Burden of Living with Migraine: Results for United States from the "My Migraine Voice" Survey

INTRODUCTION AND OBJECTIVE

- Migraine affects 1.04 billion people globally, resulting in 45.1 million years lived with disability in 2016, and is associated with debilitating symptoms that affect daily functioning.¹
- 1 out of every 6 Americans suffer from migraines,² with the estimated adjusted incremental health care expenditures for migraine patients totaling \$9.20 billion per year.³
- The "My Migraine Voice" survey was a large, cross-sectional multi-country online survey aimed at understanding disease burden directly from people with migraine.
- Here we present the functional, emotional, social, and economic impact as reported by patients in the United States (US). Global results are reported elsewhere.⁴

METHODS

Study Design and Sampling

- We administered a cross-sectional, online survey consisting of 88 questions in a sample of adults recruited via patient/consumer online panels and support groups for people with migraine.
- Eligible participants:
- Self-reported a medical diagnosis of migraine.
- Experienced \geq 4 monthly migraine days in the previous 3 months.
- Prespecified quotas were used so that:
- 90% reported current/past use of prescription preventive treatment, 80% of whom switched treatment (i.e., reported at least 1 preventive treatment failure).
- 10% were preventive treatment naïve (never used any medication prescribed by a doctor to prevent migraine attacks).

Outcome Measures

- Functional limitations, emotional and social burden, healthcare utilization, monthly out-of-pocket costs, and impact on work productivity are reported.
- Impact on work productivity was assessed using the imbedded validated Work Productivity and Activity Impairment (WPAI) questionnaire, which measured the following due to migraine:
- Work time missed (absenteeism)
- Reduced on-the-job effectiveness (presenteeism)
- Overall work impairment (work productivity loss)
- Activity time missed (activity impairment)
- Descriptive results were stratified by employment status and preventive treatment use, including:
- Preventive treatment naïve (never used medication prescribed by a doctor to prevent migraine attacks from happening)
- No preventive treatment failure (never needed to change the medication prescribed by a doctor to prevent migraine attacks)
- 1 preventive treatment failure (changed preventive treatment once)
- 2+ preventive treatment failures (changed preventive treatment) 2+ times)

RESULTS

Survey Sample

from the US and are reported on in this study (**Table 1**).

Table 1. Survey Sample

N (% of all US respondents)

		employed					
	All US respondents	Yes	No	Preventive treatment naïve	No preventive treatment failure	1 preventive treatment failure	2+ preventive treatment failures
N (%)	1,101 (100%)	661 (60%)	440 (40%)	111 (10%)	199 (18%)	94 (9%)	697 (63%)
Female n (%)) 772 (70%ª)	375 (57% ^b)	397 (90%)	87 (78%)	149 (75%)	80 (85%)	456 (65%)
Age (mean)	41	38	45	44	42	45	39

^aRepresents percent of females using US respondents as the denominator. ^bRepresents percent of females out of all employed respondents.

Functional Limitations

- migraine phase (**Figure 1**).
- phases (49%).
- treatment failures.

Figure 1. Limitations Completing Daily Activities During Each Migraine Phase^a



migraine phase

^a The survey asked respondents to report limitations completing daily activities during each migraine phase on a 1 to 5 scale, where 1 = not limited at all. 2 = a little limited. 3 = somewhat limited. 4 = verv limited. 5 = extremelv limited. The percentages reported here are those who reported a 4 or 5 on this scale.

• Out of the 11,266 individuals who completed the global survey (31 countries), 1,101 individuals were

• US respondents reported being very/extremely limited in completing daily activities during each

• The proportion of respondents who reported being very/extremely limited in completing daily activities was highest in the attack phase (85%) but substantial in the premonitory/aura (43%) and postdrome

• The proportion of respondents reporting limitations was highest among those with 2+ preventive

Emotional and Social Burden

- 41% were very/extremely fearful of a next migraine attack, and most experienced sleep problems (87%), relied on family, friends, or others for help with daily tasks (69%), and reported their personal relationships (69%) and social life (87%) were impacted by migraine (Figure 2).
- The proportion of respondents reporting burden in each domain was highest among those with 2+ preventive treatment failures.
- Respondents reported being helped for 14 days on average in the last 3 months. Unemployed respondents needed more help from others (18 days on average in the last 3 months).

Figure 2. Emotional and Social Burden



^a The survey asked respondents to report fear of next migraine attack on a 1 to 5 scale, where 1 = not fearful at all, 2 = a little fearful, 3 = somewhat fearful, 4 = very fearful, 5 = extremely fearful. The percentages reported here are those who reported a 4 or 5 on this scale.

Healthcare Utilization

- Half reported at least 1 ER visit (mean 2.9 visits) and 31% reported at least 1 hospital night (mean 2.3 hospital nights) due to migraine in the last 12 months (Figure 3).
- The proportion of respondents reporting at least 1 ER visit or hospitalization due to migraine in the last 12 months was lowest among those who were preventative treatment naïve and highest among those with 2+ preventive treatment failures.

Mean number of ER visits in At least 1 ER visit in the last 12 the last 1 months months **All US respondents** Preventive treatment history 1.5 Preventive treatment naïve 14% 2.0 No preventive treatment failure 1.8 1 preventive treatment failure 23% 2+ preventive treatment failures

Figure 3. Percent of Respondents Who Reported Healthcare Utilization Due to Migraine in the Last 12 Months

¹Partnership for Health Analytic Research (PHAR), LLC, Beverly Hills, CA; ²Amgen Inc., Thousand Oaks, CA; ³Novartis Pharmaceuticals Corporation, East Hanover, NJ; ⁴Albert Einstein College of Medicine, Bronx, NY



CONCLUSIONS

emotional, social, and economic aspects of daily life.

RESULTS (Continued)

Monthly Out-of-Pocket Costs

- Among those who answered the question on monthly out-of-pocket costs, respondents reported \$637.70 in doctor's fees, \$225.70 in health insurance, \$101.70 for prescriptions, and \$103.30 for complementary treatments per month (**Table 2**).
- Employed individuals had higher monthly out-of-pocket costs than those who were not employed. The reported out-of-pocket costs were highest among those with 2+ preventive treatment failures.

Table 2. Monthly Out-of-Pocket Costs

Mean US\$ (n)

		Currently employed		Preventive treatment				
	All US respondents	Yes	No	Preventive treatment naïve	No preventive treatment failure	1 preventive treatment failure	2+ preventive treatment failures	
Doctor's fees	\$637.70	\$855.30	\$104.10	\$67.40	\$111.30	\$73.70	\$800.10	
	(504)	(358)	(146)	(21)	(67)	(28)	(388)	
Prescription fees	\$101.70	\$124.70	\$59.20	\$38.80	\$54.30	\$44.50	\$122.40	
	(630)	(409)	(221)	(30)	(94)	(53)	(453)	
Health	\$225.70	\$238.60	\$197.30	\$140.90	\$184.60	\$177.50	\$249.00	
insurance	(450)	(309)	(141)	(29)	(70)	(40)	(311)	
Complementa	ary \$103.30	\$126.30	\$48.10	\$26.80	\$114.30	\$45.60	\$112.60	
treatments	(255)	(180)	(75)	(15)	(33)	(17)	(190)	

Costs are calculated only among respondents who answered this question in the survey. Number of respondents (n) are shown for each cost.

Work Productivity and Activity Impairment

- The WPAI measures absenteeism (work time missed) and presenteeism (reduced on-the-job effectiveness) over the past 7 days.⁵
- Among employed respondents, 21.5% of work time was missed (absenteeism), 60.0% of work time was impaired (presenteeism), for a total of 64.7% work productivity loss due to migraine (**Table 3**).
- Absenteeism and presenteeism were highest among those with 2+ preventive treatment failures.

Table 3. WPAI (Among Employed Respondents)

Mean % of time (n)

		Preventive treatment					
	All US respondents	Preventive treatment naïve	No preventive treatment failure	1 preventive treatment failure	2+ preventive treatment failures		
Absenteeism (work time missed)	21.5	4.4	12.5	11.8	26.8		
	(610)	(53)	(96)	(45)	(416)		
Presenteeism (reduced on-the-job effectiveness)	60.0	35.5	54.0	51.8	65.4		
	(608)	(53)	(95)	(45)	(415)		
Work productivity loss (overall work impairment)	64.7	37.6	56.9	53.8	71.1		
	(608)	(53)	(95)	(45)	(415)		
Activity impairment (activity time missed)	63.5	44.7	57.3	56.1	68.2		
	(661)	(57)	(112)	(49)	(443)		

Mean percent of time shown. For example, among all US respondents, on average 21.5% of work time was missed due to migraine in the past 7 days.

Sarah N Gibbs, MPH¹; Shweta Shah, PhD, MHA²; Chinmay G Deshpande, BPharm, PhD³; Pamela Vo, PharmD, MS³; Mark E Bensink, PhD²; Michael S Broder, MD, MSHS¹; Richard B Lipton, MD⁴

• Among patients with 4 or more monthly migraine days and especially among those with 2+ preventive treatment failures, migraine adversely affects functional,



LIMITATIONS

- We used a convenience sample of online survey respondents who self-selected to participate, reported 4 or more monthly migraine days, and 90% reported current/past use of prescription preventive treatment. Respondents may not be representative of all migraine sufferers.
- Only those with internet access were able to respond to the survey.
- All data were self-reported and may be subject to self-report and recall bias.

DISCUSSION

- In our study sample, 21.5% of work time was missed (absenteeism), 60.0% of work time was impaired (presenteeism), for a total of 64.7% work productivity loss due to migraine.
- Migraine sufferers may be limited completing daily activities during all phases of migraine, experience fear of a next migraine attack and sleep difficulties, and pay substantial out-of-pocket costs, reflecting the high burden experienced by these patients.
- Compared to those who were preventive treatment naïve, never changed preventive treatment, or switched preventive treatments once, those with 2+ preventive treatment failures reported higher out-of-pocket costs, greater absenteeism, and healthcare utilization.
- The impact of migraine extends to caregivers who help people with migraine with daily tasks, employers who are affected by employee absenteeism, presenteeism, and reduced productivity, and society which is burdened by reduced economic productivity and healthcare costs.

REFERENCES

- 1. Vos T, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet.* 2017.
- 2. Burch R, Rizzoli P, Loder E. The Prevalence and Impact of Migraine and Severe Headache in the United States: Figures and Trends From Government Health Studies. Headache. 2018.
- 3. Raval AD, Shah A. National Trends in Direct Health Care Expenditures Among US Adults With Migraine: 2004 to 2013. *J Pain*. 2017.
- 4. Martelletti P, et al. My Migraine Voice survey: a global study of disease burden among individuals with migraine for whom preventive treatments have failed. J Headache Pain. 2018.
- 5. Reilly MC, Zbrozek AS, Dukes EM. The Validity and Reproducibility of a Work Productivity and Activity Impairment Instrument: *PharmacoEconomics*. 1993;Nov;4(5):353-365.

ACKNOWLEDGMENTS

• The authors thank the My Migraine Voice Steering Committee and all study participants for their contribution to the "My Migraine Voice" initiative

DISCLOSURES

- This work was co-funded by Novartis Pharmaceutical Corporation and Amgen Inc. The "My Migraine Voice" survey was funded by Novartis Pharmaceutical Corporation.
- **SNG, MSB** Employees of PHAR, LLC which was paid by Amgen Inc. to conduct the research described in the abstract.
- **SS**, **MEB** Employees of & shareholders in Amgen Inc.
- CGD, PV Employees of & shareholders in Novartis Pharmaceutical Corporation
- RL Consulting: Alder, Allergan, American Academy of Neurology, American Headache Society, Amgen, Autonomic Technologies, Avanir, Boston Scientific, Dr. Reddy's, Electrocore, Eli Lilly, eNeura Therapeutics, GlaxoSmithKline, Merck, Novartis, Pfizer, Teva, Vedanta: Editorial board: Cephalalgia, Neurology: Senior Advisor: Headache: Receives rovalties from Wolff's Headache: Informa: Other activities: Biohaven, National Headache Foundation, NIH; Migraine Research Foundation.