

# Evaluation of real-world effectiveness of acute migraine treatment: results from DREAM, a nationwide population study on 58,000 people

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## BACKGROUND

Migraine is a highly prevalent neurovascular disease affecting 2-3 times more women than men, particularly of working age, and is the leading cause of disability among young women<sup>1,2</sup>. First-line treatment of an acute migraine attack consists of over-the-counter simple analgesics such as paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs), second-line treatment consists of triptans, and third-line medication of ditans and gepants where available<sup>3</sup>. As the individual and societal costs of ineffectively treated migraine remain high,<sup>4,5</sup> a better understanding of real-world effectiveness of treatment, as defined by the European Headache Federation consensus statement on effective treatment of acute migraine<sup>6</sup>, is needed.

## OBJECTIVE

We wanted to explore the proportion and characteristics of effective treatment of a migraine attack with any acute treatment among men and women in Denmark, as well as the impact of effective treatment on return to normal function at 2 hours.

## METHODS

**Data Source** – The nationwide DREAM (Danish REgistry Analyses of Migraine) study combined data from Danish national health registers, such as prescription medicine use, comorbid diagnoses, income data, and data related to long term sick leave, with a patient survey distributed by Statistics Denmark consisting of 87 questions related to migraine including diagnosis, symptoms, and use of acute and preventive migraine medications.

**Participants** – All Danish residents  $\geq 18$  years who had redeemed a triptan prescription (ATC codes: N02CC01-N02CC07) as a proxy for migraine or been diagnosed with migraine (ICD-10: G43) between January 2021 – December 2023 were invited to respond to the survey.

**Analyses** – In alignment with the European Headache Federation consensus statement on effective treatment of acute migraine, we evaluated the effectiveness of any acute treatment (over the counter or prescription medicine) used to treat the most recent migraine attack (any severity,  $\leq 3$  months prior).

- Effective treatment was in the study defined as: 1) pain freedom or pain relief within 2 hours, lasting at least 24 hours, 2) no or minimal migraine accompanying symptoms within 2 hours, 3) no side effects. As return to normal function is a goal of acute treatment and important to patients, we asked respondents about their ability to return to normal function at 2h after taking medication.
- To understand the characteristics of the MP we compared it with a reference population (RP) derived from Danish national registries of individuals presumed to not have migraine as they did not have a migraine diagnosis or any triptan redemptions; they were matched to the migraine population 1:3 based on year of birth, sex, and region of residence.

## RESULTS

### Demographics and characteristics

#### A flowchart of the survey population is presented in Figure 1.

- Of the 145,333 people invited, 58,606 (40%) responded, of which 50,857 reported having a migraine diagnosis from a physician (i.e. migraine population (MP)); 83% were women and the overall median age was 50.0.
- 41,498 persons in the MP reported having a migraine attack within the last 3 months, of which 38,981 (94%) treated the attack and responded to questions allowing analyses on treatment effectiveness.

#### Register-derived baseline characteristics of the MP compared with the RP is presented in Table 1.

- Women were on average almost three years younger than men (48.8 vs 51.6 years).
- Both mean and median annual income were higher in the MP than the RP overall, for both women and men,  $p < 0.01$ .
- A small but significantly higher proportion of people in the MP than the RP had comorbidities (21.3% vs 18.9%,  $p < 0.01$ ).

## REFERENCES

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## CONFLICTS OF INTEREST

HS reports receiving personal fees from AbbVie, Lundbeck, Pfizer and Teva and is Chair of the International Headache Society Education Committee and associate editor for Cephalgia: DSH, USL, AJ, KHB are employees and shareholders of Pfizer. MS, JO, and CB are current employees of EY Parthenon, a paid vendor to Pfizer; TFH declares no conflicts of interest with respect to the research, authorship and/or publication of this poster

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Figure 1: Flowchart of the population

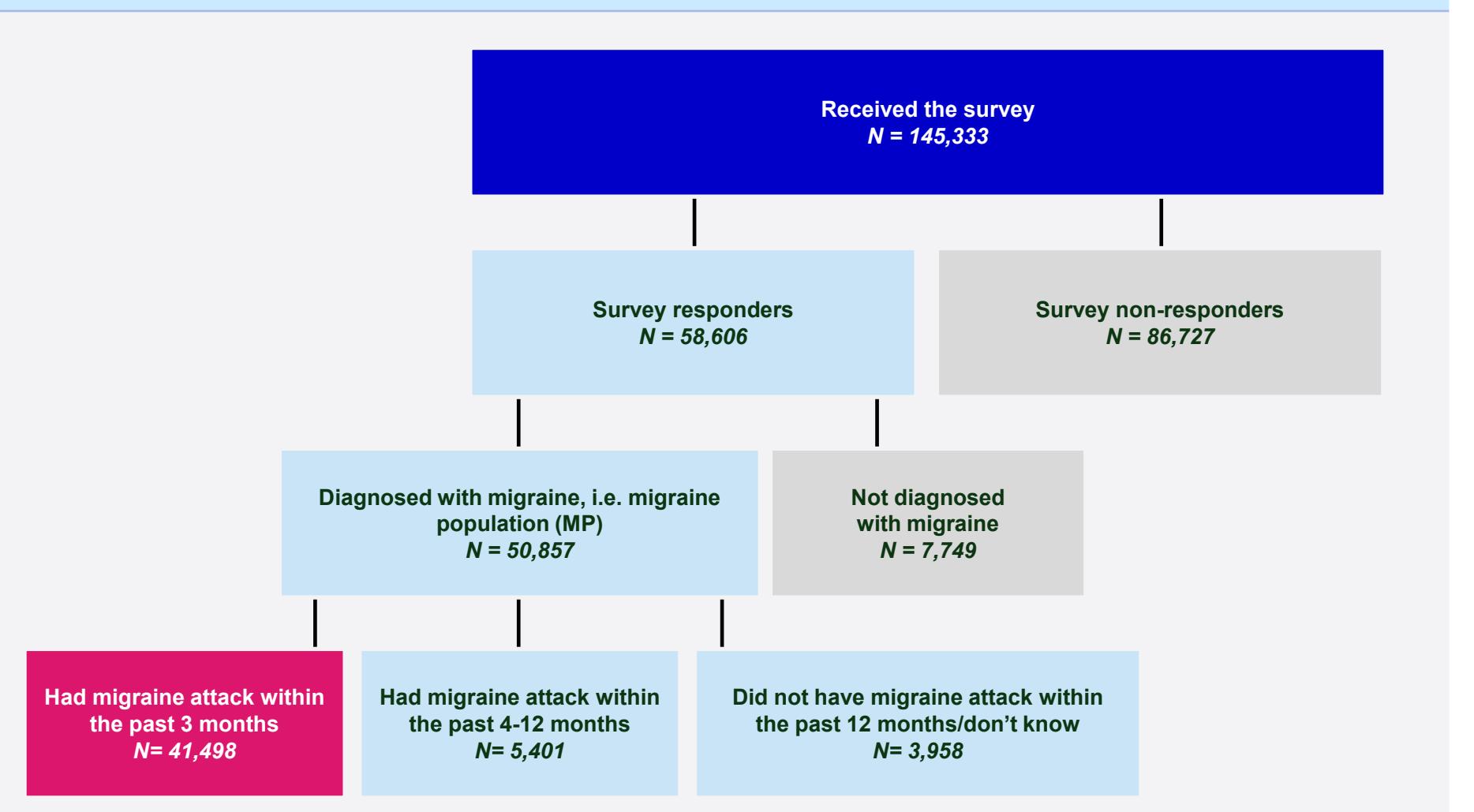


Table 1: Key baseline characteristics of the migraine population and reference population

	Migraine population (MP)	Reference population (RP)	Women (MP)	Women (RP)	Men (MP)	Men (RP)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
N	41,498	124,494	34,898	104,694	6,600	19,800
Age						
Age, mean (SD)	49.2 (13)	49.2 (13)	48.8 (13)	48.8 (13)	51.6 (14)	51.6 (14)
Age, median (IQR)	50 (40, 59)	50 (40, 59)	50 (39, 58)	50 (39, 58)	52 (42, 61)	52 (42, 61)
Annual income (EUR)						
Income, mean (SD)	43,449 (41,948)	42,170 (42,161)	41,467 (38,624)	40,360 (37,123)	53,929 (55,187)	51,741 (61,487)
Income, median (IQR)	47,275 (3,267, 64,999)	45,387 (1,683, 63,613)	46,115 (3,260, 62,892)	44,199 (1,800, 61,666)	55,136 (3,397, 77,592)	53,597 (1,028, 75,415)
Number of comorbidities						
0 comorbidities	32,635 (78.6%)	100,974 (81.1%)	27,311 (78.3%)	84,982 (81.2%)	5,324 (80.7%)	15,992 (80.8%)
1 comorbidity	7,931 (19.1%)	20,628 (16.6%)	6,777 (19.4%)	17,271 (16.5%)	1,154 (17.5%)	3,357 (17.0%)
2 or more comorbidities	932 (2.2%)	2,892 (2.3%)	810 (2.3%)	2,441 (2.3%)	122 (1.8%)	451 (2.3%)

## Baseline characteristics by outcome measure

Baseline characteristics and outcome on return to normal function at 2h for those treating their most recent migraine attack within the last 3 months and determine to have effective treatment or not effective treatment in the survey are presented in Table 2.

- Of the 38,981 people in the MP treating a migraine attack within 3 months and categorised as achieving either effective treatment or not effective treatment, only 14,021 (36%) (women: 34%, men: 45%) reported effective treatment, while 24,960 (64%) (women 66%, men 55%) reported not effective treatment,  $p < 0.01$ .
- Of those reporting effective treatment only 8,422 (60%) (women: 59%, men: 63%) said they returned to normal function within 2 hours  $p < 0.01$ .
- Those reporting effective treatment were generally older (mean age 52.9 years vs. 47.6 years,  $p < 0.01$ ) and with a higher mean (€ 46,973 vs. 42,477) and median (€ 50,150 and € 46,830) income than those reporting treatment that was not effective, with men being older and with higher mean and median income than women.
- A higher proportion of those whose treatment was not effective had redeemed their first triptan prescription within the past 5 years (24.6% vs. 19.2%) than those with effective treatment.

Table 2: Baseline characteristics by outcome measure of those treating a migraine within the past 3 months (N = 38,981)

	Effective treatment			Not effective treatment		
	Total n (%)	Women n (%)	Men n (%)	Total n (%)	Women n (%)	Men n (%)
N	14,021 (36.0%)	11,260 (34.2%)	2,761 (45.4%)	24,960 (64.0%)	21,634 (65.8%)	3,326 (54.6%)
Return to normal function 2h	8,422 (60%)	6,679 (59%)	1,743 (63%)	5,599 (40%)	4,581 (41%)	1,018 (37%)
Age						
Age, mean (SD)	52.9 (13)	52.4 (13)	54.8 (13)	47.6 (13)	47.3 (13)	49.5 (14)
Age, median (IQR)	54 (44, 62)	53 (44, 62)	56 (47, 64)	48 (38, 57)	48 (38, 56)	50 (39, 59)
Annual income (EUR)						
Income, mean (SD)	46,973 (48,998)	43,911 (44,698)	59,462 (62,055)	42,477 (37,599)	41,186 (35,470)	50,880 (48,423)
Income, median (IQR)	50,150 (3,535, 68,123)	48,482 (3,140, 65,201)	59,773 (5,421, 82,676)	46,830 (4,089, 63,901)	46,072 (4,240, 62,498)	53,317 (3,225, 75,291)
Number of comorbidities						
0 comorbidities	11,156 (79.6%)	8,909 (79.1%)	2,247 (81.4%)	19,540 (78.3%)	16,878 (78.0%)	2,662 (80.0%)
1 comorbidity	2,549 (18.2%)	2,084 (18.5%)	465 (16.8%)	4,870 (19.5%)	4,269 (19.7%)	601 (18.1%)
2 or more comorbidities	316 (2.3%)	267 (2.4%)	49 (1.8%)	550 (2.2%)	487 (2.3%)	63 (1.9%)
Time since first triptan redeemed						
<5 years	2,691 (19.2%)	2,080 (18.5%)	611 (22.1%)	6,151 (24.6%)	5,213 (24.1%)	938 (28.2%)
5-10 years	2,218 (15.8%)	1,724 (15.3%)	494 (17.9%)	4,663 (18.7%)	3,990 (18.4%)	673 (20.2%)
10-15 years	1,993 (14.2%)	1,600 (14.2%)	393 (14.2%)	3,775 (15.1%)	3,255 (15.0%)	520 (15.6%)
15-20 years	2,045 (14.6%)	1,674 (14.9%)	371 (13.4%)	3,576 (14.3%)	3,166 (14.6%)	410 (12.3%)
>20 years	5,048 (36.0%)	4,166 (37.0%)	882 (31.9%)	6,701 (26.8%)	5,934 (27.4%)	767 (23.1%)
Previous use of preventive medication* (self-reported)						
Yes	6,664 (47.5%)	5,412 (48.1%)	1,252 (45.3%)	13,084 (52.4%)	11,425 (52.8%)	1,659 (49.9%)
No	7,357 (52.5%)	5,848 (51.9%)	1,509 (54.7%)	11,876 (47.6%)	10,209 (47.2%)	1,667 (50.1%)

## CONCLUSIONS

- In this large nation-wide cross-sectional study, we found that effective treatment was only reached by a third of the people treating a migraine attack within the last 3 months, and only 60% of those with effective treatment had a return to normal function within 2 hours.
- The majority of people using acute treatments for migraine still experience a significant disability from migraine attacks and could benefit from strategies for treatment optimization.



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