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Please list names of authors who have participated in each category:

Category 1:

a. Conception and design  
Larry Charleston IV, MD, Matthew S. Robbins, MD,

Jeffrey Royce, MD

b. Acquisition of data  
Larry Charleston IV, MD, Jeffrey Royce, MD, Teshamae S. Monticeth, MD,  
Susan W. Broner, MD, Hope L. O'Brien, MD, Salvador L. Manriquez, DDS,  
Matthew S. Robbins, MD

c. Analysis an interpretation of data  
Larry Charleston IV, MD, Jeffrey Royce, MD, Teshamae S. Monticeth, MD,  
Susan W. Broner, MD, Hope L. O'Brien, MD, Salvador L. Manriquez, DDS,  
Matthew S. Robbins, MD

Category 2:

a. Drafting the manuscript

Larry Charleston IV, MD, Matthew S. Robbins, MD, Jeffrey Royce, MD,  
Teshamae S. Monticeth, MD, Susan W. Broner, MD, Hope L. O'Brien, MD,  
Salvador L. Manriquez, DDS

b. Revising it for intellectual content

Larry Charleston IV, MD, Matthew S. Robbins, MD, Jeffrey Royce, MD,  
Teshamae S. Monticeth, MD, Susan W. Broner, MD, Hope L. O'Brien, MD,  
Salvador L. Manriquez, DDS

Category 3:

a. Final approval of the completed manuscript

Larry Charleston IV, MD, Matthew S. Robbins, MD, Teshamae S.  
Monticeth, MD, Jeffrey Royce, MD, Susan W. Broner, MD, Hope L.  
O'Brien, MD, Salvador L. Manriquez, DDS

D'Brien, MD, Salvador L. Manriquez, DDS

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Name (PLEASE PRINT):

Larry Charleston IV, MD

Signature:



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Jason Roberts, PhD  
Managing Editor, *Headache*  
36 Old Mill Lane  
Plymouth, MA 02360 USA  
Fax: (+1) 508-276-0546  
Email: [journal@ahsnet.org](mailto:journal@ahsnet.org)

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**Migraine care challenges and strategies in US uninsured and under-insured adults: A narrative review, Part 1**

Larry Charleston IV, MD, MSc<sup>1</sup>

Jeffrey Royce, MD<sup>2</sup>

Teshamae S. Monteith, MD<sup>3</sup>

Susan W. Broner, MD<sup>4</sup>

Hope L. O'Brien, MD<sup>5</sup>

Salvador L. Manriquez, DDS<sup>6</sup>

Matthew S. Robbins, MD<sup>7</sup>

On behalf of the Underserved Populations in Headache Medicine Special Interest Section of the American Headache Society

1. Department of Neurology, University Of Michigan, Ann Arbor, MI
2. Neuro and Headache Center, SwedishAmerican Hospital, Rockford, IL
3. Department of Neurology-Headache Division, University Of Miami, Miller School of Medicine Miami, FL
4. Manhattan Headache Center of Weill Cornell, New York, NY
5. Cincinnati Children's Medical Center, University of Cincinnati College of Medicine, Division of Neurology, Cincinnati, OH
6. Herman Ostrow School of Dentistry, University of Southern California, Los Angeles, CA
7. Montefiore Headache Center, Department of Neurology, Albert Einstein College of Medicine, Bronx, NY

Corresponding Author:

Larry Charleston IV, MD, FAHS, University of Michigan, Headache Medicine, Assistant Professor, Department of Neurology, PH: 734-936-7910, FAX: 734-936-8763, 1914 Taubman Center, 1500 E. Medical Center Dr. SPC 5316, Ann Arbor, Michigan 48109-5316 [larrycha@med.umich.edu](mailto:larrycha@med.umich.edu)

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**Conflict of Interest**

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**Abstract:**

**Objective:** To review the scope of the problem facing individuals with migraine who are who are under or uninsured. In this first of a two-part narrative review, we will explore migraine epidemiology and the challenges that face this vulnerable population.

**Background:** Implementation of the Affordable Care Act has improved access to health care for many individuals who were previously uninsured, but there are many, particularly those of certain demographics, who are at high risk for worse outcomes.

**Methods:** A narrative review was performed after a series of discussions within the Underserved Populations in Headache Medicine Special Interest Section meetings of the American Headache Society. Literature was reviewed for key concepts underpinning conceptual boundaries and a broad overview of the subject matter. Published guidelines, state-specific Medicaid websites, headache quality measurement set, literature review and expert opinion were used to tailor suggested treatment options and therapeutic strategies.

**Results:** Migraine is a common, yet remains under-diagnosed and associated with worse outcomes among those of under-represented backgrounds and those who are under or uninsured. Low socioeconomic status may play an important role in the disease progression, characteristics, outcome and quality of life of patients with migraine and other headache disorders. Other barriers to optimal care

include time constraints, lack of access to specialty providers, transportation and financial limitations.

**Conclusions:** There are many barriers and challenges that affect people with migraine who are under or uninsured, particularly those of under-represented racial backgrounds and of lower socioeconomic status.

### **Introduction:**

Although the Patient Protection and Affordable Care Act has improved access to medical insurance, barriers persist for some patients to receive appropriate care. Patient cost-sharing, including higher deductibles, has left millions under- or uninsured (1, 2). Underinsurance, previously defined as a lack of needed care or services due to onerous out-of-pocket patient costs in spite of medical coverage, varies considerably by state, (e.g. 19% in California, 31% in Texas) (1, 3-5). A recent report found that historically underserved groups (e.g. young adults, the poor, Latinos, Blacks) have made significant gains in health insurance coverage (6). In spite of this, 16% of 19-64 year old adults remain uninsured. (1) Vulnerable populations in healthcare have been defined to include patients who are racial or ethnic minorities, children, elderly, socioeconomically disadvantaged, underserved, or those with certain medical conditions whom are at risk for disparate healthcare access and outcomes because of economic, cultural, ethnic, or health characteristics.(7)

For many families with health insurance, higher deductibles have outpaced income growth (8). Thirty-one million people (23% of 19-64 year olds)

with health insurance were underinsured because of high deductibles or other patient cost-sharing and 44% of these people reported not getting needed care because of cost. Additionally, 57% of the uninsured did not seek care because of cost (1).

Headache is a leading reason for medical consultation, especially for neurological evaluation.(9, 10) Tension-type headache and migraine are ranked as the second and third most common prevalent disorders, respectively, and migraine is the seventh-highest specific cause of disability worldwide.(11)

We aimed to provide a narrative review of the underserved, underinsured adult population with migraine. We address the epidemiology and challenges that face this population. We suggest strategies to optimize migraine management in patients with minimal to no insurance, provide pearls for counseling patients, review a few high quality low cost migraine medications and suggest resources to help practitioners care for those with little or no insurance. Other considerations that may be helpful when caring for this vulnerable population are explored. This manuscript will be in two parts. In this part (part 1), we will explore migraine epidemiology and challenges in underserved and some vulnerable adult populations. In part two of this narrative review, we will explore migraine care strategies and considerations for adult migraine patients in underserved and vulnerable populations.

### **Methods:**

This narrative review was drafted after a series of discussions at the Underserved Populations in Headache Medicine Special Interest Section meetings of the American Headache Society (AHS) meetings, including a preliminary review at the 2014 AHS Scottsdale Headache Symposium, a detailed point-by-point discussion at the 2015 AHS annual scientific meeting in Washington District of Columbia, and a section meeting at the 2016 AHS annual scientific meeting in San Diego, California for finalization. Conceptual strategies and discussions were also made via teleconferencing and email correspondence. The discussions explicitly addressed subject content, reviewed organizational strategies and details. Pubmed, Scopus and Google Scholar databases were utilized. Search terms included terms such as “underinsured population in migraine”, “underserved population in migraine”, “low socioeconomic status migraine”, “migraine underinsured”, “underserved opioids migraine”, “vulnerable population opioids migraine”, “underserved treatment migraine”, “underinsured treatment migraine” and “affordable care act migraine”. Literature was reviewed for key concepts underpinning conceptual boundaries and a broad overview of the subject matter. Published guidelines, headache quality measurement set, literature review and expert opinion were used to tailor suggested treatment options and therapeutic strategies included in this narrative review. State-specific Medicaid websites were reviewed between 2014-2016 for specified medication costs. The manuscript was drafted and revised by a subcommittee of AHS Special Interest Section members (manuscript authors) over this timeframe.

**Background:**



## **Migraine epidemiology in underserved populations**

### Socioeconomic status

A low socioeconomic status has been posited to impact the presence, onset, and worsening of migraine in the population. A large United States (US) population based study(12) confirmed that migraine prevalence is strongly associated with annual household income, with a 60% higher rate of migraine in lower (<\$10,000) versus higher (>\$30,000) income groups. Though disability was not related to income, attack frequency was higher in lower income groups. The more recent American Migraine Prevalence and Prevention (AMPP) study confirmed this finding in both men and women.(13) For those with an annual household income >\$90,000, migraine prevalence was 13.6% in women and 4.2% in men, but in those with an annual household income <\$22,500, prevalence was much higher at 20.1% in women and 8.8% in men. In adjusted analyses, a household income >\$90,000 reduced the risk by almost 50%.

The AMPP study also addressed the impact of socioeconomic status on migraine prevalence in adolescents, an age group where biological predisposition likely predominates.(14) Household income did not impact migraine prevalence in adolescents with a family history of migraine. However, adolescents without a family history featured a migraine prevalence that increased as household income decreased.

This finding in adolescents supported the social causation hypothesis, where factors that are associated with low socioeconomic status elevate disease prevalence, as opposed to the social selection hypothesis, where disease

disability secondarily leads to a decline in socioeconomic status because of impacted educational and occupational functioning. (14) The social causation hypothesis was further tested in the AMPP study, where an observed higher migraine prevalence in those with lower household income was largely driven by a higher migraine incidence rather than any disparity in migraine remission rates.(15) These findings suggest that migraine onset is strongly driven by exogenous factors that would be more prominent in those with low socioeconomic status, such as physical and psychological stress, abuse and neglect.

Low socioeconomic status may also influence migraine attack frequency and progression from episodic to chronic migraine. Though household income is an unexplored risk factor for chronic migraine onset, those with a less than high school education had a greater than 3-fold risk of chronic daily headache (CDH) in comparison to those with a graduate school education in a population based sample.(16) In addition, the odds of CDH remission were nearly one-fifth in those with less than a high school education in comparison to those with a graduate school education. Data from the National Health Interview survey show that the unemployed or part time employed population is more likely to report headaches than full time workers. Migraine prevalence was higher in the lower income group and varied with insurance status. (17) The uninsured and individuals with Medicaid were more likely to report migraine than individuals with commercial insurance.

#### Racial groups

A recent review of available data from national survey studies addressed discrepancies in prevalence and care for migraine in different racial groups.(18) Migraine prevalence is highest in Native Americans, then Whites, followed by African-Americans, Hispanics and Asian-Americans. Average prevalence of severe headache or migraine from the National Health Interview Survey 2005 to 2012 data was 17.7% for Native Americans, 15.5% for Whites, 14.5% for Hispanics, 14.45% for Blacks, and 9.2% for Asians.(18) However, studies rarely distinguish between subgroups within ethnicities, such as Chinese, Japanese and Korean within US Asians. African-Americans and Hispanics have a disproportionately low number of outpatient visits and specific migraine diagnostic rates in comparison to generic headache diagnoses.(18)

#### Barriers to care in the population

Barriers to migraine care have been addressed in a population based study using the AMPP. Barriers were divided into three levels: medical consultation, diagnosis and use of appropriate therapies. Only 45.5% of those with migraine consulted a health care professional in the previous year, and 86.7% of those were diagnosed with migraine.(19) Only 66.7% were using migraine-specific therapies. In total, only 26.3% of those with migraine traversed all three barriers to care. Having health insurance was associated with a nearly 2-fold increase in receiving a migraine diagnosis, and a high annual household income was the strongest predictor of using appropriate migraine-specific therapy. Related, ineffective acute treatment of episodic migraine is associated with new onset chronic migraine, and as treatment efficacy diminishes, the

proportion of subjects with an annual household income of <\$50,000 escalates.(20) A low socioeconomic status is also associated with increased utilization of the emergency department (ED) for headache care in the US population.(21) Compared to those with an annual household income of >\$90,000, those with an annual household income of <\$22,500 in the previous year had a 2.4-fold higher rate of ED use (at least one visit) and a 11.5-fold higher rate of frequent ED use (at least 4 visits).(21)

### **Challenges to headache care among those on Medicaid, underinsured or uninsured**

There are several challenges to headache care among those on Medicaid, underinsured or uninsured. One study that analyzed eleven years of data from the National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey from 1997-2007, showed that the uninsured and those with Medicaid, receive substandard therapy for migraine, at least in part because they received less care in physicians' offices and more care in EDs.(22)

Transportation to specialized headache care centers poses a problem as headache clinics are few and in some states headache specialty centers do not exist.(23) Individuals with lower incomes may not have the time, financial, social or other resources for coordinated headache care especially if it includes long-distance travel or an inpatient headache stay (childrearing, work loss etc).(24)

One study found disparities among low income or uninsured subjects in that they were less likely to receive triptans, a migraine specific abortive care. (25) One study in Germany, where virtually everyone has health insurance and drug coverage, suggested that disparities exist in the use of new and recommended migraine drug treatments by insurance status; though confirmatory studies in the United States are needed. (26) This discrepancy may be particularly important as ineffective acute treatment is associated with new onset chronic migraine.(20) A recent study has also explored the issue of triptan specific coverage, using New York state as an example in an examination of 100 drug formularies. The coverage of generic and brand name triptans by both commercial and non-commercial insurers was very heterogeneous, though generic sumatriptan, naratriptan, zolmitriptan, and rizatriptan were covered by nearly all plans. The study demonstrated that equitable access was problematic, particularly for specific triptans and formulations, quantity limits, and requirements for step therapy that may be major barriers to care impacting patients specifically with government (noncommercial) insurance plans.(27) The efficacy and cost effectiveness of treatment for, as well as healthcare utilization by individuals with a low socioeconomic/educational status and migraine should be further explored.

Important risk factors for migraine progression may be specifically problematic among people with low educational and income levels that have inadequate insurance. Medication overuse is a common risk factor for migraine progression, and individuals with migraine and a low socioeconomic status may be particularly at risk for developing medication overuse headache. (28) Anxiety

and depression are risk factors for migraine progression and contribute to migraine related disability and impact (29). Underserved populations may also have limitations in access to psychiatric care as well as pharmacological interventions. A multi-disciplinary treatment approach with behavioral management including psychology or biofeedback may be useful, but it is often not covered as a part of basic insurance coverage (Medicaid, etc) and may be too expensive when paid out of pocket.

### **Conclusions:**

Migraine is an extraordinarily common, disabling neurological disorder in the population, but people with under-represented backgrounds and poor health insurance coverage have lower diagnostic rates and worse outcomes. Low socioeconomic status may play an important role in the disease progression, characteristics, outcome and quality of life of patients with migraine and other headache disorders. Other barriers to optimal care include time constraints, lack of access to specialty providers treating both migraine and its comorbidities, therapy coverage, transportation and financial limitations. In part two of this narrative review, we will address management considerations and provide potential strategies to optimize migraine care in patients who are under- or uninsured.

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