ABSTRACT

Studying the epidemiology and impact of headache can help improve patient care, estimate the burden of disease, and refine classification systems. This article reviews the results of several epidemiological studies on headache and migraine. In resolving and overcoming barriers to care, disability is a key factor and a cost driver. Although treatment guidelines are an important step for creating a standard for diagnosis and treatment, it is especially important to take a systematic approach to reduce the burden of migraine and related headache disorders.


The epidemiology and burden of headache reflect the enormous scope of migraine and other headache disorders and underscore the need to provide effective therapies for patients who require care. While many patients with headache are under a physician’s care, many patients are not under care or are not receiving adequate medical treatment.

There are several important reasons to study the epidemiology and impact of headache, all of which ultimately translate into improved patient care. First, studying the epidemiology and impact of headache clarifies the scope of the problem and the distribution of headache disorders. Second, these studies assess the natural history of headache disorders and can help improve classification of these disorders. Studies also measure the burden of disease, an increasingly important factor in areas of the world where resources are scarce relative to need and where resources are allocated on principles that are difficult to define.

Epidemiology and health services research is also extremely useful in identifying risk factors and developing effective preventive strategies, an area that is particularly relevant in daily chronic headache and other chronic headache disorders. Such research findings can also be used to assess patterns of care and unsuitable treatment needs.

PREVALENCE

In the United States and Great Britain, migraine and other headache disorders are the most common problem for which patients consult a neurologist, accounting for about 20% of neurology consultations and reflecting the high lifetime and 1-year period prevalence rates of headache (Tables 1 and 2).

Two meta-analyses of studies involving patients with migraine have provided valuable information about the variation in prevalence. One meta-analysis, done in 1995, included 24 studies with well-specified sampling methods. Five of these studies used International Headache Society (IHS) criteria for migraine diagnosis. The meta-analysis found that 4 factors accounted for 70% of the variation in migraine prevalence.
• Gender;
• Gender plus age;
• Gender plus age times age; and
• Gender plus age plus case definition.\textsuperscript{4}

The second meta-analysis, done in 1998, included more than 90 population-based studies, 18 of which used IHS criteria for migraine diagnosis. Case definitions were not thought to influence the prevalence of migraine in this meta-analysis, which found that migraine was more common in females in all postpubertal age groups and most common in middle life in both males and females. A surprising finding was that geography had a major impact on migraine prevalence, with rates highest in both men and women in North America, followed in descending order of frequency by rates in South America, Europe, Asia, and Africa.\textsuperscript{5}

The differences in prevalence by geographical region of the world may reflect racial differences, as shown in a study that found the prevalence of migraine in both men and women in the United States was highest in whites, intermediate in African Americans, and lowest in Asian Americans.\textsuperscript{6} Studies have also found that the incidence of migraine peaks about 20 to 30 years before the prevalence peaks,\textsuperscript{2,3} indicating that migraine is a condition of long duration.\textsuperscript{3}

**Burden of Headache**

There are 2 major approaches to estimating the burden of headache: the clinician's approach, which estimates individual burden, and the public health approach, which estimates societal burden. The clinician's approach assesses several factors that affect the individual patient, including frequency and duration of attacks, symptoms during attacks, anticipation between attacks, quality of life, lost economic opportunities, and reduced family, social, and recreational activities. The public health approach focuses on direct costs (i.e., medical care) and indirect costs (i.e., lost work and productivity).

Studies using the Health-Related Quality of Life and Short Form-12 assessment instruments have shown that quality of life is substantially reduced in migraine populations compared with population controls. Pooled data from methodologically similar studies conducted in the United States and in the United Kingdom revealed the median pain intensity in patients with migraine was 8 on a zero-to-10 scale, with zero representing no pain and 10 representing the worst pain imaginable.\textsuperscript{7} This is significantly higher than the median pain intensity reported by patients with arthritis, inflammatory bowel disease, and other diseases associated with chronic pain, where the scores usually range between 4 and 6.

<table>
<thead>
<tr>
<th>Table 1. Lifetime Prevalence of Common Headache Disorders</th>
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<tbody>
<tr>
<td><strong>Headache Type</strong></td>
</tr>
<tr>
<td>Primary headache</td>
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<tr>
<td></td>
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<tr>
<td>Secondary headache</td>
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<table>
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<th>Table 2. 1-Year Period Prevalence of Headache Disorders by Gender</th>
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<tbody>
<tr>
<td><strong>Headache Type</strong></td>
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<tr>
<td>Migraine</td>
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<tr>
<td>Transformed migraine</td>
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<tr>
<td>Episodic tension-type</td>
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<td>Chronic tension-type</td>
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The study also found that the median duration of attack was 24 hours, the median number of lost workdays over the previous 3 months was 1.1, and the median number of lost workday equivalents per year was 12.7

A study estimating indirect costs found that men with migraine required 3.8 days of bedrest per year while women with migraine required 5.6 days of bedrest. Moreover, migraine disability—ie, missing the equivalent of 5 or more days of work per year—was not uniformly distributed in the population. Whereas 48% of women with migraine lost 5 or more days per year because of migraine, they accounted for 93% of all work losses attributed to migraine. Similarly, 38% of men with migraine accounted for 85% of all work losses attributed to migraine.8

Thus, the most disabled one third to one half of migraine sufferers losing the equivalent of 1 week of work per year to migraine accounted for 90% of all work losses due to migraine.8 From a public health perspective, this is the group to target to reduce the burden of migraine.

Patterns of Diagnosis and Treatment

Determining patterns of migraine diagnosis and treatment is best accomplished by a population-based approach in which a community is systematically screened to identify who has migraine and who does not, independent of a medical diagnosis. In one study using such an approach and conducted in the United States in 1989, participants were asked when and if they saw a physician for headache within the previous year and how the headache was treated. In this sample, 16% of the participants were currently seeing a physician for headache, 50% had seen a physician but had lapsed from care, and 34% had never seen a physician for headache.9 When the study was repeated in 1998, using identical methods as those in the initial study, 47% of the participants were currently seeing a physician for headache, 21% had lapsed from care, and 34% had never seen a physician for headache.9

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Thus, over 1 decade, the percentage of patients currently under a physician’s care tripled, the percentage of those who had lapsed from care declined by more than half, and the percentage of those who had never consulted a physician remained the same.

In the US study, those participants who were currently consulting a physician for headache were older, had more severe headaches, were more likely to be married, and were more likely to be female. In 1989, 39% of the persons identified as having migraine had a medical diagnosis of migraine, while 61% were undiagnosed. About 37% used a prescription medication, 59% used an over-the-counter (OTC) medication exclusively, and 4% used no medication. In 1998, 48% of the people identified as having migraine had a medical diagnosis of migraine, while 52% were undiagnosed. Nearly half (46%) used a prescription medication, 50% used an OTC medication, and 4% used no medication.9 In the United Kingdom study, 41% used a prescription medication, 57% used an OTC medication, and 2% used no medication (R.B.L., unpublished data, 1998).

Of those participants in the US study who consulted a physician for headache, the majority were treated by a general practitioner or family physician, while 14% of women and 10% of men consulted a neurologist.9 Consult rates for neurologists in the United Kingdom study were lower. Migraine is undertreated, as reflected by results showing only 29% of those in the US study who consulted a physician were very satisfied with treatment.9 However, the low satisfaction rate might also be related to the relatively high expectations the migraine sufferers had regarding treatment.

Barriers to Care

Although it is not necessary for everyone with migraine symptoms to have a medical diagnosis of this disorder, a diagnosis is an essential step in the treatment of those patients with great pain and disability. Because disability, ie, lost work time, is a powerful predictor of treatment needs, failure to include it in the evaluation of a patient with migraine is a major barrier to health care. Too often, physicians do not ask about disability and patients do not tell. This gap in communication creates a gap in treatment.

As demonstrated in the Disability in Strategies of Care study, 56% of patients with a modest level of disability and 69% of those with more disability, as determined by the Migraine Disability Assessment (MIDAS) grade, were not adequately treated with aspirin and metoclopramide. The study also found that 75% of those with the highest MIDAS grades (who account for 25% of all migraine cases) were not adequately treated with these agents.11
The MIDAS scale is a 5-item questionnaire that measures disability over a 3-month period. In addition to its utility in predicting treatment needs, the MIDAS scale is useful in stratifying care in the context of clinical trials and, ultimately, in clinical practice.

Improving communication about disability, and assessing and recognizing disability as an important component of migraine, assists physicians practicing in primary care and other settings to make wise treatment choices for individual patients. Disability associated with migraine is also the main driver of indirect costs, and the societal burden of migraine can be reduced by recognizing and assessing this disability.

**SUMMARY**

Migraine and related headache disorders are common in both genders and at all ages and are associated with frequent disability. Migraine and other types of headache should be evaluated by a systematic approach that assesses the natural history of the disease and the patient's symptoms and quality of life, improves disease classification, measures the clinical and economic burden of disease, and identifies risk factors.

In resolving and overcoming barriers to care, disability is a key factor and a cost driver. Recognizing disability as a component of migraine motivates the patient to seek care and encourages appropriate diagnosis and more effective treatment. Physicians intuitively believe that patients with migraine-related disability require more aggressive therapy.

Treatment guidelines in the United States are an important tool for improving diagnosis and treatment. In Europe, many sets of treatment guidelines are being used for these purposes. What is important, however, is not so much the set of guidelines being used, but that a systematic approach be taken to reduce the burden of migraine and related headache disorders.

**REFERENCES**