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ORIGINAL ARTICLE

Characterization of Acute Prescription Migraine Medication Use: Results From the CaMEO Study

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Abstract

Objective: To characterize self-reported use of acute prescription medication for migraine in a sample representing the US population.

Patients and Methods: Data were obtained from the Chronic Migraine Epidemiology and Outcomes (CaMEO) Study. The CaMEO Study is an Internet-based cross-sectional longitudinal survey administered between September 17, 2012, and November 19, 2013. Demographic characteristics, migraine-related disability, symptom severity, quality of life, and psychiatric comorbidity profiles were evaluated.

Results: Data from 13,624 respondents were analyzed, including 3121 (22.9%) self-reported current users of acute prescription medication for migraine, 1719 (12.6%) previous/discontinued users, and 8784 (64.5%) who had never used acute prescription medication for migraine. Mean ± SD monthly headache frequency was 7.3±7.1 days for current users, 5.6±6.6 days for those who discontinued, and 3.9±4.9 days for respondents who never used acute prescription medication for migraine. Current users experienced the highest degree of migraine-related disability based on Migraine Disability Assessment scores and the highest levels of migraine symptom severity based on Migraine Symptom Severity Scale scores. Current users also had the highest scores on the depression and anxiety questionnaires. The most commonly reported prescription medications used or "kept on hand" by current users were triptans (47.2%; 1474 of 3121), opioids (37.3%; 1164 of 3121), nonsteroidal anti-inflammatory drugs (31.9%; 997 of 3121), and barbiturates (12.8%; 399 of 3121), with many people reporting more than 1 medication.

Conclusion: Despite reporting moderate to severe migraine-related disability and impairment, many people with migraine have never used acute prescription migraine medication. The burden related to migraine is great, especially among individuals currently using acute prescription medication for migraine.

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Migraine is a chronic and potentially debilitating neurologic disease that is characterized by episodic attacks. It affects approximately 1 in 7 individuals globally, is ranked as the second leading cause of years lived with disability worldwide, prevalence peaks during the ages of 18 to 44 years, and it more commonly affects women. Migraine attacks are characterized by moderate to severe headache pain that is typically unilateral and pulsatile and associated with other symptoms, including nausea, vomiting, or sensitivity to light or sound in various combinations.[1,2] The burden of living with migraine varies from person to person and depends on a number of interconnected variables, including attack frequency, attack severity, associated symptoms, and associated comorbid conditions.[3-5] Migraine can lead to a substantial individual, familial, economic, and societal burden.[3,6-8] Additionally, people with migraine have high rates of comorbid physical (eg, gastrointestinal disorders) and

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psychological (eg, depression and anxiety) health conditions.[9,10]

The main goals of the acute treatment of migraine attacks include rapidly treating the attack with minimal recurrence, reducing the use of additional rescue medications, restoring function, minimizing subsequent resource use, being cost-effective, and minimizing the occurrence of adverse events.[11,12] In addition to widely used over-the-counter medications, a number of prescription medications are currently available for the acute treatment of migraine attacks. Common acute treatments include migraine-specific medications (triptans and ergot derivatives) and nonspecific treatments for pain (nonsteroidal anti-inflammatory drugs and combination analgesics that may include barbiturates or opioids).[13,14] Many people with migraine report dissatisfaction with acute treatments, with a high number discontinuing medication, switching treatments, or adding additional medications in the hopes of finding an effective and tolerable management strategy.[15-18] Furthermore, because of numerous barriers identified in the American Migraine Prevalence and Prevention (AMPP) Study, among those with episodic migraine, only 26.3% traverse all 3 steps toward good care: consulting a health care professional, receiving a diagnosis of migraine, and being treated with an evidence-based acute medication.[19]

Despite numerous approved treatment options, acute treatments of migraine attacks often fail to meet primary treatment goals, which can increase the risk for disease progression.[20-23] Although dissatisfaction with medication may be the reason for suboptimal treatment in many patients, others may have comorbid conditions that are contraindicated for commonly prescribed medications for migraine, thereby limiting treatment choices.[24] Furthermore, with almost 80% of patients willing to try another medication, new options with an improved benefit-risk profile in comparison to current acute treatments are needed.[17] Fortunately, new options for the acute treatment of migraine attacks are currently in development.[25] As new acute medications become available, it will be important for health care professionals to be aware of current patterns and limitations to medication use and to tailor their approach for migraine treatment to the individual patient, including identifying the appropriate use/combination of acute and preventive pharmacologic and nonpharmacologic treatments.

The Chronic Migraine Epidemiology and Outcomes (CaMEO) Study was designed to characterize self-reported migraine in a representative sample of the US population.[26] This analysis of CaMEO data categorized study respondents as those who self-reported currently using, had discontinued, or never used acute prescription medications for migraine. Demographic characteristics, migraine-related disability, quality of life, and psychiatric comorbid condition profiles were evaluated to gain insight into factors influencing inadequate management of migraine attacks.

PATIENTS AND METHODS

Study Design

The CaMEO Study design and baseline data have been previously published.[26] CaMEO is an Internet-based study that collected information on the clinical course of migraine, family burden, barriers to care, and co-occurring or comorbid health problems. Longitudinal survey modules were administered at 3-month intervals, and several independent cross-sectional assessments were administered over the course of a year between September 17, 2012, and November 19, 2013. Invitations to participate were sent via e-mail to 489,537 members of an Internet research panel using quota sampling toward the goal of obtaining a sample representative of the US population. Migraine screening was based on *International Classification of Headache Disorders, 3rd edition* migraine symptom criteria, which was assessed using the validated American Migraine Study/AMPP migraine diagnostic module.

The present analysis used data from a subset of the CaMEO modules collected at baseline, with a focus on acute prescription

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medication use for migraine, including the screening and barriers-to-care modules (administered during stage 1 to all respondents who met the inclusion criteria); the core module (administered during stage 1 and twice during stage 3 at 6 and 12 months); and the comorbid conditions/endophenotypes module (administered during stage 2; Supplemental Figure 1, available online at http://www.mayoclinicproceedings.org).

Study Population and Assessments

Demographic information was collected as part of the screening module. Classification of respondents as current users, discontinued users, or never users of acute prescription medication to treat headache pain was performed based on responses to questions from the barriers-to-care module. Throughout the survey, the term "headache" was used because not all respondents were aware that they met the criteria for migraine or that it had been diagnosed. The question "Which of the following types of headache treatments have you ever used to treat or manage your headache pain?" was used to stratify the sample. Based on endorsement of "Prescription pain medication that you take when you get a headache (or feel one coming on)," respondents were classified as having ever used or never used acute prescription medication. Those who endorsed this initial question were asked, "Which are you currently using (or have on hand) for your headaches?" Respondents selecting acute prescription medication as an answer for only the first question were classified as discontinued users. Respondents selecting acute prescription medication in answer to both questions were categorized as current users.

The analysis population was further refined to remove respondents with contradictory responses regarding acute prescription medication use. For example, respondents may have initially stated that they never used prescription medication to treat their headaches, but then reported in a subsequent question that they kept specific prescription medications on hand. Respondents who indicated they had never used acute prescription medication for migraine were presented with a list of potential reasons (Supplemental Table 1, available online at http://www.mayoclinicproceedings.org). Focus-group discussions with people with migraine and clinician input guided development of the initial "reasons" item set. Presurvey cognitive debriefing eliminated redundant items and confirmed readability and interpretation. For descriptive purposes, items from the list were grouped into 5 domains: treatment is not a priority, self-treatment preferred, concerned with tolerability or adverse effects, concerned with cost of treatment, and needs information and/or help.

Sociodemographic information (age, sex, race, employment, education, household size, and income) and health insurance status were collected in the screening module. Monthly headache day frequency was assessed in the core module by asking the question "On how many days in the past 3 months (previous 90 days) did you have a headache?" Responses were divided by 3 to estimate monthly number of headaches. The core module also included an assessment of headache treatments used within the previous 30 days, including over-the-counter and prescription medications.

Patient-reported outcomes in the core module included the Migraine Disability Assessment (MIDAS), Migraine Symptom Severity Scale (MSSS) score, Migraine-Specific Quality of Life Questionnaire (MSQ), Patient Health Questionnaire 9-item depression questionnaire (PHQ-9), and General Anxiety Disorder 7 anxiety questionnaire (GAD-7; Supplemental Table 2, available online at http://www.mayoclinicproceedings.org).[26] The ability to function with headache was also assessed in the barriers-to-care module with a single question ("How are you usually affected by your headaches?"). Whether respondents were currently consulting a health care provider (HCP) or physician for their headaches was also evaluated. A self-reported diagnosis of co-occurring or comorbid illness was obtained using a precoded list of health

TABLE 1. Sociodemographic and Headache Characteristics by Use of Acute Prescription Medication for Migraine[a]

Characteristic	Acute Prescription Medication Use Status			Total (N=13,624)
	Current Users (n=3121)	Discontinued Users (n=1719)	Never Users (n=8784)	
Age (y), mean ± SD	45.8±13.5	42.1±14.0	39.3±14.4	41.1±14.4
Age group (y), n (%)				
18-24	200 (6.4)	210 (12.2)	1817 (20.7)	2227 (16.3)
25-34	567 (18.2)	421 (24.5)	2152 (24.5)	3140 (23.0)
35-44	723 (23.2)	387 (22.5)	1741 (19.8)	2851 (20.9)
45-54	804 (25.8)	367 (21.3)	1650 (18.8)	2821 (20.7)
55-64	535 (17.1)	207 (12.0)	904 (10.3)	1646 (12.1)
≥65	292 (9.4)	127 (7.4)	520 (5.9)	939 (6.9)
Female, n (%)	2504 (80.2)	1348 (78.4)	6324 (72.0)	10,176 (74.7)
White, n (%)	2678 (86.0)	1508 (88.0)	7429 (85.0)	11,615 (85.6)
Body mass index category, n (%)				
Underweight	47 (1.5)	35 (2.0)	248 (2.8)	330 (2.4)
Normal	925 (29.6)	556 (32.3)	3239 (36.9)	4720 (34.6)
Overweight	909 (29.1)	472 (27.5)	2459 (28.0)	3840 (28.2)
Obese	1240 (39.7)	656 (38.2)	2838 (32.3)	4734 (34.7)
Household income category, n (%)				
<$30,000	565 (18.3)	392 (23.0)	2006 (23.0)	2963 (21.9)
$30,000-$49,999	545 (17.6)	307 (18.0)	1533 (17.6)	2385 (17.6)
$50,000-$74,999	715 (23.1)	364 (21.3)	2003 (23.0)	3082 (22.8)
≥$75,000	1269 (41.0)	644 (37.7)	3177 (36.4)	5090 (37.6)
Current health insurance coverage, n (%)	2876 (92.8)	1429 (84.6)	7134 (84.4)	11,439 (86.4)
Employed, n (%)	2097 (67.2)	1182 (68.8)	6290 (71.6)	9569 (70.2)
Currently consulting with an HCP/doctor, n (%)	2106 (67.5)	215 (12.5)	407 (4.6)	2728 (20.0)
Monthly headache frequency (d), mean ± SD	7.3±7.1	5.6±6.6	3.9±4.9	4.9±5.9
Self-reported health care professional's diagnosis of migraine or chronic migraine,[b] n (%)	2459 (78.8)	1160 (67.5)	1698 (19.3)	5317 (39.0)
Allodynia present (ASC-12), n (%)[c]	1438 (60.2)	673 (50.4)	2501 (37.3)	4612 (44.2)

[a]ASC-12 = 12-item Allodynia Symptom Checklist; HCP = health care provider.
[b]Diagnosis made by HCP.
[c]Current users, n=2388; discontinued users, n=1335; never users, n=6708; total, n=10,431.

conditions in the endophenotype module, which was administered during a subsequent assessment. This module also included the 12-item Allodynia Symptom Checklist, which assesses the frequency of cutaneous allodynia symptoms associated with migraine attacks.[27]

Descriptive data are provided for sociodemographic characteristics, migraine-related symptom severity and disability, treatments used, and rates of clinical depression and anxiety for respondents who were classified as current users, discontinued users, or never users of acute prescription medications. No statistical testing was performed.

RESULTS

CaMEO Analysis Sample

Overall, 13,624 respondents were included in the analysis population (Supplemental

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Figure 2, available online at http://www.mayoclinicproceedings.org). These respondents were divided into 3 categories, based on their current pattern of acute prescription medication use for migraine: 3121 (22.9%) were categorized as current users; 1719 (12.6%) as discontinued users; and 8784 (64.5%) as never users. The categories with the oldest and youngest mean ages were current users and never users (45.8 and 39.3 years, respectively; Table 1). Of 13,624 respondents, most were women (74.7%; n=10,176), most were white (85.6%; n=11,615), and one-third had a body mass index (calculated as the weight in kilograms divided by the height in meters squared) categorized as obese (34.7%; n=4734). More current users (78.8%; n=2459 of 3121) self-reported a health care professional's diagnosis of migraine than discontinued (67.5%; n=1160 of 1719) or never users (19.3%; n=1698 of 8784). Similarly, more current users (67.5%; n=2106 of 3121) were currently consulting with a health care professional about migraine than discontinued (12.5%; n=215 of 1719) or never users (4.6%; n=407 of 8784).

Headache Day Frequency, Associated Symptoms, and Migraine-Related Disability

Mean monthly headache frequency was highest among current users (mean ± SD = 7.3±7.1 days) and lowest among never users (mean ± SD = 3.9±4.9 days; Table 1). Across all respondents, 15.5% (483 of 3121) of current users reported 15 or more headache days per month compared with 11.0% (189 of 1719) of discontinued users and 5.3% (463 of 8784) of never users (Figure 1). Furthermore, cutaneous allodynia was most common in current users. Current users experienced the highest degree of migraine-related disability and symptom severity based on MIDAS (Figure 2) and MSSS scores (Table 2), respectively. A higher percentage of current users (18.8%; n=586 of 3121) reported requiring bed rest as a usual effect of headache, compared with 6.6% (576 of 8784) of never users and 10.6% (182 of 1719) of discontinued users (Table 2). All 3 MSQ domains showed a higher impact of migraine on daily function among current users compared with never or discontinued users.

Pharmacologic Treatment

Use of over-the-counter headache medication was marginally higher among discontinued users (88.7%; n=1524 of 1719) than current users (84.6%; n=2639 of 3121) and never users (85.3%; n=7497 of 8784) of acute prescription medications. The prescription medications that current users most commonly used or kept on hand for headache treatment were triptans (47.2%; n=1474 of 3121), opioids (37.3%; n=1164 of 3121), nonsteroidal anti-inflammatory drugs (31.9%; n=997 of 3121), and barbiturates (12.8%; n=399 of 3121). Only 2.1% (66 of 3121) of current users used ergots, even though they are migraine-specific acute medications. More than one-third of current users (34.5%; n=1078 of 3121) reported current use of preventive medication, compared with 11.5% (198 of 1719) of discontinued users and 6.0% (525 of 8784) of never users. The most common individual reasons for not using acute prescription migraine medication (Supplemental

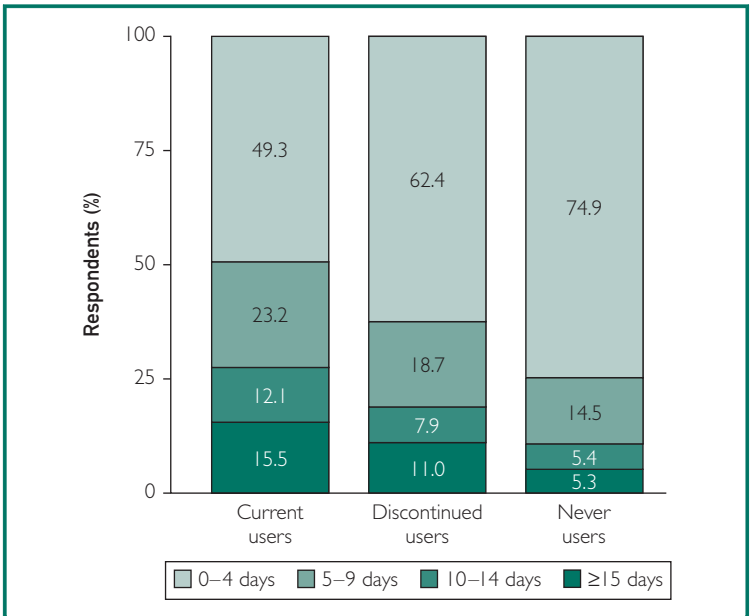

FIGURE 1. Monthly headache day frequency by acute prescription medication use status.

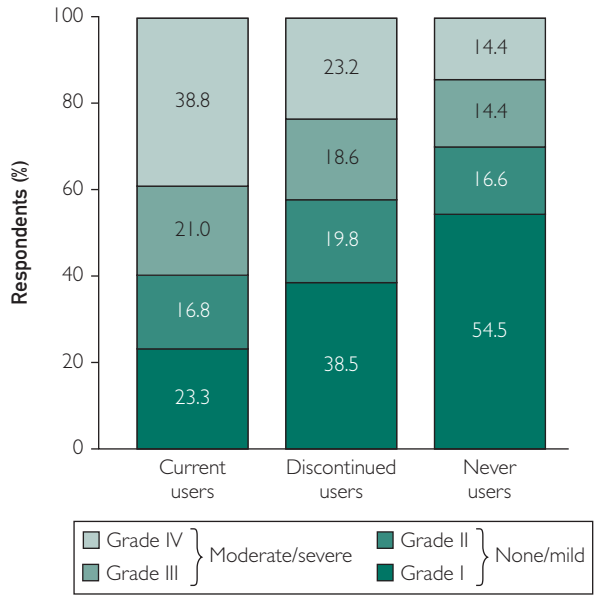

FIGURE 2. Migraine-related disability by acute prescription medication use status.

Table 1) were the following: headaches were not that serious (53.2%; n=4669 of 8784), satisfactory response to over-the-counter medications (42.6%; n=3745 of 8784), and did not want to take a prescription medication (30.4%; n=2674 of 8784).

Comorbid Conditions

Self-reported comorbid conditions were most common among current users (Table 3), including cardiovascular and gastrointestinal comorbid conditions. A greater proportion of current users had moderate to severe levels of depression or anxiety than discontinued or never users, as determined by the PHQ-9 and GAD-7 scores (Table 2).

DISCUSSION

In this cross-sectional descriptive subanalysis of CaMEO Study data, nearly two-thirds of persons with migraine (64.5%; n=8784 of 13624) reported having never used acute prescription medication, 22.9% (n=3121 of 13624) were currently treating with an acute prescription, and 12.6% (1719 of 13624) had discontinued use. Not surprisingly, respondents who never used acute prescription medication were younger, more likely to be men, and reported less migraine-related burden than those who were current or discontinued users. Conversely, current use of acute prescription medication for migraine was more prevalent in older respondents, and current users were more likely to be women and exhibited a greater migraine burden and comorbidity profile. The elevated body mass index, comorbidity burden, and household income seen in current users may be related to their older age. Self-reported comorbid health problems may be associated with an increased number of interactions with health care professionals because those with more severe and/or more frequent migraine were more likely to seek care (ie, Berkson's bias).[28]

Although the degree of migraine-related disability was lower among never or discontinued users than among current users, the degree of disability and migraine-related burden in these subgroups is still clinically meaningful. Respondents who never used acute prescription medications for migraine had the lowest mean monthly headache day frequency, but more than 1 in 10 still experienced at least 10 headache days per month. Respondents who never used acute prescription medications had the smallest migraine burden based on MIDAS, MSSS, and MSQ scores and survey responses; however, 28.8% (2532 of 8784) experienced moderate to severe migraine-related disability and 12% (1051 of 8784) reported severely impaired function or a need for bed rest as a usual effect of headaches. These results suggest a significant level of unmet treatment need in this subgroup. Similarly, discontinued users reported lower levels of disability, depression, and anxiety than current users, but 33.0% (567 of 1719) of discontinued users reported moderate/severe levels of depression based on the PHQ-9 and 30.0% (515 of 1719) reported moderate/severe anxiety based on the GAD-7, suggesting meaningful unmet needs in this population. A full characterization of only the discontinued users from this study has been reported separately.[29]

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TABLE 2. Assessments by Use of Acute Prescription Medications for Migraine[a]

Assessment	Acute Prescription Medication Use Status			Total (N=13,624)
	Current Users (n=3121)	Discontinued Users (n=1719)	Never Users (n=8784)	
PHQ-9 category (depression), n (%)[b]				
None/mild	1953 (62.6)	1152 (67.0)	6355 (72.4)	9460 (69.4)
Moderate/severe	1168 (37.4)	567 (33.0)	2428 (27.6)	4163 (30.6)
GAD-7 category (anxiety), n (%)[b]				
None/mild	2090 (67.0)	1204 (70.0)	6446 (73.4)	9740 (71.5)
Moderate/severe	1031 (33.0)	515 (30.0)	2337 (26.6)	3883 (28.5)
Usual effect of headaches, n (%)				
I work or function normally	335 (10.7)	329 (19.1)	3023 (34.4)	3687 (27.1)
Working ability or activity impaired to some degree	1763 (56.5)	1023 (59.5)	4710 (53.6)	7496 (55.0)
Working ability or activity severely impaired, but no bed rest required	437 (14.0)	185 (10.8)	475 (5.4)	1097 (8.1)
Bed rest required	586 (18.8)	182 (10.6)	576 (6.6)	1344 (9.9)
MSQ score, mean ± SD				
Role function—restrictive	49.8±23.8	60.1±23.4	66.2±22.4	61.7±23.8
Role function—preventive	64.7±25.2	75.9±22.1	81.7±19.7	77.1±22.5
Emotional function	57.0±30.4	69.9±27.7	78.1±24.1	72.2±27.6
MSSS score, mean ± SD	17.1±3.0	15.9±3.0	14.7±3.1	15.4±3.2

[a]GAD-7 = General Anxiety Disorder 7-item questionnaire; MSQ = Migraine-Specific Quality of Life Questionnaire; MSSS = Migraine Symptom Severity Scale; PHQ-9 = Patient Health Questionnaire 9-item depression questionnaire.
[b]Never used, n=8783; total, n=13,623.

In an analysis of AMPP study data, investigators found that only 26.3% (204 of 775) of persons with episodic migraine who were in need of guideline-specific acute prescription medications were actually taking these medications. Those who reported currently using guideline-specific acute treatments were more likely to be younger and have a higher household income.[19] Additionally, 66.7% (204 of 306) of diagnosed current patients who consulted a health care professional about their headaches were using acute migraine-specific treatments.[19] In our study, 22.9% (3121 of 13,624) of respondents were current users of acute prescription medication for migraine and, as has been previously reported, our data suggest a strong relationship between HCP consulting status and acute prescription medication use. Among current users, 67.5% (2106 of 3121) reported currently consulting with an HCP compared with only 4.6% (407 of 8784) of never users.

Our finding that 12.6% (1719 of 13,624) of respondents had discontinued use of acute prescription medication for migraine is lower than reported rates of medication discontinuation or switching in other studies.[20,22,30-32] However, to provide an appropriate comparison, we must first limit our analysis to only those who have ever tried acute prescription treatment for migraine. By removing those who never used acute medications from our sample, the data showed that 35.5% (1719 of 4840) of respondents who ever received an acute prescription medication for migraine discontinued that medication, which is similar to previously published data. *Holland et al*[20] reported that during the period of 1 year, 34.6% of patients had discontinued use of triptans and 59.0% had discontinued opioid use. A multicenter cross-sectional survey of US tertiary-care headache clinics reported that 25.0% of patients discontinued triptan use within a 6-month period.[22] An additional finding of note was that discontinuation rates associated with preventive migraine treatment have been reported from 24.0% to 40.8%.[32]

TABLE 3. Self-reported Comorbid Conditions by Acute Prescription Medication Use Status

Condition, n (%)	Acute Prescription Medication Use Status		
	Current Users (n=3121)	Discontinued Users (n=1719)	Never Users (n=8784)
Pain			
Neck pain (ever had)	1246 (52.2)	610 (45.7)	2238 (33.4)
Chronic back pain (ever had)	835 (35.0)	361 (27.0)	1183 (17.6)
Arthritis (HCP diagnosed)	524 (21.9)	197 (14.8)	587 (8.8)
Osteoarthritis	423 (17.7)	146 (10.9)	385 (5.7)
Chronic pain (ever had)	406 (17.0)	126 (9.4)	310 (4.6)
Insomnia (ever had)	1173 (49.1)	568 (42.5)	2095 (31.2)
Depression (HCP diagnosed)	997 (41.8)	465 (34.8)	1555 (23.2)
Anxiety (HCP diagnosed)	923 (38.7)	418 (31.3)	1410 (21.0)
Cardiovascular			
Hypertension (HCP diagnosed)	664 (27.8)	283 (21.2)	1066 (15.9)
Vertigo, dizziness, or balance problems (ever had)	637 (26.7)	281 (21.0)	1022 (15.2)
Fainting or loss of consciousness (ever had)	326 (13.7)	140 (10.5)	557 (8.3)
Irregular heart rhythms (HCP diagnosed)	297 (12.4)	146 (10.9)	469 (7.0)
Gastrointestinal			
Gastroesophageal reflux disease (HCP diagnosed)	610 (25.5)	241 (18.1)	705 (10.5)
Irritable bowel syndrome (HCP diagnosed)	356 (15.2)	166 (12.6)	435 (6.6)

HCP = health care provider.

Efforts to improve migraine screening for treatment might best be targeted to adults in their mid-30s and younger because these respondents represented approximately half of those who never used acute prescription medications for migraine. Fewer than 1 in 5 of those who never used acute prescription medications had received a migraine diagnosis and less than 5% were managed by an HCP for their headaches. Given the relationship between active acute prescription medication use and consultation status in our data, increasing consultation rates could ensure that more people in this subgroup would receive appropriate treatment, potentially reducing migraine-related disability and the likelihood of disease progression. Furthermore, a greater proportion of male respondents were observed in the never-user group than in the other categories, suggesting that outreach to both sexes would be beneficial. These observations are in agreement with previous recommendations.[19] The fact that current users experienced the highest degree of migraine burden despite actively receiving treatment is further indication of an unmet treatment need in this subgroup. Treatment options with an improved tolerability and efficacy profile are greatly needed to address the needs of these individuals.

The limitations of the CaMEO Study have been discussed previously, including potential selection bias owing to a low survey response rate, potential over-representation of respondents with the strongest opinions or greatest interest in migraine, and over- or under-representation of those with the most severe disease.[26] Confounding by indication was also possible because migraine burden was different between groups with and without current acute prescription medication use. This survey included a systematically recruited sample of people with migraine; it is likely that patients receiving professional medical care have more severe disease and may have nonrepresentative profiles of medication use. As is common in epidemiologic studies of this type, all data were self-reported and were not

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verified by health care professionals or health records. Results are based on patient recall and an understanding of medications taken, which cannot be independently confirmed. Additionally, the study was not able to capture the use of pain medications taken for indications other than migraine; the use of these medications could affect the clinical course of migraine in these participants. The generic term "headache" was used in the survey, and data from respondents with nonmigraine headaches may inadvertently be included in the data set. However, the migraine screening module, which has 100% sensitivity and 82% specificity for migraine diagnosis,[33] was used to minimize the risk for surveying individuals without migraine. Strengths of the CaMEO Study include the large nationwide sampling, a sample selected to be representative of the US Census, and the inclusion of validated instruments.

CONCLUSION

Many people who meet the criteria for migraine, especially younger people and men, have discontinued use of or have never received acute prescription medication for migraine despite relatively high rates of migraine-related burden. There also remains a significant migraine-related burden among those who currently use acute prescription medication for migraine. Improvement in treatment options and access to health care for migraine are needed for diagnosis and management. Greater understanding of the factors underlying these dynamics can foster and improve diagnosis and treatment of migraine across all care settings.

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SUPPLEMENTAL ONLINE MATERIAL

Supplemental material can be found online at http://www.mayoclinicproceedings.org. Supplemental material attached to journal articles has not been edited, and the authors take responsibility for the accuracy of all data.

Abbreviations and Acronyms: **AMPP** = American Migraine Prevalence and Prevention; **ASC-12** = 12-item Allodynia Symptom Checklist; **CaMEO** = Chronic Migraine Epidemiology and Outcomes; **GAD-7** = General Anxiety Disorder 7; **HCP** = health care provider; **MIDAS** = Migraine Disability Assessment Scale; **MSQ** = Migraine-Specific Quality of Life Questionnaire; **MSSS** = Migraine Symptom Severity Scale; **PHQ-9** = Patient Health Questionnaire 9-item depression screener

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