). The etiology diagnosis of headache requires understanding its pathology, preparing a history, and specifying the characteristics of pain as acute, subacute, or chronic by performing a detailed physical examination and summarizing differential diagnoses (Eigenbrodt *et*

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*al.*, 2021; Goadsby *et al.*, 2021). In most cases, the cause of the headache is benign.

However, a new headache can be the main symptom or the first manifestation of a systemic disease or dangerous intracranial disease (Ha H, Gonzalez, 2019). So, a systematic and comprehensive clinical evaluation is required. Migraine is defined as a common headache that is usually one-sided, mainly has a throbbing quality, and is often accompanied by nausea, phonophobia, and photophobia (Iannone *et al.*, 2022). Migraine headaches affect more than 10% of the population. Two-thirds to three-quarters of migraine cases occur in women, and more than 90% occur before the

age of 40. The family history of migraine can be traced mainly (Neumeier *et al.*, 2021; Papetti *et al.*, 2021). Although little is known about the molecular mechanism of migraine, studies suggest that calcitonin gene-related peptide (CGRP) is released and activated by a variety of stimuli through stimulation of ion channels known as TRP. It can intensify migraine attacks (Robbins MS, 2021). A diet that helps to control weight gain can positively affect the severity of migraine (Ruschel and De Jesus, 2022). Migraine is clinically divided into three categories: classic migraine or with aura that occurs after the occurrence of aura (transient visual, sensory, or motor symptoms and disorders), common migraine or without aura, and chronic migraine that has changed to a frequent headache syndrome after a long time (Saylor *et al.*, 2018; Silberstein *et al.*, 2018).

Due to the importance and frequency of migraine headaches, this study investigated the epidemiological characteristics and prevalence of symptoms in migraine patients and compared the identified pattern with the pattern recorded in other parts of the world.

**MATERIALS AND METHODS:**

This study was conducted on 90 patients referred to Walfajr Health Center and Shahid Beheshti Hospital in Shiraz in 2013 and 2014. The sample was selected by convenience sampling (referring to the mentioned places during the study, the researcher took a sample from the referring people. If the selected people were not included in the samples for any reason, they were replaced by the next person). This cross-sectional

study was conducted using the descriptive-analytical method. The statistical population included all the patients referred to the mentioned medical centers with all age and gender ranges. New patients or patient’s diagnosed with migraine was visited by a neurologist and their symptoms were recorded. The gender, age range, and headache symptoms of the patients were collected and documented through questionnaires.

**Statistical Analysis**

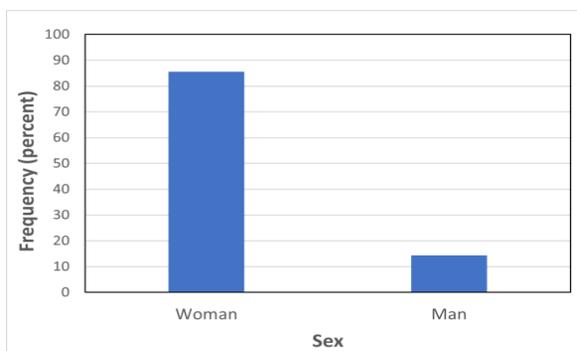
The data were analyzed using descriptive statistics and paired t-test and Chi-square statistical tests. A P-value less than 0.05 were considered significant level. SPSS software was used to analyze the data.

**Questions and Hypotheses**

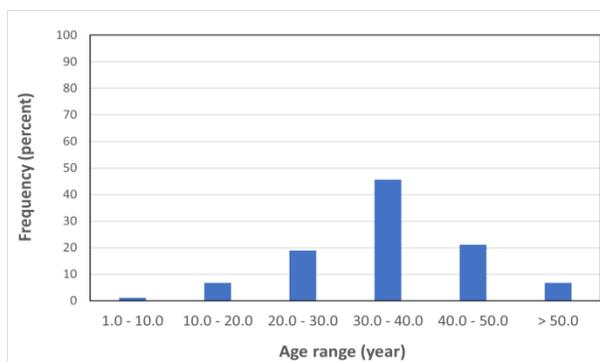
The study was conducted to answer and test the following four questions and hypotheses:

- 1) Is migraine more common in women?
- 2) Is migraine more common before the age of 40?
- 3) Are the clinical symptoms of the patients the same as in the reference books?
- 4) Is migraine without aura more common than migraine with aura?

Findings **Fig.1 to 3** shows the results of gender frequency, age range, duration, aura, and clinical symptoms of migraine patients. As can be seen, 85.6% of patients were female and 14.4% were male (**Fig. 1a**). The age range of the patients was normally distributed. Most of the patients (45.6%) were 30 to 40 years old, and the lowest frequency (1.1%) belonged to the age range of 1 to 10 years (**Fig. 1b**).



(a)



(b)

**Fig. 1:** The frequency of gender (a) and age range (b) in migraine patients.

In terms of migraine duration, most patients (52.2%) experienced 4 to 24 hours, and the lowest frequency

(4.4%) belonged to more than 72 hours (**Fig. 2a**). Migraine was without aura in the majority of patients

(65.6%) (Fig. 2b). Moreover, among the clinical symptoms of migraine, including one-sidedness or two-sidedness, throbbing, nausea, phonophobia, photophobia, recovery with rest, and exacerbation with move-

ment, the highest frequency belonged to throbbing, phonophobia, and photophobia, respectively, and two-sidedness and exacerbation with movement were less common (Fig. 3).

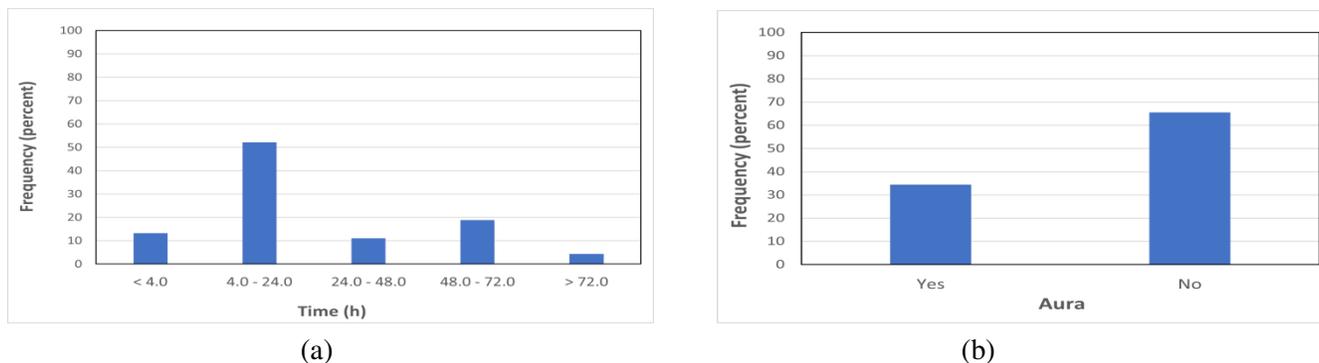


Fig. 2: The frequency of duration (a) and aura (b) in migraine patients.

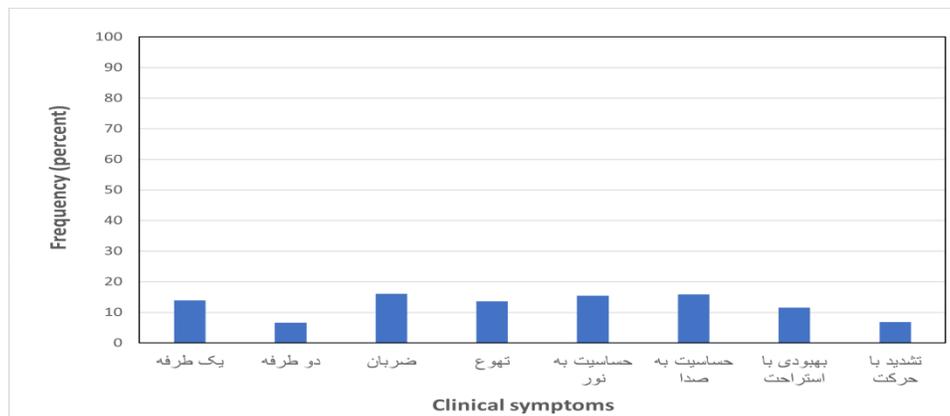


Fig. 3: The frequency of clinical symptoms in migraine patients.

The results of the chi-square test suggested that migraine was more common in females, the clinical symptoms of the patients in this study were the same as the reference book and the global pattern, and migraine without aura was more common than migraine with aura (P-value was smaller than 0.05 in all three cases). So, Hypotheses 1, 3, and 4 were confirmed. Furthermore, by setting the test value to 35, the results of the one-sample t-test indicated that migraine was more common before the age of 40 (P<0.05, 95% confidence interval between -31.23 and -30.80). In this way, Hypothesis 2 was confirmed.

**CONCLUSION:**

In a study by Al Shimmery *et al.* (2009) on 200 patients from Iraqi Kurdistan in 2007 and 2008, the pattern of migraine headaches and the effect of age and duration of the disease on the symptoms were investigated (Simon *et al.*, 2009). Most of the studied cases

(77%) were females. The mean age of onset was 22.33 ± 9.52 years (± SD), and the most common type of migraine observed was without aura (72%). In this study, various symptoms such as phonophobia (92%), nausea (86.5%), photophobia (84%), dizziness (78%), scalp thinning (75%), pallor (64%), sweating (57%), vomiting (50%), arm pain (39%), and chest pain (6%) were investigated concerning the age of onset and duration of the disease. The duration of the disease was not significantly correlated with the age of onset and spread of migraine symptoms. Besides, there was no significant correlation between the duration of the disease and the frequency of attacks. It is concluded that many symptoms of migraine are the same in each attack regardless of the duration of the disease and the age of onset, except for the tendency to vomit, which may be less common in younger patients. The findings showed that the prevalence and symptoms of migraine

are almost similar between the population of patients in this study and other parts of the world despite cultural, social, and nutritional differences, etc., indicating that these differences probably have not much effect on the prevalence of migraine and its epidemiological characteristics. It can be concluded that the headache is likely to be benign and there is no definite need for imaging if the patient has a headache with migraine characteristics. Patients should know the clinical symptoms of migraine so that they don't get anxious when visiting the doctor. Similar studies are recommended to be conducted in other provinces of Iran to confirm what was mentioned about the pattern and characteristics of migraine epidemiology. It is also recommended to investigate the prevalence of types of auras in migraine so that patients can better understand their symptoms and predict headache attacks.

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#### CONFLICTS OF INTEREST:

The authors of this manuscript declare their agreement with the statements. Authors also state separately that they have all read the manuscript and have no conflicts of interest.

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