

# Rates of Stressful Life Events among Chronic and Episodic Migraine: Results of the American Migraine Prevalence and Prevention (AMPP) Study



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## BACKGROUND

- Stress plays an important role in migraine, and may be a trigger for attacks as well as progression from episodic migraine (EM) to chronic migraine (CM).
- Major life events have been related to the onset and maintenance of several chronic illnesses.
- The appraisal of life events as stressful is subjective and may be influenced by cultural, social, and personal factors.
- Chronic migraine is a burdensome and stressful condition, which may be related to higher rates of major life events, and may influence the appraisal of these events as stressful.

## OBJECTIVES

To assess differences cross-sectionally between persons with CM and EM on rates of major life events (MLE) in the course of a year and in the appraisal of these events as stressful (i.e., stressful life events [SLE]) in a population-based sample.

## METHODS

- The AMPP study is a longitudinal, US population-based study with questionnaires mailed to a sample of 24,000 “severe headache” sufferers first identified in 2004 and followed annually between 2005-2009.
- Eligible participants were respondents to the 2007 survey who met ICHD-2 criteria for migraine divided into CM ( $\geq 15$  HA days/month) or EM ( $< 15$  HA days/month).
- Subjects were asked about the occurrence of Major Life Events (MLEs) in the preceding year in the following categories: moving, change in significant relationship status, work/school stressors, events with children, deaths, other extremely stressful situations.
- For endorsed MLEs, respondents were asked “How stressful was this?” on a 5-point likert-type scale where 1 represented “not at all stressful” and 5 represented “very stressful.”
- Responses were dichotomized with a cut score of  $\geq 4$  to identify stressful MLEs denoted as Stressful Life Events (SLEs), then were summed in order to contrast differences in rates of occurrence between persons with CM and EM.
- Respondents with CM were compared to those with EM in terms of the odds of increasing SLEs using a proportional odds model.
- Ordered logistic regressions were used to model the odds of reporting a greater number of SLEs by persons with CM compared to those with EM.

## RESULTS

- In 2007, 14,069 individuals with “severe headache” completed the survey, of which 8,195 reported MLE data and met study criteria for CM (551) or EM (7,644). 6,456 (78.8%) migraineurs reported experiencing at least one MLE in the preceding year and 4,588 (56.0%) reported at least one SLE.

### Major Life Events

- 81.8% of persons with CM reported at least one MLE in the preceding year compared with 78.6% of persons with EM.
- The percentage of respondents with CM and EM reporting no MLEs (18.2% vs. 21.4%), 1 MLE (26.3% vs. 27.5%), 2 MLEs (27.8% vs. 26.0%) and  $\geq 3$  MLEs (27.8% vs. 25.1%) revealed more MLEs among persons with CM. (Table 1)
- The unadjusted cumulative Odds Ratio (OR) indicated that the odds of more frequent MLEs were approximately 19% greater for persons with CM than EM (OR=1.19, 95% CI 1.02-1.38, p=0.03).
- Adjusting this effect for age, gender, race and BMI, increased the trend, with odds of more frequent MLEs being 22% greater for persons with CM than EM (OR=1.22, 95% CI 1.04-1.43, p=0.01).

### Stressful Life Events

- 76.5% of persons with CM who reported a MLE endorsed at least one event as stressful (SLE) in the preceding year compared with 71.4% of persons with EM. Among those who reported a MLE, the percentage of respondents with CM and EM reporting no SLEs (19.3% vs. 23.3%), 1 SLE (32.9% vs. 34.1%), 2 SLEs (27.2% vs. 25.2%) and  $\geq 3$  SLEs (20.7% vs. 17.4%) revealed more SLEs among persons with CM. (Table 2)
- The unadjusted cumulative OR indicated that among those with migraine who reported a MLE, the odds of more frequent SLEs were approximately 25% greater for CM than EM (OR=1.25, 95% CI 1.04-1.49, p=0.02).
- Results were nearly unchanged after adjusting for age, gender, race, and BMI (OR=1.26, 95% CI 1.05-1.51, p=0.01).

Table 1. Rates of Major Life Events

# of MLEs reported in preceding year	CM N=551	EM N=7,644
0	100 (18.2%)	1,639 (21.4%)
1	145 (26.3%)	2,098 (27.5%)
2	153 (27.8%)	1,987 (26.0%)
$\geq 3$	153 (27.8%)	1,920 (25.1%)

Table 2. Rates of Stressful Life Events\* Among Those Who Reported a Major Life Event

# of SLEs reported in preceding year	CM N=426	EM N=5,531
0	82 (19.3%)	1,287 (23.3%)
1	140 (32.9%)	1,888 (34.1%)
2	116 (27.2%)	1,393 (25.2%)
$\geq 3$	88 (20.7%)	963 (17.4%)

\* Sample size for SLEs (Table 2) is less than MLEs (Table 1) because some respondents did not report any MLEs and therefore were not included in Table 2.

## CONCLUSIONS

- We found that persons with CM experienced more major life events in the preceding year, and when MLEs occurred, they were more likely to be perceived as stressful (SLEs) among persons with CM compared to those with EM.
- The directionality of MLEs and SLEs is unknown. Increased rates of MLEs may occur in the lives of those with CM. For example, they may experience problems at work related to the impact of CM. Or, SLEs may arise because those with CM may be more likely to perceive events as stressful.
- The interaction between major/stressful life events and the trajectory of CM requires further study. Longitudinal analyses are required to assess whether MLEs and SLEs are risk factors for, or consequences of, CM. Future work will disentangle this relationship by examining the temporal sequencing of MLEs/SLEs related to new onset CM.