Comparison of Headache-Related Impact (HIT-6) by Migraine Status:
Results from the American Migraine Prevalence and Prevention (AMPP) Study

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BACKGROUND

- Chronic migraine (CM) has been demonstrated to have even greater impact than episodic migraine (EM) on socioeconomic status,[1,2] headache-related-disability,[2,3,4] health-related quality of life,[2,5] direct and indirect costs,[6] and comorbid medical and psychiatric conditions.[1,2]
- The Headache Impact Test (HIT-6), a well validated measure of headache impact, has been used extensively in research and clinical practice with EM.[7]
- A recent publication validated the HIT-6 for use with persons with CM.[8]
- We sought to further explore the validity of the HIT-6 to assess the impact of CM within the general population and report rates of headache-impact between persons with EM and CM.

OBJECTIVES

1. To assess HIT-6 as a useful measure of headache-impact among persons with CM.
2. To report rates of various levels of headache-related impact among persons with EM and CM.

METHODS

- The AMPP study has a longitudinal, population-based, survey design. Respondents were identified in 2004 by screening 120,000 US households. An annual follow-up survey has been sent to a sample of 24,000 severe headache sufferers identified from the 2004 survey in the years 2005-2009. In 2009, the survey was sent to a sample of 16,983 severe headache sufferers, and 10,270 control subjects (non severe headache sufferers identified in 2004.)
- Surveys include questions regarding headache symptomology which allows for the computation of headache type according to ICHD-2 criteria[9] and sociodemographic data. Body mass index (BMI) was calculated from respondent reported height and weight using a standard formula. The Headache Impact Test (HIT-6) was included in the 2009 survey.
- The HIT-6 is a self administered, six-item questionnaire that measures headache-impact in lost time in work, school or social activities, pain severity, fatigue, frustration, and difficulty with concentration. Total sum scores range from 36-78 in the following categories: "no/little impact" (<50), "some impact" (50-55), "substantial impact" (56-59), and "severe impact" (60+).
- To be eligible for analyses, subjects were respondents to the 2009 survey who endorsed experiencing at least one severe headache in the preceding year and either:
    - CM (ICHD-2 diagnosis of migraine and average ≥15 headache days/month) or
    - EM (ICHD-2 diagnosis of migraine and average <15 headache days/month)
- Statistical analyses were conducted using the SAS (Cary, NC) system v. 9.2.1.
- Descriptive statistics along with a cumulative logistic imputation model were utilized to compare groups.
- Descriptive statistics such as means, standard deviations (SDs), and percents were computed using the MEANS and FREQ Procedures. A p value ≤0.05 was used to demarcate statistically significant effects.
- Inferential statistics for HIT-6 models were complicated by the presence of HIT-6 item non-response, this was solved using multiple imputation (MI) techniques.[10]
- In order to determine the difference between EM and CM with regard to HIT-6 score categories, post-imputation, scores in each imputed data set were categorized according to HIT-6 categories. An ordinal logistic regression model was fit to each imputed data sets and results were aggregated using the MIANALYZE procedure in SAS.

Fig. 1 Distribution of Raw and Imputed HIT-6 Scores for EM and CM Populations
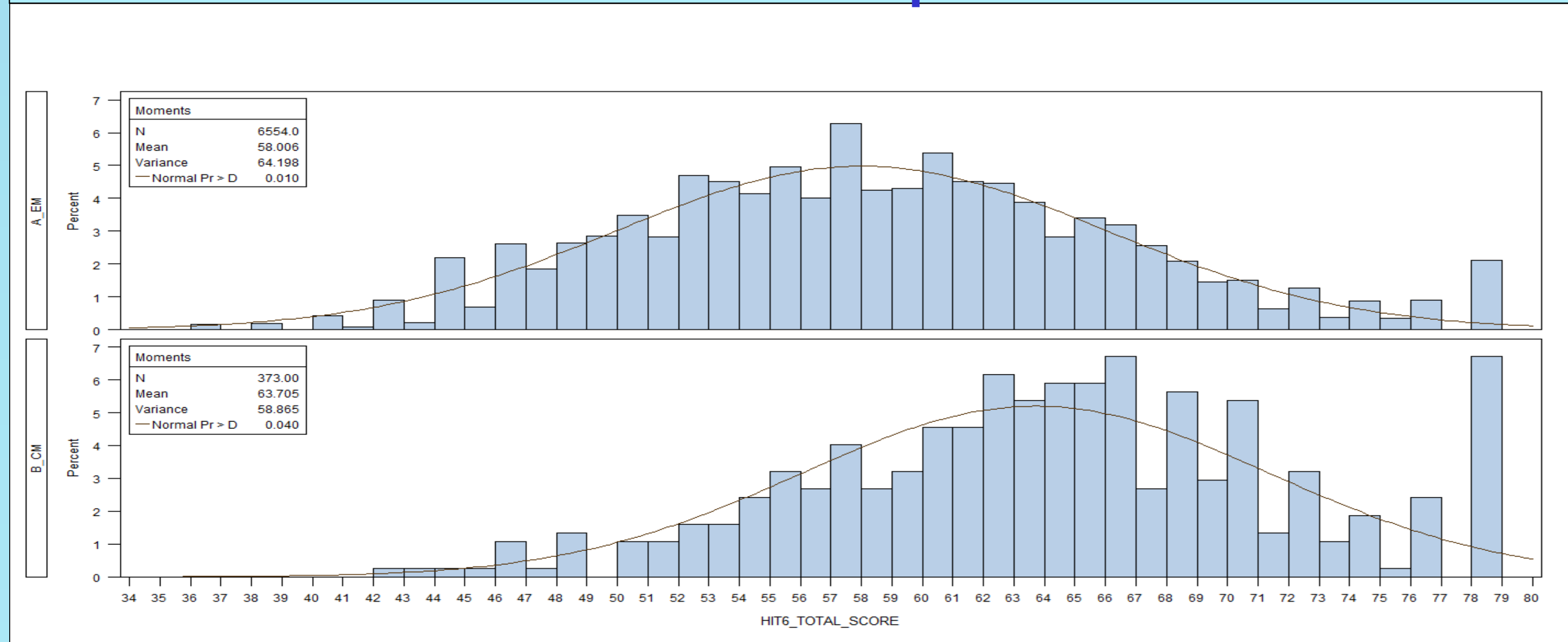
RESULTS

- In 2009, 27,253 questionnaires were fielded, 20,107 were returned (73.8%). 11,792 (69.4%) of surveys sent to headache suffers were returned, of which 9,215 (78.2%) respondents reported at least one headache in the preceding year. 373 met criteria for CM (2.4%) and 6,554 met criteria for EM (41.9%).

Sociodemographics:
- The majority of respondents in both groups were female (80.7% of CM and 78.3 % of EM) and Caucasian (92.0% of CM and EM 89.3% of EM).
- Both groups had an above average mean BMI (CM=30.4, EM=29.6) placing EM respondents in the "overweight" category and CM respondents in the "obese, class 1" category.
- CM respondents tended to be slightly older than EM respondents though differences were not significant.
- Those with CM reported lower average annual household income levels (38.3% of CM and 26.5% of EM <$30,000/year; 17.4% of CM and 28.3% of EM >$75,000/year).

HIT-6 Scores:
- HIT-6 scores in the CM and EM groups were normally distributed. (Fig. 1)
- Average HIT-6 scores were significantly different (b=5.75, 95%CI=4.9-6.6, p<.0001) between CM (64= "severe impact") and EM (58= "substantial impact").
- Those with CM were more likely to be in the "severe" headache-related impact category (72.9% vs. 42.3%). Those with EM had lower levels of impact. The categories "no impact", "some impact", and "substantial impact" were higher for EM compared to CM by 11.0%, 13.1%, and 6.5%, respectively. (Fig. 2)
- An ordinal logistic regression multiple imputation model revealed that respondents with CM had significantly higher odds of greater impact (HIT-6 categories) compared with EM (OR=3.5, 95%CI=2.77-4.41, p<.0001).

Fig 2. HIT-6 Categorical Scores for EM and CM Populations
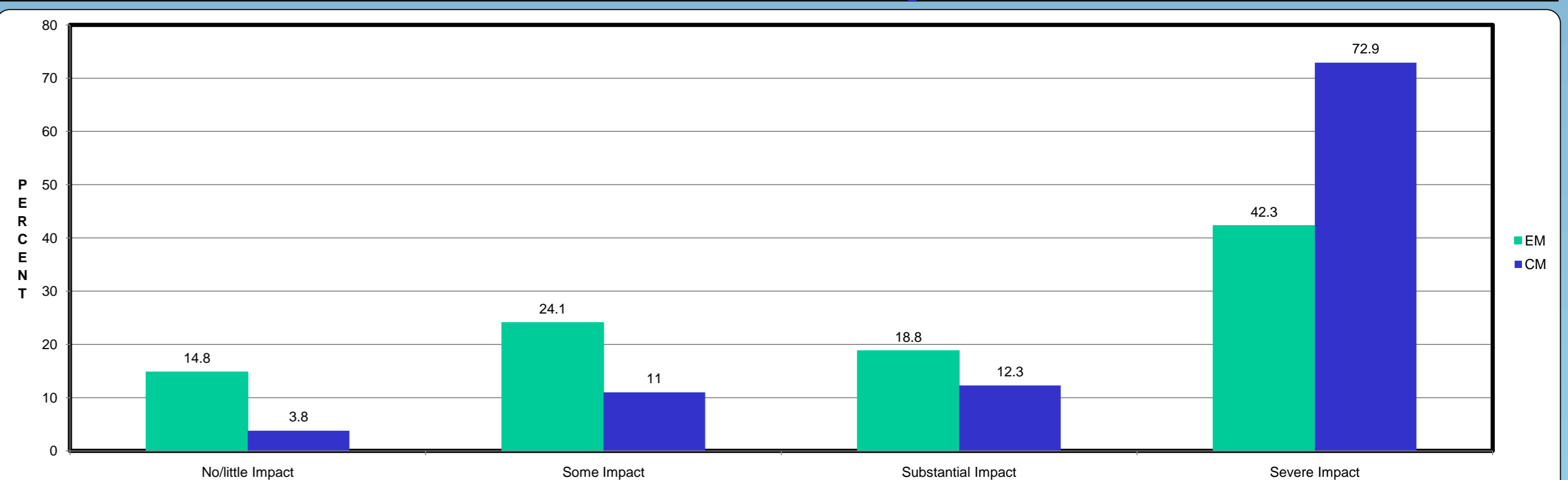
CONCLUSIONS

- Findings demonstrated that persons with CM experience greater headache-impact that persons with EM. Both univariate and ordinal logistic regression multiple imputation models demonstrated that CM respondents had significantly higher odds of greater headache-impact, as measured by the HIT-6 when compared with respondents with EM.
- This work also supports the use of the HIT-6 in a CM sample. HIT-6 scores were normally distributed among both EM and CM groups in this population-based sample.

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