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Characterization of patients seeking migraine care via telemedicine in the United States

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INTRODUCTION

- The prevalence of migraine has remained high over the past decades,[1] with continued challenges to access to care.
- In addition, real-world evidence for patients with migraine has been limited because evaluation of the disease severity and treatment effects heavily rely on patient-reported outcome measures (PROMs), which were rarely available in existing real-world data sources.
- The use of telemedicine for treatment of migraine, accelerated by the COVID-19 pandemic, has improved patient accessibility, especially for those who were not able to find successful treatment resolution in primary care.[2,3]
- It also provides a unique opportunity to capture PROMs in the real-world, enabling researchers to understand the disease characteristics and evaluate treatment effects in the real-world practice.
- The current study seeks to describe characteristics of patients seeking migraine care via telemedicine.

METHODS

Data Source

- Thirty Madison's Cove (Cove) is a large asynchronous telemedicine platform that specializes in migraine treatment in the United States (US). It provides patients with personalized treatments and ongoing condition management via unlimited text messages.
- Cove collects comprehensive clinical and patient-reported data such as migraine symptoms, headache frequency and intensity, prior treatments, productivity loss, and healthcare resource use at the initial patient intake as well as the regular check-ins.
- De-identified patient-reported data of 57,218 patients seeking migraine care on Cove between January 2021 and December 2023 collected during the initial patient intake were analyzed in this study.

Statistical Analyses

- Descriptive analyses were conducted for demographics, health conditions, treatment history, lifestyle triggers, headache-related outcomes, healthcare resource utilization, and productivity and activity impairment.
- Mean, standard deviation (SD), median, and interquartile range (IQR) were reported for continuous variables. Counts and proportions (%) were reported for categorical variables.

RESULTS

Demographics

- Of the 57,218 patients seeking migraine care on Cove, the mean age (± SD) was 37.2 (± 10.5) years (**Table 1**).
- 72.6% of patients were female and 53.1% were White. Sex and race were missing for 16.4% and 37.4% of patients, respectively (**Table 1**).

Table 1. Patient demographics

Age (years)	
Mean ± SD	37.18 ± 10.50
Median (IQR)	36 (29.00, 44.00)
Missing	6 (0.01%)
Sex	
Female	41,524 (72.57%)
Male	6,288 (10.99%)
Missing	9,406 (16.44%)
Race	
White	30,369 (53.08%)
Hispanic or Latino	3,161 (5.52%)
Black or African American	2,232 (3.90%)
Asian	1,491 (2.61%)
American Indian or Alaska Native	509 (0.89%)
Native Hawaiian or Other Pacific Islander	146 (0.26%)
Other	235 (0.41%)
Missing	21,416 (37.43%)

Headache related characteristics

- Patients reported having an average of 11.3 (± 7.4) headache days per month with an average headache intensity of 7.5 (± 1.7) measured on a scale from 0 to 10 (**Table 2**).
- The top 5 lifestyle triggers reported by patients were stressful situations (61.5%), too little sleep (44.8%), menstruation (42.0%), skipped meals (31.3%), and alcohol (25.0%) (**Table 2**).
- 65% of patients had a Migraine Disability Assessment Scale (MIDAS)[4] score of Grade 3-4 (**Figure 1**).
- The mean and median of MIDAS score were 54.41 (± 53.75) and 38, with MIDAS score missing in 27.5% of patients (**Table 3**). Note that the data showed substantial variability indicated by the large SDs.

Figure 1. Headache severity based on MIDAS score

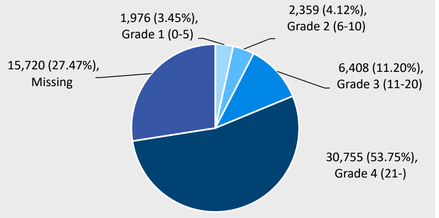


Table 2. Headache characteristics

Headache pain intensity	
Mean ± SD	7.50 ± 1.68
Median (IQR)	8 (7.00, 8.00)
Missing	61 (0.11%)
Top 5 lifestyle triggers that consistently result in headache	
Stressful situations	35,212 (61.54%)
Too little sleep	25,641 (44.81%)
Menstruation	24,004 (41.95%)
Skipped meals	17,893 (31.27%)
Alcohol	14,299 (24.99%)
None of the above or missing	7,769 (13.58%)

- On average, patients reported missing 4.6 (± 8.6) days of work or school due to headaches and having 13.0 (±14.7) days where productivity was reduced by half or more in the three months prior to their intake consultation (**Table 3**). The median was 3 days and 10 days, respectively.
- Patients also reported an average of 14.3 (± 15.0) days of being unable to do household work and 8.6 (±12.4) days of missed family, social, or leisure activities (**Table 3**). The median was 10 days and 5 days, respectively.

Table 3. Productivity and activity impairment in the last 3 months

MIDAS score	
Mean ± SD	54.41 ± 53.75
Median (IQR)	38 (20.00, 70.00)
Missing	15,720 (27.47%)
Number of days with missed work or school	
Mean ± SD	4.63 ± 8.62
Median (IQR)	3 (0.00, 5.00)
Missing	11,160 (19.50%)
Number of days with productivity at work or school reduced by half or more	
Mean ± SD	13.01 ± 14.65
Median (IQR)	10 (4.00, 15.00)
Missing	11,160 (19.50%)
Number of days with the inability to do household work	
Mean ± SD	14.28 ± 14.98
Median (IQR)	10 (5.00, 20.00)
Missing	11,160 (19.50%)
Number of days with productivity in household work reduced by half or more	
Mean ± SD	14.33 ± 15.49
Median (IQR)	10 (5.00, 20.00)
Missing	11,160 (19.50%)
Number of days with missed family, social or leisure activities	
Mean ± SD	8.58 ± 12.42
Median (IQR)	5 (2.00, 10.00)
Missing	11,160 (19.50%)

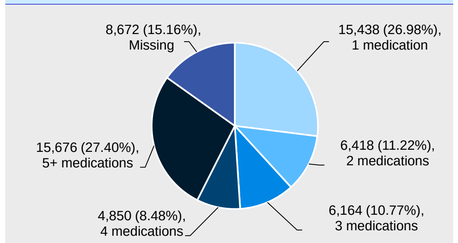
Treatment history

- Most patients were taking or had previously tried at least one medication to treat their migraine (84.9%) (**Table 4**).
- 78.8% and 37.1% of patients were currently using or had previously used an acute and preventive treatment, respectively (**Table 4**). 27.4% of patients had previously tried five or more medications (**Figure 2**).
- Over-the-counter combination analgesics (37.8%), sumatriptan (37.8%), ibuprofen (37.1%), acetaminophen (36.7%), and topiramate (23.6%) were the most common medications reported by patients (**Table 4**).

Table 4. Treatment history at Intake

Prior or current medications	
Yes	48,553 (84.86%)
No	8,592 (15.02%)
Missing	73 (0.13%)
Intended indication of prior or current medications	
Acute	45,087 (78.80%)
Preventive	21,208 (37.07%)
Other	3,279 (5.73%)
Missing	8,672 (15.16%)
Top 5 medications a patient has tried or is currently taking to treat headaches	
Over-the-counter combination analgesics	21,647 (37.83%)
Sumatriptan imitrex	21,641 (37.82%)
Ibuprofen advil	21,231 (37.11%)
Acetaminophen tylenol	20,990 (36.68%)
Topiramate topamax	13,476 (23.55%)

Figure 2. Number of unique medications among patients previously treated



Healthcare resource utilization

- Most patients had previously seen a general practitioner for headaches (72.0%). 38.5%, 24.9%, and 18.7% of patients had sought headache-related care from a neurologist, an emergency room, or urgent care setting, respectively (**Figure 3**).
- 32.2% of patients had undergone a diagnostic imaging test for headaches (**Table 5**).

Figure 3. Healthcare professionals ever seen for headaches

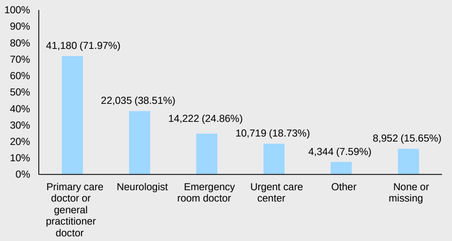


Table 5. Diagnostic tests ever performed for headaches

Imaging	18,444 (32.23%)
Blood	9,840 (17.20%)
Eye exam	1,641 (2.87%)
Spinal tap	1,487 (2.60%)
Other	1,170 (2.04%)
No diagnostic tests reported	37,029 (64.72%)

DISCUSSION AND CONCLUSIONS

- Telemedicine has become an integral part of migraine management in the US, yet relatively little is known about the characteristics of patients who seek care via this modality.
- This study offers a thorough characterization of more than 50,000 patients utilizing telemedicine for migraine treatment.
- Patients seeking care via telemedicine tend to suffer from severe migraine.
- Despite prior medication attempts, patients reported substantial burden due to migraine, highlighting the need for accessible and specialized migraine care in the US.

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CONFLICTS OF INTEREST

JB, ML, AJ, LA, KHB, and JC are employees and own stocks in Pfizer. CX and JS are employees of Analysis Group, Inc., which received funding for this study from Pfizer, Inc. SC, ML, and EM are employees of Thirty Madison, which licensed the de-identified data for this study.

ACKNOWLEDGEMENTS

The authors would like to thank Ian Nason, Joe Liu, and Alice for their inputs on the data analysis.

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Presented at the American Headache Conference 66th Annual Scientific Meeting, June 13, 2024, San Diego, California, USA