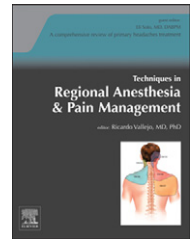


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The epidemiology and comorbidities of migraine and tension-type headache

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ABSTRACT

Headache is one of the most common medical complaints resulting in presentation to a doctor's office, and it is frequently associated with substantial personal and societal burden. This burden is often greater than the disability associated with several common medical disorders such as hypertension and diabetes. Migraine and tension-type headache (TTH) are the most common primary headache disorders. In the first section of this review, the authors will discuss the incidence and prevalence rates of migraine, as well as the data suggesting that such rates may have increased in the past. This is then followed by a discussion on several key migraine comorbid disorders, as well as the personal and societal burden associated with migraine. In the second section, the authors will similarly review the epidemiology of TTH, as well as its comorbid conditions and its burden on the individual and society.

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Introduction

Headache is a common condition that has affected human kind throughout history, with documented descriptions in Egypt dating back prior to 1550 BC.¹ However, it was not until 1988 that the first edition of the International Classification of Headache Disorder (ICHD) was published.² Today, there are approximately 200 different headache disorders described in the ICHD 2nd edition (personal communication, Morris Levin).² The publication of the ICHD provided an operational tool that allowed greater uniformity in headache diagnoses and facilitated great strides in headache research and our understanding of headache disorders.

In making a headache disorder diagnosis, the first and most important distinction is the determination as to whether the headache is (1) a primary condition, where there is no underlying cause, or (2) a secondary condition, where the head pain is attributable to an underlying etiology (eg, trauma, vascular disorder).² In this review, the authors will focus on the most common primary headache disorders, migraine and tension-type headache. They will review the

incidence and prevalence rates of each disorder, and will discuss their common comorbidities and the impact of each on the individual headache sufferer and society.

Migraine classification

Migraine is commonly described as a severe headache that is unilateral in location, throbbing in nature, and associated with nausea or photo and phonophobia or both.² However, it is important to keep in mind that to satisfy an ICHD diagnosis of migraine, only 2 of the 4 ICHD criteria C are required (Table 1).³ Thus, migraine headaches may be mild or even bilateral in location and still fulfill migraine criteria.

Migraine incidence

Incidence refers to the number of *new* cases that develop in a population over a defined period of time.⁴ The peak incidence of migraine is in the late teens to twenties in women and in

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Table 1 – ICHD-II migraine criteria.

- A. At least 5 attacks fulfilling criteria B-D
 B. Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)
 C. Headache has at least two of the following characteristics:
 1. Unilateral location
 2. Moderate or severe pain intensity
 3. Aggravation by or causing avoidance of routine physical activity (eg, walking or climbing stairs)
 4. Pulsating, pounding, or throbbing quality
 D. During headache at least one of the following:
 1. nausea and/or vomiting
 2. photophobia and phonophobia
 E. Not attributed to another disorder

Note: “U-MAP the pain” is the mnemonic taught by Dr. Peterlin to help remember the possible headache characteristics to fulfill criteria B for migraine.

the late adolescence to teen years in men.⁵⁻¹⁰ Migraine incidence rates in general population studies have been remarkably consistent when comparing those studies designed without substantial age-restricted inclusion criteria.⁵⁻¹⁰ In 1992, Stang et al. evaluated migraine incidence in a US-based population (age range: 0-60+) and demonstrated that migraine incidence peaks in women at 20-24 years of age (6.89 per 1000-person years) and in men at 10-14 years of age (2.46 per 1000-person years).⁵ This finding was later substantiated by 2 general population studies.^{6,7} In 2000, Rozen et al. reported that migraine incidence peaked in women between 20 and 29 years of age (or 9.86/1000-person years) and in men between 10 and 19 years of age (or 3.71/1000 person).⁶ Similar findings were reported by Stewart et al., almost a decade later.⁷ Additionally, 3 European studies, all longitudinal in design, have similarly estimated the 1-year migraine incidence to be between 3 and 18 cases per 1000-person years.⁸⁻¹⁰ Finally, the lifetime incidence of migraine has been reported to be approximately 43% in women and 18% in men.⁷

Migraine prevalence

Prevalence refers to the total number of new or previously identified cases of a disease in the population over a defined period of time. In the next section, the authors will discuss the impact of age, sex, and race on migraine prevalence.

The impact of age and sex on migraine prevalence: Prior to puberty, boys have a higher migraine prevalence than girls.^{11,12} The higher pre-pubescence migraine prevalence in boys may be related to the earlier peak incidence of migraine in boys. (In one study evaluating migraine incidence, restricted to a younger population (12-29 years old), the incidence of migraine with aura in boys peaked at 5 years of age and migraine without aura at 10-11 years of age. In contrast, the incidence of migraine with aura in girls peaked at 12 years of age and migraine without aura at 15 years of age.¹³) Following puberty, migraine prevalence becomes greater in women than men, a pattern that persists throughout the lifespan.^{12,14} Specifically, the 1-year prevalence of migraine in adults in the United States has been estimated to be 12% of the general population, including 18% of all women and 6-8% of all men.^{14,15} In summary, although more

prevalent in women than men, migraine is prevalent in both sexes and is most common in those of reproductive age between 20 and 50 years of age.¹⁵⁻¹⁷

The impact of race and geography on migraine prevalence: Both European and American studies have shown that 11-18% of women and 4-9% of men experience migraine each year.¹⁴⁻¹⁹ A similar pattern is seen in Central and South America.²⁰⁻²² Historically, migraine has been reported to be less prevalent in African populations as compared to Caucasian populations.²³⁻²⁶ Specifically, in the United States, the prevalence of migraine has been reported to be greatest in Caucasians, then African Americans, and least common in Asian Americans.²⁷ However, a recent general population study of Sub-Saharan African adults reported migraine prevalence rates of 14% in women and 7% in men (Gelaye B, Peterlin BL, Lemma S, et al: Migraine and psychiatric comorbidities among Sub-Saharan African Adults. Headache 2012, in press), rates similar to those reported in Caucasians. Existing data consistently support that migraine is less prevalent in populations from Asia (1-5% of women; <1% of men) than in those in occidental countries.^{28,29}

Are migraine incidence and prevalence still increasing?

Although studies utilizing the American Migraine Study database (the largest dedicated migraine epidemiology database) have not appeared to show a substantial change in migraine incidence or prevalence,^{14,30} several studies of both adolescents and adults have suggested that the incidence and prevalence of migraine may have increased in past decades.^{5,31-39}

The first study to report an increasing incidence of migraine was a US population study, utilizing the Rochester Epidemiology Project resources.⁵ In this study, Stang et al. demonstrated that there was a significant increase in age-adjusted migraine incidence from 1979 to 1981 ($P < 0.01$) (Figure 1). Specifically, the age-adjusted incidence of migraine increased in those under 45 years of age by 34% in women and 100% in men between 1979 and 1981.⁵ A second study, also utilizing the Rochester Epidemiology Project resources, conducted by Rozen et al.,³¹ evaluated the incidence of migraine between 1979 and 1981 and 1989 and 1990. The

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