

A 3D illustration of a human head in profile, facing right. The interior of the head is depicted as a dark, stormy sky with bright white lightning bolts striking across it. Rain is shown as numerous small white lines falling throughout the head's interior.

REAL-WORLD IMPACT OF MIGRAINE ON CANADIANS' PRODUCTIVITY

A Cross-Sectional Pharmacy-Based Study

July 2025

SUMMARY

BACKGROUND

Migraine affects numerous aspects of life, including work and school productivity.

Although triptans are the cornerstone of acute treatment, up to 40% of patients fail to achieve satisfactory symptom relief, which may impact work productivity.

This study assessed the impact of migraine on work productivity in adults using triptans.

METHODS

A **cross-sectional observational study** was conducted on adults with migraine using any triptan formulation in a real-world setting. Data collection was performed using the **PROxy Network**. Patient identification was conducted by 10 pharmacy members of the PROxy Network (Quebec, Canada). Self-reported migraine frequency was used to determine the type of migraine: episodic (1-6 days/month), frequent episodic (7-14 days/month), and chronic (≥ 15 days/month). Migraine Disability Assessment Scale evaluated productivity loss, and costs were calculated in Canadian dollars using the 2022 average hourly wage from Statistics Canada.

RESULTS & CONCLUSION

Among 100 participants recruited, 92 met the inclusion criteria; the majority were female, and the mean age was 44.1 years. 54%, 33% and 13% had episodic, frequent episodic, and chronic migraine, respectively.

The average proportion of time attributed to productivity loss was significantly higher in frequent episodic (26.6%) and chronic migraine (44.6%) compared to episodic migraine (9.3%).

Presenteeism accounted for 7%, 19% and 21%, while absenteeism accounted for 2%, 8% and 24% of productivity loss, respectively. Monthly productivity loss costs averaged CAD262.13 (episodic), CAD639.20 (frequent episodic) and CAD1,375.74 (chronic) per patient.

This PROxy study highlights significant migraine-related productivity impairment despite triptan treatment, particularly in frequent episodic and chronic migraine cases.



PROXY, AN INNOVATIVE RESEARCH PLATFORM DESIGNED SPECIFICALLY TO COLLECT PATIENT-REPORTED OUTCOMES (PROS).

The primary objective of this initiative is to facilitate the generation of patient-centred evidence that supports the integration of healthcare innovation.

This unique initiative integrates the collaboration of interdisciplinary stakeholders within the community, including more than 100 community pharmacists in Quebec, patient associations, healthcare practitioners, and patient support programs. PROs collected through the network include, but are not limited to, quality of life, healthcare resource utilization, patient satisfaction, and caregiver burden.

PROxy is an innovative approach that enables rapid access to key insights into the impact of diseases or treatments from a patient perspective.



MIGRAINE

A PREVALENT DISABLING NEUROLOGICAL DISORDER

25%

OF WOMEN¹

8%

OF MEN¹

10%

OF CHILDREN¹

Migraine impacts an estimated 5 million Canadians, with a higher occurrence among women than men.¹ Given its high prevalence in the working population (12.1% are aged between 30 to 49 years old), migraine has been identified as the leading cause of disability in the peak productive years of an individual and ranks as the second most disabling medical condition.^{1, 2}

Migraine frequency can vary over time, leading to different classifications: episodic migraine (EM), frequent EM, and chronic migraine (CM).³ Migraine Canada defines EM as fewer than 15 headache days per month, frequent EM as 7-14 days, and CM as 15 or more.⁴ Beyond frequency, migraines cause significant disability, persistent pain, and functional impairments, often leading to work impairments.⁵ Among Canadian employees with migraine, 23% report being on short-term disability and 18% being on long-term disability.⁶

The goal of preventive treatments is to reduce the frequency, severity, and duration of migraine attacks and lessen the associated disability.^{7, 8} However, these treatments do not eliminate migraine, so patients still require acute therapies to alleviate symptoms during attacks.⁹ These include both non-migraine (e.g., analgesics, non-steroidal anti-inflammatory drugs, acetaminophen, opioids, anti-emetics and ergotamine) and migraine-specific medications like triptans.^{10, 11}

Seven triptans are approved in Canada: sumatriptan, naratriptan, zolmitriptan, rizatriptan, almotriptan, eletriptan, and frovatriptan. While triptans are the cornerstone of acute treatment, up to 40% of patients do not achieve adequate symptom relief.¹² Switching to a different triptan yields mixed results, with efficacy ranging from 6 to 51%, depending on the triptan used.¹¹³ Adverse events, including tingling, dizziness, confusion, agitation and chest pain, are common, and triptans are contraindicated in patients with cardiovascular disease.^{14, 15} These limitations, combined with migraine severity and frequency, contribute to lost productivity and increased disability.

Understanding the burden of migraine in Canada is essential to addressing patients' unmet needs. Previous studies have evaluated the economic impact of migraine, particularly among severely disabled patients experiencing at least four migraine days per month and who have failed at least two preventive therapies.¹⁶ Annual costs for CM patients were estimated at \$25,669, compared to \$24,885 for frequent EM and \$15,651 for EM.¹⁶ These findings include both direct costs (e.g., healthcare and non-healthcare resource utilization and treatment) and indirect costs (e.g., productivity loss due to presenteeism and absenteeism).

Among severely disabled participants, average work time missed reached 21%, with 47% experiencing impairment while working, translating into annual costs of \$10,458 and \$12,462, respectively.¹⁶ Other Canadian studies have focused on direct healthcare costs and on patients eligible for preventive therapy.^{17, 18}

While previous Canadian studies have focused on determining the economic burden of migraine in severe cases where preventive treatment is recommended, limited research has been conducted on the impact of migraine on patients who were prescribed acute treatments for their migraine episodes.¹⁶

A crucial area that remains largely unexplored is the effect of migraines on individuals who are both active members of the workforce and actively engaged in educational pursuits as students.

**THIS STUDY AIMS TO ESTIMATE THE IMPACT OF MIGRAINE
ON PRODUCTIVITY AND DAILY ACTIVITIES IN ADULTS
USING TRIPTANS AS ACUTE TREATMENT, WHO ARE ALSO
ENGAGED IN WORK OR EDUCATION.**

METHODOLOGY

STUDY DESIGN & PARTICIPANTS

This study is a cross-sectional, observational, patient-reported outcomes (PROs) study that assessed Canadian workers and students with migraine treated with triptans (NCT05556564). Participants were identified through 10 community pharmacy members of the PROxy Network. The target population included adults (≥ 18 years) who were employed (full- or part-time) or enrolled as students and had received a new or a renewed prescription within the past 3 months of any formulation of triptan medications.

DATA COLLECTION & ETHICAL CONSIDERATIONS

At enrollment, participants provided written informed consent and completed questionnaires in French or English via the PROxy secure web-based platform. Upon request, paper versions of the study documents were mailed, with a double-entry process used to ensure data accuracy. All data were self-reported, except for information on triptan use (new or renewed prescription) and other migraine treatments used in the past 3 months, which were extracted from pharmacy records with the participant's consent. Recruitment took place between November 2022 and March 2023. The study protocol, consent forms, and procedures were reviewed and approved by Veritas IRB Ethics Review Board. No protocol deviations were reported.

PROs MEASURES

Participant demographics, including sex, migraine characteristics, and comorbidities, were self-reported via questionnaires. To assess the impact of migraine on productivity, the validated **Migraine Disability Assessment (MIDAS)** questionnaire was used.²¹ This 5-item, self-administered tool evaluates headache-related disability over the previous 3 months, capturing lost productivity days at work or school, as well as impairment in family, social, and leisure activities. The MIDAS measures both absenteeism (missed days) and presenteeism (days with significantly reduced productivity), generating a total score that categorizes disability into 4 grades: Grade I (0-5 days) - little to no disability, Grade II (6-10 days) - mild disability, Grade III (11-20 days) - Moderate disability, and Grade IV (21+ days) - Severe disability.¹⁹

DATA ANALYSIS

The study enrolled 100 participants with migraine, a sample size selected to support generalizability and representativeness.²² Analyses followed the pre-defined statistical analysis plan. Results were reported for the overall population and by migraine subtype, defined using Migraine Canada criteria: episodic migraine (EM: 1-6 days/month), frequent EM (7-14 days), and chronic migraine (CM: ≥ 15 days). Between-group comparisons used Pearson's chi-square test (categorical) and one-way ANOVA (continuous). The human capital method (HCM) was applied to convert productivity loss into monetary value, treating each hour not worked as a financial loss. Productivity costs were calculated by multiplying absenteeism days and half of the presenteeism days (as per MIDAS responses) by the 2022 average hourly wage for full- or part-time workers, sourced from Statistics Canada.²⁰

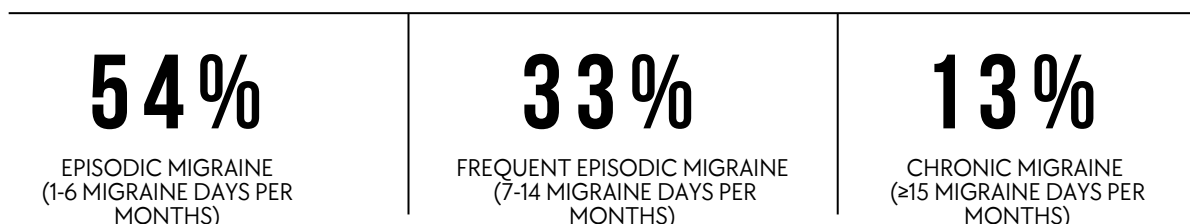
KEY FINDINGS

DEMOGRAPHICS & DISEASE CHARACTERISTICS

At enrollment, the mean age of participants was 44.1 years, with 87.0% of them being female. Most participants were employed full-time (75%) and had no (40.2%) or one (33.7%) comorbidity. Among those with comorbidities, anxiety (20.7%) and depression (16.3%) were the most commonly reported.

The majority of participants (85.9%) had been experiencing migraines for over 5 years. Over the past 3 months, participants reported an average of 20.4 migraine days, with the highest burden observed in those with chronic migraine (48.8 days) and frequent episodic migraine (23.5 days). Most patients were using only 1 treatment (33.7% for preventive and 39.1% for acute). This trend was consistent across migraine types, except in the chronic migraine group, where 33.3% were using more than 3 treatments. The most commonly used acute medications were anti-inflammatories (43.5%) and analgesics (12.0%), while antidepressants (32.6%) and antihypertensives (16.3%) were the most used preventive treatments.

When asked to score their level of headache pain on a scale from 1 to 10, most participants reported a level of pain between 5 and 8, despite triptan use. Similar findings were observed when categorizing participants by migraine type, with no statistically significant difference found between the groups.



MIGRAINE-RELATED DISABILITY INCREASES WITH MIGRAINE FREQUENCY

Across the overall population, 42.4% of participants reported severe migraine-related disability.

When categorized by migraine types, 67% and 83% of participants reported severe migraine-related disability for episodic migraine and chronic migraine, respectively. Little or no disability and moderate disability were the most reported for frequent episodic migraine (38% and 30%, respectively).

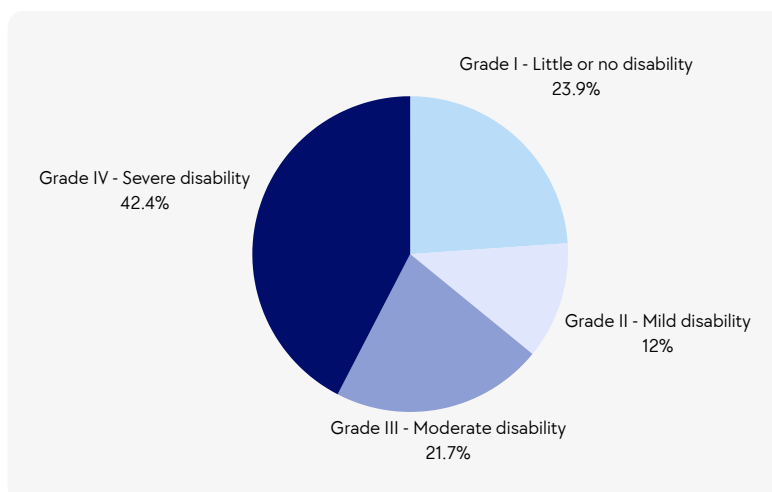


Figure 1. Disability as Determined by the MIDAS Grade in the Overall Population

PRESENTEEISM IS THE PRIMARY DRIVER OF PRODUCTIVITY LOSS AMONG MIGRAINE PATIENTS ACROSS ALL SUBGROUPS

In the overall study population, presenteeism accounted for more than twice the productivity loss compared to absenteeism.

This pattern was consistent across migraine types: participants with episodic migraine reported 6.9% presenteeism vs 2.4% absenteeism, and those with frequent episodic migraine reported 18.8% vs 7.8%, respectively.

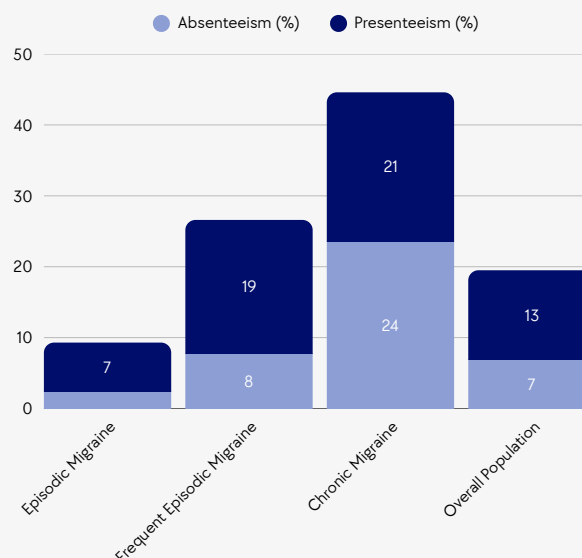


Figure 2. Absenteeism & Presenteeism

CHRONIC MIGRAINE WAS ASSOCIATED WITH THE HIGHEST ABSENTEEISM COST, WHILE PRESENTEEISM WAS THE MAIN COST DRIVER IN EPISODIC MIGRAINE

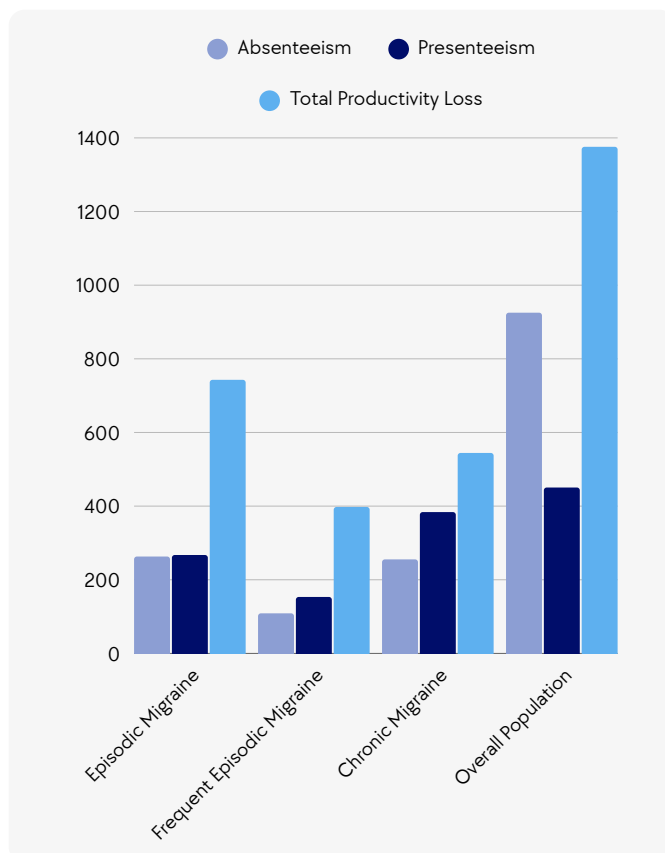


Figure 3. Cost of Productivity Loss per Person

For the overall population, the estimated monthly economic cost of productivity loss per participant was \$530.34 (SD 742.96), with absenteeism accounting for \$263.11 and presenteeism for \$267.23.

Participants with chronic migraine incurred the highest absenteeism costs.

Interestingly, presenteeism costs exceeded absenteeism in both the episodic migraine (\$153.31 vs \$108.82) and frequent episodic migraine (\$450.49 vs \$952.25), while the reverse was observed in the chronic migraine group (\$450.49 vs \$925.25). These differences were also statistically significant ($p < 0.001$).

TAKE HOME MESSAGE

DESPITE TREATMENT, MIGRAINE CONTINUES TO CAUSE SUBSTANTIAL PRODUCTIVITY LOSS, HIGHLIGHTING GAPS IN TREATMENT ACCESS AND AWARENESS IN CANADA

FREQUENCY OF MIGRAINE EPISODES CORRELATES WITH PRODUCTIVITY LOSS

Productivity loss increased with migraine frequency: 26.6% in frequent EM and 44.6% in CM, compared to 9.3% in EM. This was primarily driven by presenteeism—being present at work or school but not fully productive. These findings are supported by international studies, such as Shimizu et al., which also reported greater impairment in CM compared to EM populations.²¹

COMPARING ECONOMIC BURDEN ACROSS STUDIES AND TOOLS

The annual cost of productivity loss in this study was notably lower than estimates from Amoozegar et al., likely due to differences in population severity and PRO used.¹⁶ Amoozegar’s study included a severe population and used the WPAI¹⁶, whose validity in migraine has not been well-documented and may overestimate presenteeism.²¹ The presenteeism question in MIDAS captures the number of days on which a participant’s productivity was reduced by 50% or more due to migraine. The estimates presented in our study assumed that participants were less productive 50% of the time, which may in reality be higher. The true monthly cost per participant associated with presenteeism can be as high as \$306.62 for EM, \$767.58 for frequent EM and \$900.98 for CM when considering 100% of presenteeism.

STUDY STRENGTHS AND LIMITATIONS

This is the first real-world Canadian study focusing on workers and students with migraine treated with triptans. The sample size meets COSMIN standards for reliability.²² However, limitations include self-selection and recall bias, exclusion of non-working populations, and lack of data on direct healthcare costs. Additionally, the study was conducted before anti-CGRP therapies became available, limiting the scope of treatment options represented.

IMPLICATION FOR CARE AND WORKPLACE AWARENESS

Despite access to acute treatments, migraine continues to significantly affect productivity, particularly for those with CM. There is a pressing need to increase workplace awareness, enhance access to preventive treatments, and ensure more comprehensive migraine care in Canada. Addressing these gaps could reduce both the personal and economic burden of this condition.





OUR EXPERTISE, YOUR SUCCESS

Founded in 2003, PeriPharm is a Canadian company with an established expertise in pharmacoeconomics and outcomes research. We are distinguished through our in-depth knowledge of the Canadian healthcare system and payers' requirements, our rigorous work methods to produce high-quality projects, and our commitment to our projects and flexibility to our services.

We have been involved in the preparation of numerous submissions to INESSS, CDA-AMC (CDR and pCODR), participating federal, provincial, and territorial drug plans, and private payers. We have a team of 24 highly qualified professionals with complementary academic and professional backgrounds, including pharmacoeconomics, clinical research, epidemiology, biostatistics, mathematics, and market access. Additionally, Jean Lachaine, partner at PeriPharm has acted as a pharmacoeconomics expert on the INESSS scientific committee for more than 10 years. His extensive knowledge of the field combined with his notable expertise represents an undeniable and valuable contribution to each and every project. PeriPharm offers a wide array of services essential in decision-making to support our client's initiative.

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