Prevalence of Chronic Migraine, Headache-Related Disability and Sociodemographic Factors in the US Population: Results from the American Migraine Prevalence and Prevention (AMPP) Study

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BACKGROUND

- Chronic migraine (CM) is broadly defined by the presence of migraine with headaches on ≥15 days per month.
- A systematic review of population-based studies utilizing various criteria reported the majority of CM prevalence estimates ranged from 1.4% to 2.2% (Natoli et al. *Cephalalgia* 2010;30:599-609).

OBJECTIVES

1. To estimate the prevalence of CM in the US population.
2. To characterize persons with CM by sociodemographics and headache-related disability.

METHODS

- In 2004, we mailed surveys to a sample of 120,000 US households stratified to represent US Census data.
- Headache frequency, symptoms, sociodemographics and headache-related disability (MIDAS) data were obtained. Surveys were returned by 162,756 individuals aged ≥12. 30,721 reported severe headache.
- CM was defined as ICHD-2 migraine with ≥15 headache days/month; EM was defined as ICHD-2 migraine with <15 headache days/month.
- Crude and sociodemographically adjusted prevalence ratios (PRs) were generated. Male-female contrasts and EM-CM contrasts on MIDAS grade were done using ordinal logistic regression adjusting for sociodemographics (age, gender, race, household income and size, census region, population density).

RESULTS

- In this US population sample, the overall prevalence of CM was 0.91% (males = 0.48%, females = 1.29%).
- CM represented 7.7% of overall migraine cases.
- In crude and adjusted models, CM prevalence was higher in females, during mid-life, and in households with the lowest income (Table 1).
- CM prevalence increased throughout adolescence and mid-life, peaked between age 40-59, and declined after age 50 (Figure 1).
- As a proportion of all migraine, the contribution of CM increased with age (Figure 2).
- Headache-related disability (MIDAS score) among those with CM was significantly greater in females than males (Figure 3).
- Headache-related disability (MIDAS score) was significantly greater among persons with CM compared to EM (Figure 4).

CONCLUSIONS

- In this US population sample, prevalence of CM was approximately 1% which is slightly lower than previous estimates, perhaps because our case definition required self-reported “severe headache” for inclusion.
- CM prevalence was highest among females, reaching approximately 2%, in mid-life, and in lower income households.
- CM represented an increasing proportion of all migraine with increasing age, suggesting that the prevalence of EM declines more quickly with age than CM.
- As reported in prior research, persons with CM reported significantly more headache-related disability than persons with EM.
- Among persons with CM, females reported significantly greater headache-related disability than males.

Table 1. Crude Prevalence and Adjusted Prevalence Ratios for CM

		Crude Prevalence Rates		Adjusted* Prevalence Ratios	
		Males N=374	Females N=1,101	Males	Females
Age (years)	12 thru 17	0.3%	0.5%	ref	ref
	18 thru 29	0.4%	1.9%	1.44 (0.83-2.49)	4.02 (2.76-5.86)
	30 thru 39	0.7%	1.8%	2.83 (1.68-4.77)	4.28 (2.93-6.24)
	40 thru 49	0.8%	1.9%	3.31 (1.99-5.49)	4.71 (3.24-6.83)
	50 thru 59	0.6%	1.3%	2.28 (1.34-3.87)	3.47 (2.36-5.09)
	≥ 60	0.2%	0.5%	0.78 (0.44-1.37)	1.08 (0.72-1.62)
Race	Caucasian	0.5%	1.2%	ref	ref
	African-American	0.7%	1.7%	1.3 (0.9-1.86)	1.01 (0.83-1.22)
	Other	0.6%	2.5%	1.28 (0.87-1.86)	1.14 (0.92-1.42)
Region	New England	0.5%	0.8%	ref	ref
	Middle Atlantic	0.4%	1.2%	0.76 (0.44-1.32)	1.34 (0.93-1.94)
	East North Central	0.4%	1.1%	0.83 (0.49-1.41)	1.26 (0.88-1.82)
	West North Central	0.4%	0.9%	0.68 (0.36-1.27)	1.07 (0.7-1.63)
	South Atlantic	0.5%	1.4%	0.95 (0.57-1.6)	1.58 (1.11-2.25)
	East South Central	0.8%	1.9%	1.03 (0.58-1.83)	1.71 (1.16-2.53)
	West South Central	0.7%	1.7%	1.03 (0.6-1.76)	1.69 (1.17-2.43)
	Mountain	0.5%	1.6%	0.89 (0.49-1.63)	1.77 (1.2-2.61)
	Pacific	0.4%	1.2%	0.79 (0.45-1.38)	1.36 (0.94-1.97)
Market Size (CBSA†)	<100,000	0.8%	1.7%	ref	ref
	100,000-499,999	0.6%	1.5%	0.85 (0.63-1.16)	0.98 (0.81-1.19)
	500,000-1,999,999	0.5%	1.4%	0.77 (0.57-1.04)	0.97 (0.81-1.17)
	≥2,000,000	0.3%	1.0%	0.6 (0.44-0.82)	0.95 (0.79-1.14)
Income	< $22,500	1.3%	2.6%	ref	ref
	$22,500 - 39,999	0.5%	1.4%	0.42 (0.32-0.56)	0.47 (0.4-0.55)
	$40,000-59,999	0.3%	1.0%	0.24 (0.17-0.33)	0.34 (0.28-0.4)
	$60,000-89,999	0.3%	0.7%	0.24 (0.17-0.33)	0.23 (0.19-0.28)
	≥$90,000	0.2%	0.5%	0.18 (0.13-0.26)	0.16 (0.12-0.2)
Household Size	1 member	0.6%	1.1%	ref	ref
	2 members	0.5%	1.1%	1.39 (1.01-1.92)	1.2 (0.98-1.46)
	3 members	0.5%	1.4%	1 (0.69-1.44)	1.23 (0.99-1.53)
	4 members	0.4%	1.2%	0.79 (0.53-1.18)	1.15 (0.92-1.46)
	≥5 members	0.5%	1.7%	1.1 (0.74-1.62)	1.55 (1.23-1.94)

***Adjusted for all covariates in table, adjusted prevalence ratios and 95% confidence limits estimated using log-binomial models predicting migraine status (within gender)**
†CBSA = Core Based Statistical Area (measure of population density)

Figure 1. Prevalence of CM by Gender and Age

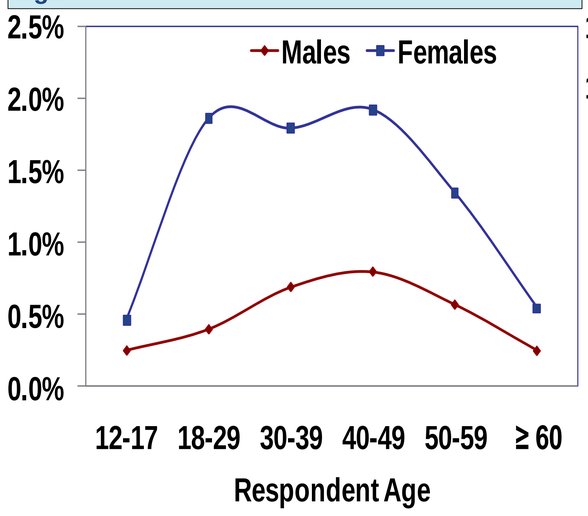


Figure 2. CM as the Proportion of all Migraine by Gender and Age

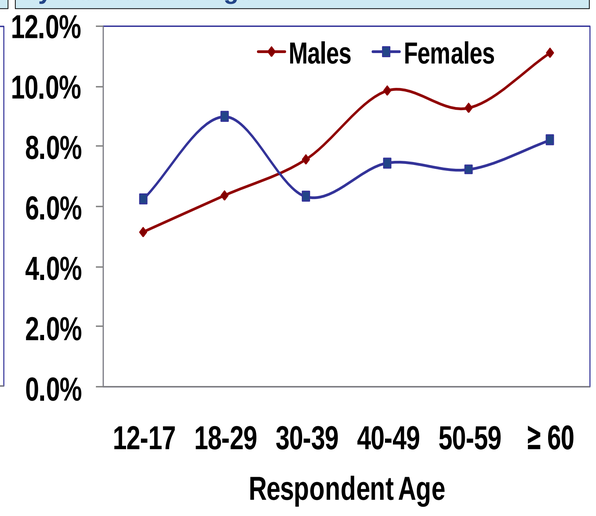


Figure 3. MIDAS Grade Distribution by Gender in CM

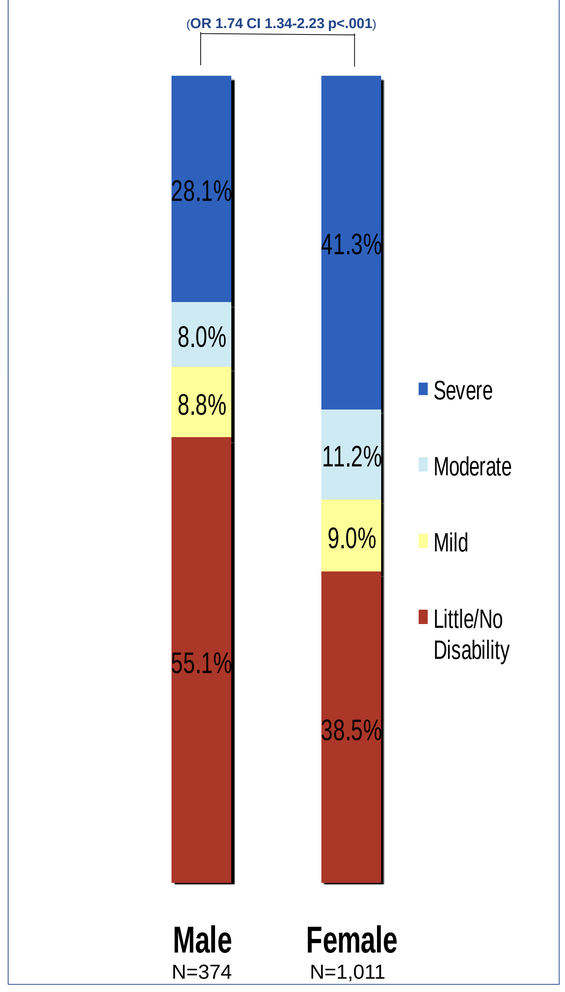
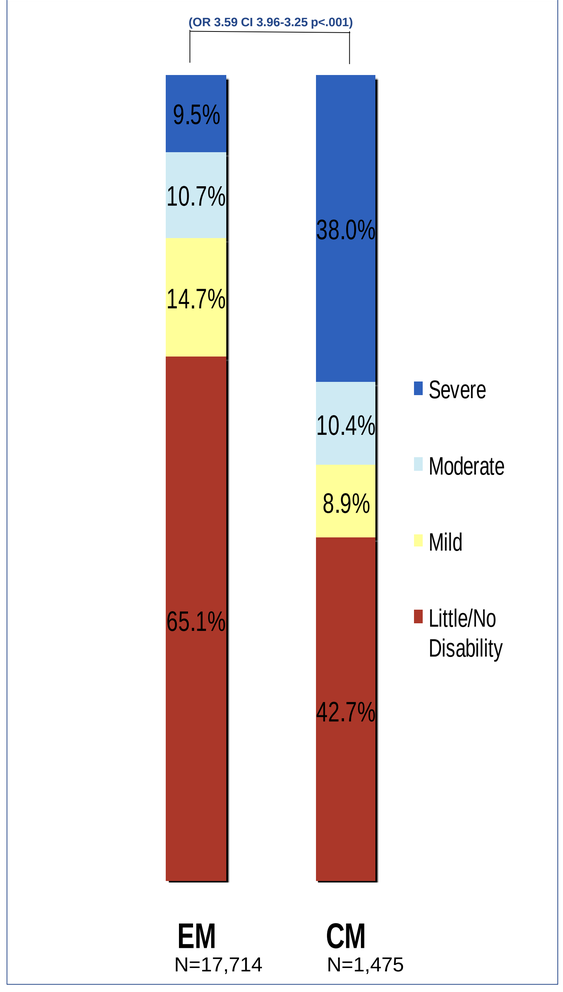


Figure 4. MIDAS Grade Distribution for EM vs. CM



Ordinal logistic regression controlling for demographics (age, gender, race, household income and size, census region, population density.)

The American Migraine Prevalence and Prevention Study is funded through a research grant to the National Headache Foundation from Ortho-McNeil Neurologics, Inc., Titusville, NJ. Additional analyses and poster preparation were supported by Allergan Inc., Irvine, CA.