Migraine Epidemiology

Rebecca Burch, MD
The John R. Graham Headache Center
Faulkner Hospital
Boston, MA

How do we know who has migraines?

By now, the broad outlines of migraine epidemiology in the US have become familiar to us all. Migraine affects 3 times as many women as men. It is most common during years of peak productivity, decreasing in prevalence as people get older. Overall, migraine affects about 12% of the population, and about 1 in every 4 households includes someone suffering from migraine. But where did this information come from? How do we know who has migraine?

There have been three large population based studies looking at the epidemiology of migraine in the US. The first two, American Migraine Study I and II (AMS I and II), were performed ten years apart and were cross-sectional, capturing information about migraine in 1989 and 1999, respectively.(1,2) The third, the American Migraine Prevalence and Prevention study (AMPP), was started 6 years after AMS II and continues to this day, providing crucial data about the factors which influence migraine patterns over time.(3)

The first American Migraine study was made possible by the confluence of two events which would change the landscape of headache medicine. The first was the development of the first edition of the International Classification of Headache Disorders (ICHD) in 1988. The Classification provided specific criteria for the diagnosis of migraine, which could be easily adapted to a questionnaire format and which allowed standardization of migraine studies. The other was the development of a first-in-class medication for migraine by Glaxo, starting in 1972 and nearing completion in the late 1980s.(4) This drug, sumatriptan, was released in the US in 1992. With the development of clear diagnostic criteria, and the likelihood that there would soon be migraine-specific treatment available, the natural extension was determination of how many people had migraine and who they were. Glaxo provided funding for AMS I, perhaps seeing the utility in defining this population.

For AMS I, Walter Stewart, Richard Lipton, and colleagues developed and validated a questionnaire based on the first ICHD criteria for migraine. These diagnostic criteria are substantively unchanged from those we use today. Notably, only participants between the ages of 12 and 80 who had at least one severe headache in the last year and did not have daily headache were included. The remaining questions determined migraine associated symptoms and the presence of aura. The questionnaire also included questions about the level of disability associated with the headaches. The study households were drawn from panels kept by an advertising agency, and were representative of the US population at the time. The questionnaire was sent to 15,000 households, and with a response rate of 63.4%, identified 2,479 cases of migraine out of 20,468 total respondents.

The results of AMS I showed that migraine affected 17.6% of women and 5.7% of men. Prevalence was higher in lower income groups. The prevalence of migraine increased until age 40 for women and slightly younger in men, indicating that the highest burden of migraine occurred during the years of highest expected productivity. 59% of women and 50% of men experienced at least one severe headache per month, and 43-47% of migraine sufferers experienced moderate to severe disability. When extended to the population of the US at the time, these findings

suggested that the burden of migraine was substantial: 8.7 million women and 2.6 million men suffered from migraine with moderate to severe disability. Later analysis of the same data showed that 71% of men and 59% of women with migraine had not been diagnosed, and over a third of people with migraine had not seen a doctor for their headaches. (5)

AMS II followed similar methods in order to facilitate comparison to AMS I. Notable differences include the inclusion of Migraine Disability Assessment (MIDAS) questions in the questionnaire, and a slightly larger sample size (20,000 households.) 3,577 cases of migraine were identified from 29,727 cases. The major findings of the study were similar to AMS I: The prevalence of migraine was 18.2% in women and 6.5% among men. About 23% of all households surveyed had at least one member who had migraine. And again, the burden of migraine was revealed in the findings that 53% of respondents reported “substantial impairment in activities or required bed rest” with their severe headaches. 31% missed at least 1 day of work in the previous 3 months. The data from AMS II did suggest that diagnosis of migraine was increasing, however. 48% of people with migraine had received a physician diagnosis of migraine.(6)

The first AMPP questionnaires were mailed out in 2004, using panels from the same advertising agency. The AMPP was much larger in scope than AMS I and II, however, including 120,000 households. The ICHD-II was released in 2004. One notable change is that the inclusion criteria changed to those with severe headache in the last 12 months who had headache less than 15 days per month. The questionnaire was otherwise substantively unchanged from that used in AMS II. Prevalence of migraine was similar to previous findings: 17.1% in women and 5.6% in men.

Further analysis showed that rates of diagnoses continued to rise, and 56.2% of people who had migraine according to the AMPP survey had received a diagnosis of migraine. This data also revealed a profound need for further efforts as only 20% of migraineurs used prescriptions medications to treat their headaches. Other insights into migraine in the US provided by the AMPP include the prevalence of probable migraine (headaches which fulfill all but one of the criteria for migraine), frequency of emergency department use, comorbidity profiles of migraineurs, and rates of opioid use among migraineurs. (7-11) The AMPP was designed as a longitudinal study, with questionnaires mailed out annually. Some of the most exciting exciting results from the AMPP come from the longitudinal data collected, including information about the natural history of migraine and the factors which influence the transition from episodic to chronic migraine. Just as the first American Migraine Study changed the face of migraine when it was published in 1992, the AMPP is sure to change our knowledge of how migraine evolves and how we, as practitioners, can intervene. (12,13)

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