

# Evaluating the Impact of Migraine on Work Productivity in Switzerland Using Self-Reported Data from the Migraine Buddy Application

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**Introduction:** The primary purpose of the study was to evaluate the impact of migraines on work productivity (absenteeism & presenteeism). A secondary purpose was to evaluate the prevalence of self-reported indications of anxiety and/or depression across migraine chronicities, along with the impact this has on medication usage for these groups. All analysis was performed on data self-reported by CM, EM 4-14 and LFEM patients in Switzerland using the Migraine Buddy® smartphone application.

**Methods:** Data was collected from Migraine Buddy® users (90 CM, 775 EM 4-14 and 635 LFEM individuals, corresponding to 1818, 5485 and 1245 migraine days respectively) in Switzerland, with 860 using the German version of the app, 515 using the French version, and 125 using the English version. A retrospective, cross-sectional analysis was conducted using this self-reported data. The most recent 28-days period for each user was selected as the observation period from registration date on the app through Dec 31, 2017. Migraine records were only included from those users who were older than 18 years old as of time of registration on Migraine Buddy® and had agreed to allow their data to be used for anonymized research studies. Each migraine record describes a single migraine episode. Individuals who had used Migraine Buddy® for less than 2 consecutive weeks from the time of registration were excluded. Demographic variables (age, gender, location), migraine days per patient, work days missed, self-reported indication of anxiety and/or depression, medication consumption and other information were descriptively analysed. Neither analyses of safety and effectiveness endpoints nor comparative effectiveness analyses were done.

**Results:** Migraine records were retrieved from 90 CM, 775 EM 4-14 and 635 LFEM individuals, corresponding to 1818, 5485 and 1245 migraine days respectively. Among users who reported being employed (n=700), an average of 4.33, 2.54 and 1.18 work days missed during the 28-days observation period were reported by CM (n=58), EM 4-14 (n=409) and LFEM (n=233) patients, respectively. This translates to an average of 31.91 work days missed per year in Switzerland due to migraines.

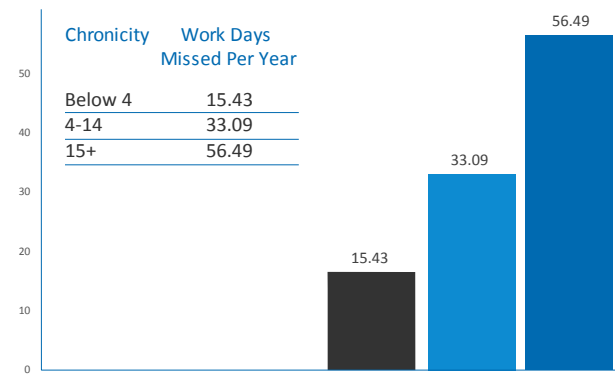
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**Table 1a: Absenteeism - Missed Days**

Patients	var	All	4+	Below 4	4-14	15+
	n	1500	865	635	775	90
Employed Patients	n	700	467	233	409	58
Migraine Days	mean	6.83	8.84	2.04	7.25	20.03
Work Days Missed [28 days]	mean	2.45	2.75	1.18	2.54	4.33
Work Days Missed [per year]	mean	31.91	35.83	15.43	33.09	56.49
% migraine days becoming missed day	mean	35.86%	31.10%	58.06%	35.02%	21.63%

Note: Below 4: LFEM, 4-14: EM 4-14, 15+: CM

**Chart 1b: Absenteeism - Work Days Missed**



On average, 86.40% of patients reported their daily activities being affected by migraine during the 28-days observation period.

**Table 2: Daily Affected Activities from Migraine**

	Population		Migraine Days			
	n	aff n	% affected	aff mdays	mdays	% migraine days
All	1500	1296	86.40%	5446	8548	63.71%
4+	865	783	90.52%	4539	7303	62.15%
Below 4	635	513	80.79%	907	1245	72.85%
4 - 14	775	705	90.97%	3601	5485	65.65%
15+	90	78	86.67%	938	1818	51.60%
Population	total sample size					
aff mdays	Days where the patient reported that migraine affected his activities					
mdays	Migraine days reported by the patients					
aff n:	Number of patients that indicated a migraine affected their activities					

Note: Below 4: LFEM, 4-14: EM 4-14, 15+: CM

Out of the migraineurs who reported their activities as affected by migraines at least once over the 28-days observation period (n=1296, corresponding to 5446 affected migraine days), 42.95%, 18.24% and 6.31% of their days were reported as affected by migraine by CM (n=78), EM 4-14 (n=705) and LFEM (n=513) populations, respectively.

**Table 3: Affected Activities - Days affected by Migraine**

	Affected Population	Affected Migraine Days	Calendar Days	% Days Affected by Migraine	Lost Days per Month	Lost Days per Year
All	1296	5446	36288	15.01%	4.50	54.03
4+	783	4539	21924	20.70%	6.21	74.53
Below 4	513	907	14364	6.31%	1.89	22.73
4 - 14	705	3601	19740	18.24%	5.47	65.67
15+	78	938	2184	42.95%	12.88	154.62

Note: Below 4: LFEM, 4-14: EM 4-14, 15+: CM

Individuals who declared either 'anxiety' or 'depression' in 'symptoms' or 'affected activities' at least once during the 28-days observation period were found to be steadily increasing in number as migraine chronicity increases. 22.52% (n=143), 51.48% (n=399) and 66.67% (n=60) of users self-reported anxiety and/or depression for LFEM (n=635), EM 4-14 (n=775) and CM (n=90) patients, respectively. The group that self-reported anxiety and/or depression also consistently consumed more migraine medication per migraine recorded over the 28-days observation period. An average of 1.06, 1.09 and 1.12 drugs per migraine were reported by LFEM (n=143), EM 4-14 (n=399) and CM (n=60) with self-reported anxiety and/or depression, versus an average of 0.98, 1.02 and 0.95 drugs per migraine reported by LFEM (n=492), EM 4-14 (n=376) and CM (n=30) patients who did not indicate anxiety and/or depression.

**Table 4: Anxiety/Depression & Migraine**

	All			4+			Below 4			4 - 14			15+		
	Patients	n	%	Patients	n	%	Patients	n	%	Patients	n	%	Patients	n	%
Users															
Anx/Dep	602	40.13%	1.09	459	53.06%	1.10	143	22.52%	1.06	399	51.48%	1.09	60	66.67%	1.12
No Anx/Dep	898	59.87%	1.00	406	46.94%	1.01	492	77.48%	0.98	376	48.52%	1.02	30	33.33%	0.95
All	1500	100.00%	1.04	865	100.00%	1.06	635	100.00%	1.00	775	100.00%	1.06	90	100.00%	1.06

n number of patients  
Drugs per Migraine The average number of different drug molecules consumed per migraine

Note: Below 4: LFEM, 4-14: EM 4-14, 15+: CM

## CONCLUSION:

- Migraine is reported to have a considerable impact on the lives of individuals.
- On average, individuals in Switzerland reported missing 31.91 work days per year due to migraine.
- 86.40% of individuals reported their daily activities being affected by migraine during the 28-days observation period.
- About 2 out of 5 migraine patients (40.13%, n=1500) reported suffering from anxiety and/or depression in at least one migraine attack over the observed study period.

**Chart 5: Self-Reported Indication of Anxiety/Depression with Increased Chronicity**

