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Results of the American Migraine Prevalence and Prevention (AMPP) Study: Comorbidity of Depression, Obesity, Disability, and Headache

Dawn C. Buse, PhD[1]; Marcelo E. Bigal, MD, PhD[1]; Michael L. Reed, PhD[2]; Seymour Diamond, MD[3]; Merle L. Diamond, MD[3]; Richard B. Lipton, MD[1]

[1]Albert Einstein College of Medicine, Bronx, New York; [2]Vedanta Research, Chapel Hill, North Carolina; [3]Diamond Headache Clinic, Chicago, Illinois, USA.

INTRODUCTION

- The relationship between migraine and depression has been well established in clinic- and population-based studies.[1,2] The relationship of other headache subtypes and depression has also been documented. We sought to explore the prevalence of depression in primary headache subtypes, within different levels of headache-related disability, and in relation to body mass index (BMI) in a large U.S. population sample of headache sufferers

METHODS

Design

- Cross-sectional population analysis

Background & Study Sample

- In 2004, the American Migraine Prevalence and Prevention (AMPP) study survey was sent to a representative sample of 120,000 U.S. households. In 2005, a follow-up survey was sent to a random sample of 24,000 self-identified headache sufferers from the screening survey. Usable surveys were returned by 16,577 individuals (69.1% response rate)

Predictor Variables

- Demographics (including height and weight)
- Headache history, frequency, severity, and symptoms (used for determination of headache subtype according to ICHD-2 criteria[3] for the diagnoses for which it was available [migraine, probable migraine, and tension-type headache]). Silberstein-Lipton criteria[4] was used for other headache subtype diagnoses
- Headache-related disability (Migraine Disability Assessment [MIDAS] Questionnaire)[5,6]
  - MIDAS is a self-administered questionnaire that measures headache-related disability by summing 5 items that assess number of days in the last 3 months when participation/productivity in work, school, or home activities was impacted due to headache. The total score is classified into 4 grades of severity: Grade 1 (minimal or infrequent disability), Grade 2 (mild or infrequent disability), Grade 3 (moderate disability), and Grade 4 (severe disability)
- BMI
  - BMI is a standardized measure of body fat based on height and weight that applies to both adult men and women. BMI was calculated according to the following formula: (weight in pounds/height in inches^2) x 703. We used the standard 5 BMI descriptive categories: underweight (<18.5), normal weight (18.5-24.9), overweight (25-29.9), obese (30-34.9), and morbidly obese (≥35)

Outcome Measure

- Depression (Patient Health Questionnaire-9 [PHQ-9])[7,8]
  - The PHQ-9 is a 9-item self-administered checklist with response options ranging from "Not at all" (0 points) to "Nearly every day" (3 points) and is based directly on the diagnostic criteria for Major Depressive Disorder from the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition (DSM-IV)[9]
  - Following DSM-IV criteria, diagnosis of depression and severity is based upon endorsement of at least one of the first 2 items (anhedonia and depressed mood) with the symptom present more than half the time over the past 2 weeks, plus the summation of the scores of secondary criteria. Total scores are used to determine severity (minimal, moderate, moderately-severe, or severe)
  - We categorized respondents with scores in the 2 most severe categories "Major depression, moderately-severe" (score, 15-19) and "Major depression, severe" (score, ≥20) as depressed

RESULTS

- The estimate of the 1-year prevalence of Major Depressive Disorder in the general U.S. adult non-institutionalized population is 6.6%[10]
- 16.4% of respondents to this survey met criteria for moderately-severe or severe depression. In comparison with episodic tension-type headache (ETTH), rates of depression were highest in transformed migraine (30.3%; OR = 2.91; 95% CI, 2.31, 3.69) and intermediate in migraine (17.8%; OR = 1.45; 95% CI, 1.23, 1.71) (Figure 1)
- The prevalence of moderately-severe and severe depressive symptomology was also found to increase with level of headache-related disability ranging from 11.2% of sufferers who met criteria for MIDAS Grade 1, to 16.2% in Grade 2, 21.1% in Grade 3, and 32.6% in Grade 4 (Figure 2)
- The prevalence of sufferers with moderately-severe or severe depressive symptomology also increased significantly with BMI ranging from 12.3% of "normal" range BMI respondents versus 14.0% of "overweight," 17.8% of "obese," and 24.7% of "morbidly obese" respondents. Respondents in the "underweight" BMI category also had a higher prevalence of moderately-severe or severe depression (19.2%) (Figure 3)

Figure 1. Prevalence of Depression by Headache Subtype

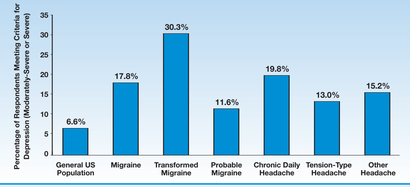


Figure 2. Prevalence of Depression by Headache-Related Disability (MIDAS Category) Among All Headache Sufferers

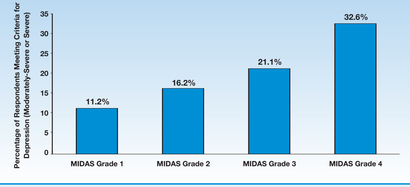
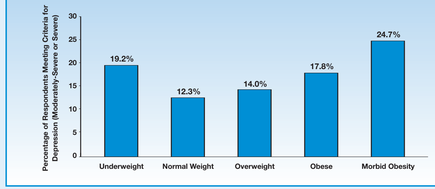


Figure 3. Prevalence of Depression by BMI Among All Headache Sufferers



CONCLUSIONS

- This is the largest population-based sample exploration of the relationships between primary headache subtype, depressive symptomology, BMI, and headache-related disability to date
- Prevalence of depression varied with headache diagnosis and was highest in transformed migraine
- Depression increased with headache-related disability
- Depression increased in all BMI categories compared with "normal weight" and was highest with "morbid obesity"
- The influence of headache diagnosis on the relationship of BMI to depression and of MIDAS grade to depression will be assessed in future analyses

REFERENCES

1. Breslau N et al. Comorbidity of migraine and major affective disorders. *Neurology.* 1994;44(10 Suppl 7):S17-S22.
2. Tietjen GE et al. High prevalence of somatic symptoms and depression in women with disabling chronic headache. *Neurology.* 2007;68:134-140.
3. International Classification of Headache Disorders, 2nd edition. *Cephalalgia.* 2004;24:(Suppl 1):9-160.
4. Silberstein SD et al. Classification of daily and near-daily headaches: proposed revisions to the IHS criteria. *Headache.* 1994;34:1-7.
5. Stewart WF et al. Reliability of the migraine disability assessment score in a population-based sample of headache sufferers. *Cephalalgia.* 1999;19:107-114.
6. Stewart WF et al. Development and testing of the Migraine Disability Assessment (MIDAS) Questionnaire to assess headache-related disability. *Neurology.* 2001;56(6 Suppl 1):S20-S28.
7. Kroenke K et al. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med.* 2001;16:606-613.
8. Spitzer R et al. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. *JAMA.* 1999;282:1737-1744.
9. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders,* 4th edition. Washington, DC; 1994.
10. Kessler RC et al; for the National Comorbidity Survey Replication. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA.* 2003;289:3095-3105.

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