

# Epidemiology, Treatment Landscape, and Healthcare Resource Utilization for Patients with Migraine in Canada: A Literature Review



Scan the QR code to receive a PDF of the poster

Erin Graves,<sup>1</sup> Brittany Gerber,<sup>1</sup> Eileen Shaw,<sup>1</sup> Michelle Mayer,<sup>1</sup> Tara Cowling,<sup>1</sup> Joanna Bougie,<sup>2</sup> Marie-Pier Ladouceur<sup>2</sup>

<sup>1</sup>Medlior Health Outcomes Research Ltd., Calgary, AB, Canada; <sup>2</sup>Lundbeck Canada, Montreal, QC, Canada

## KEY POINTS

- Migraine, especially chronic migraine, has a detrimental impact on quality of life, employment, caregiving, HCRU and costs in Canada.
- Included studies found varied use of medications and high rates of health systems interactions, including ED visits, suggesting that current management and treatment strategies may not be effective.
- The review also found that effective acute and preventive medications, such as triptans, were underutilized among Canadian patients with migraine.
- Outside of self-reported survey data, there is limited evidence available in Canadian populations regarding the burden of illness of migraine.

## CONCLUSIONS

- The burden of migraine in Canada is substantial.
- Patients with chronic migraine have higher HCRU and costs, as well as lower quality of life, compared to those with episodic migraine.
- Higher healthcare costs and reduced quality of life demonstrate an unmet need for effective management of this condition.
- The underutilization of effective treatments and higher rates of unemployment also highlight an important gap in the management of migraine in Canada.

## Introduction

- Headache disorders, including migraine, are the third leading cause of disability globally.<sup>1</sup>
- As of 2011, an estimated 2.7 million Canadians (8.3% of the population) have been diagnosed with migraine.<sup>2</sup>
- Understanding the burden of disease and current treatment patterns is critical for the development of new treatment strategies and improved patient care for migraine.

## Objectives

- To describe the treatment landscape and clinical and economic burden of migraine in Canada via a literature review.

## Methods

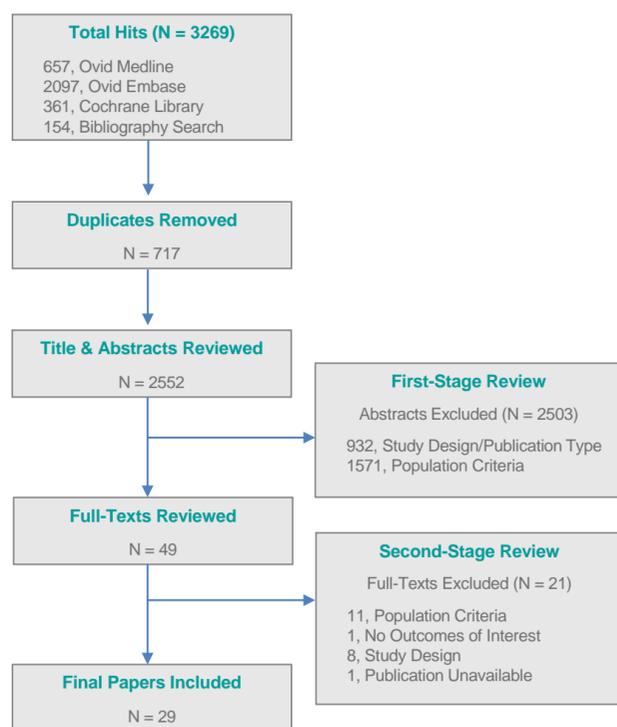
- A search strategy using key terms for migraine was executed in MEDLINE®, Embase, and the Cochrane® Library between August 2010 and August 2020 for Canadian populations with migraine.
- Outcomes of interest included prevalence, clinical or economic measures, and treatment patterns.
- Title/abstract screening, full-text screening, and data extraction were completed by a single reviewer; quality appraisal was not conducted.
- Only peer-reviewed, full-text publications from the past ten years and in the English-language were included.

## Results

### Overview

- In total, 29 studies were included (Figure 1); the provincial/territorial distribution of the included studies is shown in Figure 2.

Figure 1. PRISMA Diagram



### Prevalence/Incidence

- Thirteen studies reported incidence or prevalence.<sup>2,14</sup>
- A nationally representative longitudinal study reported a cumulative incidence of migraine of 12.4% (CI: 11.5-13.5) in the follow-up period (1994/1995-2006/2007).<sup>9</sup>
- At the national level, prevalence estimated ranged from 8.3%<sup>2</sup> to 10.2%<sup>5</sup>, with data coming from several national surveys. At the provincial level, estimates ranged from 6.8% (Quebec)<sup>2</sup> to 10.7% (Ontario).<sup>11</sup>

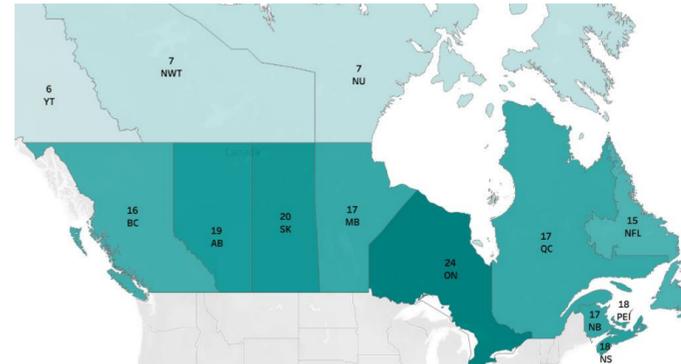
### Treatment Landscape

- Nine studies examined migraine treatment.<sup>2,4,15-21</sup>
- The proportion of patients taking OTC and prescription medications varied across studies; patients often utilized a variety of medications, and those with chronic migraine tend to have increased medication use compared to those with episodic migraine.<sup>7,12</sup>
- Self-reported medication use is reported in Figure 3.
- Triptan use varied substantially between provinces in a study of prescription claims.<sup>15</sup>
- Of surveyed physicians from Ontario EDs, approximately 66% reported that they did not use triptans in treating migraine patients, and among departments with headache protocols, fewer than 1% included triptans.<sup>17</sup>
- A retrospective chart audit of patients attending the Medication Assessment Center in Saskatchewan found that 11% of 36 patients studied were taking opioids for migraine.<sup>21</sup>
- One study reported that of patients referred to a tertiary care pain clinic for migraine, 48% had tried at least 1 triptan, and only 31% were actively using a triptan; while 72% were taking an opiate and 27% were taking multiple opiates.<sup>18</sup>
- Two studies reported that only a small number of patients had utilized preventive medications, and that they were used to a greater extent by those with chronic migraine (22%-40%) compared to those with episodic migraine (9%-25%).<sup>19,20</sup>

### Burden of Illness

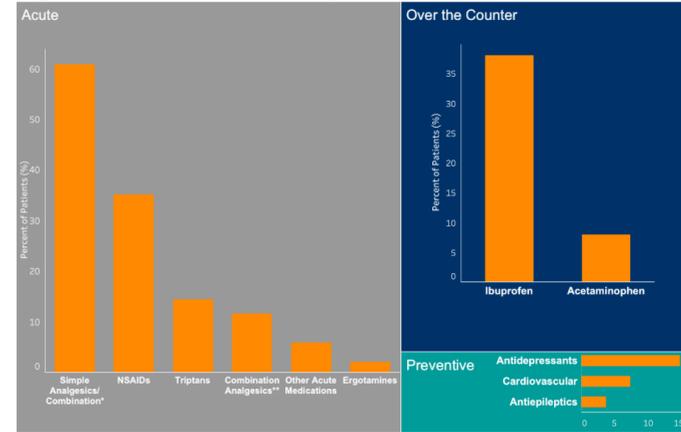
- Comorbidities were examined in 22 studies<sup>2,3,5-13,18-20,22-29</sup> (Figure 4).
- Comorbidities were common among migraine patients, especially those with chronic migraine.
  - In one study, 74% of patients with chronic migraine reported having more than 2 comorbidities (vs. 45% with episodic).<sup>19</sup>
- Mental health comorbidities, including anxiety, depression, and suicide ideation were reported across several studies in persons with chronic and episodic migraine.<sup>10,23-26</sup>
- Three studies<sup>19,20,28</sup> used MIDAS scores to assess migraine severity and disability (Figure 5).
- The included studies found that those with chronic migraine had poorer labour force outcomes than those with episodic migraine.
  - Employment rates were lower in patients with chronic migraine (32.7% to 50.0%) for a full-time position than those with episodic migraine (46.0% to 71.8%).<sup>20,28</sup>
  - One study noted that comorbid mental health and/or psychiatric conditions were further detrimental to employment outcomes in people with migraine.<sup>10</sup>
- Migraine was associated with increased HCRU, including a greater number of physician visits, compared to those without headache.<sup>4,14,29</sup>
- Chronic migraine tended to be associated with increased HCRU with rates of health system use in the prior 3 months ranging from 22% - 52% (vs. 16.0% to 35.0% among those with episodic migraine).<sup>19,20</sup>

Figure 2. Geographic Distribution of Included Studies



AB, Alberta; BC, British Columbia; MB, Manitoba; NB, New Brunswick; NFL, Newfoundland and Labrador; NS, Nova Scotia; NU, Nunavut; NWT, Northwest Territories; ON, Ontario; PEI, Prince Edward Island; QC, Quebec; SK, Saskatchewan; YT, Yukon; Note: Several studies includes more than 1 province.

Figure 3. Medication Use as Reported in Included Studies<sup>4,20</sup>



\*Combinations including opiates or barbiturates; \*\*Combinations excluding opiates or barbiturates

Figure 4. Frequency of Comorbidities in Included Studies

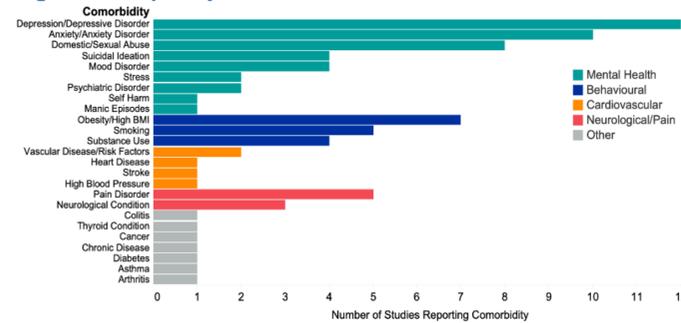
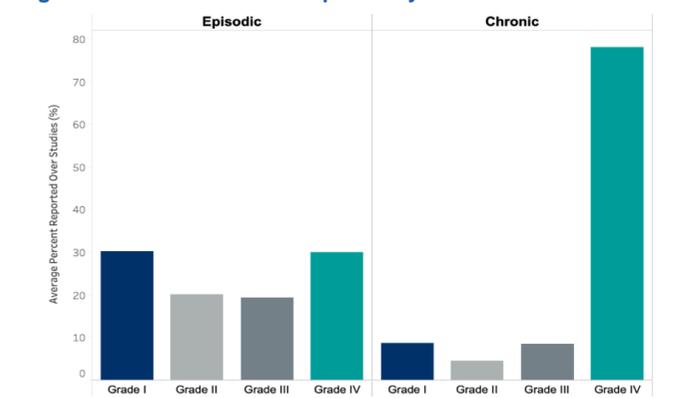


Figure 5. MIDAS Scores as Reported by Included Studies<sup>19,20,28</sup>



Note: Grade I, little or no disability; Grade II, mild disability; Grade III, moderate disability; Grade IV, severe disability

## References

- Steiner, T. J., et al. *J Headache Pain*. 2015; 16(58).
- Ramage-Morin, P. L. et al. *Health Rep*. 2014; 25(6):10-6.
- Brennenstuhl, S. et al. *Headache*. 2015; 55(7):973-83.
- Cooke, L. J. et al. *Can J Neurol Sci*. 2010; 37(5):580-7.
- Dooley, J. M., et al. *Cephalalgia*. 2016; 36(10):936-42.
- Fuller-Thomson, E., et al. *Headache*. 2010; 50(5):749-60.
- Hammond, N. G. et al. *Headache*. 2020; 60(6):1111-1123.
- Hinnell, C., et al. *Epilepsia*. 2010; 51(5):853-61.
- Modgill, G., et al. *Headache*. 2012; 52(3):422-32.
- Nguyen, T. V. et al. *Headache*. 2013; 53(3):498-506.
- Slatculescu, A. M. et al. *Neuroepidemiology*. 2018; 51(3-4):183-189.

- Sommer, J. L., et al. *J Affect Disord*. 2019; 257(562-567).
- Swanson, S. A., et al. *BMJ Open*. 2013; 3(3):1-6.
- Wolfson, C., et al. *Eur J Neurol*. 2019; 26(2):356-362.
- Amadio, A., et al. *Headache*. 2015; 55 Suppl 4(212-20).
- Metcalfe, A., et al. *BMC Complement Altern Med*. 2010; 10(58).
- Nijjar, S. S., et al. *Pain Res Manag*. 2011; 16(3):183-6.
- Nijjar, S. S., et al. *Cephalalgia*. 2010; 30(1):87-91.
- Sanderson, J. C., et al. *J Neurol Neurosurg Psychiatry*. 2013; 84(12):1309-17.
- Stokes, M., et al. *Headache*. 2011; 51(7):1058-77.
- Bhimji, H., et al. *Can Pharm J (Ott)*. 2020; 153(3):148-152.
- Altura, K. C., et al. *Can J Neurol Sci*. 2019; 46(2):216-223.

- Colman, I., et al. *Headache*. 2016; 56(1):132-40.
- Fuller-Thomson, E., et al. *Arch Suicide Res*. 2020; 24(sup1):360-379.
- Fuller-Thomson, E., et al. *Headache*. 2017; 57(3):375-390.
- Fuller-Thomson, E., et al. *Depress Res Treat*. 2013; 2013(401-487).
- Hammond, N. G. et al. *Headache*. 2019; 59(9):1547-1564.
- Sajobi, T. T., et al. *BMC Neurol*. 2019; 19(1):53.
- van Walraven, C. et al. *J Clin Epidemiol*. 2016; 71(68-75).

## Abbreviations

CI: confidence interval; ED: emergency department; HCRU: health care resource utilization; MIDAS: migraine disability assessment; NSAIDs: non-steroidal anti-inflammatory drugs; OTC: over the counter; PRISMA: preferred reporting items for systematic reviews and meta-analyses;

## Acknowledgments

This study was funded by Lundbeck Canada Inc. We would like to thank the following individuals for their contributions: Rhiannon Campden for title/abstract screening, full text screening, and data extraction, and Kellie MacLean for creating the figures included in the poster.

## Disclosures

Graves E, Gerber B, Mayer M, Shaw E, and Cowling T are employed by Medlior Health Outcomes Research Ltd., which received funding for the study from Lundbeck Canada Inc. Bougie J and Ladouceur MP are employed by Lundbeck Canada Inc., who funded this study.