

Clinical Differences and Patient Reported Outcomes Between Insufficient Responders and Responders to Prescribed Acute Migraine Treatment: Results from a Real-World Patient Survey in China

Diego Novick¹, Lei Zhang², Shiyong Zhong², Jinnan Li², Chloe Walker³, Lewis Harrison³, James Jackson³

¹Eli Lilly & Company, London, UK; ²Eli Lilly China, Shanghai, China; ³Adelphi Real World, Bollington, UK

BACKGROUND

- Migraine constitutes a primary headache disorder, which affects around 15% of the global population¹.
- In China, migraine was reported in a nationwide epidemiological study as affecting 150 million population and causing 5.5 million years of healthy life lost due to disability in 2017².
- Results from the Global Burden of Disease 2019 study highlighted that migraine was second among the world's most common causes of disability³.
- There are two types of migraine treatment, acute which aims to stop the attack, or reduce the severity of the headache and other associated symptom; preventive treatment aims to reduce the severity, frequency and duration of migraine attacks, and development of medication-overuse headache⁴.
- A real-world study in China showed that more than two in five patients (43%) currently on acute medication had an insufficient response to their treatment regimen⁵.
- There is limited real-world data on sufficient/insufficient response and predictors of insufficient response to acute treatments for migraine in individuals in China.

OBJECTIVE

- To identify clinical differences between patients experiencing insufficient response and those achieving an optimal response to acute treatment.
- To explore the association between insufficient response to prescribed acute migraine treatment and headache-related patient disability and work productivity.

METHODS

Study Design

- Data were collected in China from January to June 2014 as part of the Adelphi Migraine Disease Specific Programme™. This is a point-in-time survey of internists and neurologists, and their patients with a physician confirmed diagnosis of migraine.
- The survey methodology (Figure 1) has been published and validated⁶.
- Physicians and patients provided informed consent to participate.
- Participating physicians were either neurologists, who were eligible to take part if they consulted with at least 10 patients with migraine in a typical week, or internists, who were eligible to take part if they consulted with at least 5 patients with migraine in a typical week.
- Physicians completed patient record forms (PRFs) for the next 9 consecutively consulting patients (aged 18+) with a diagnosis of migraine.
- T-tests were performed for continuous variable data. Fisher's exact tests were performed for categorical variable data, excluding the MIDAS in which a Mann-Whitney test was performed).
- Patient Self-Completion (PSC) forms captured information on levels of headache-related disability via the Migraine Disability Assessment Scale (MIDAS)⁷ and work/activity impairment via the Work Productivity and Activity Impairment (WPAI) questionnaire⁸.
- Patients defined as:
 - Treatment Insufficient Responders (TIRs) – Those who reported pain freedom within 2 hours of taking their acute treatment in ≤3/5 migraine attacks;
 - Treatment Responders (TRs) - Those who reported pain freedom within 2 hours in ≥4/5 attacks.

Patient-Reported Outcomes

MIDAS:

- Measures headache-related disability over a 3-month period.
- Consists of 5 items that reflect the number of days patients reported missing work or experiencing reduced productivity at work or home and social events because of headache. Possible scores range from 0 to 270, with lower scores indicating lower headache-related disability.
- The sum of responses to the 5 items gives a total MIDAS score that can be mapped to the following disability categories: 0-5 = I: little or no disability, 6-10 = II: mild disability, 11-20 = III: moderate disability, 21-40 = IV-A: severe disability and ≥41 = IV-B: very severe disability.

WPAI:

- Measures work and activity impairment related to health problems over the last 7 days.
- 4 scores are calculated: absenteeism (work time missed), presenteeism (reduced effectiveness while at work), overall work impairment and activity impairment.
- All domains are measured on a scale of 0-100%, with higher scores indicating greater impairment and less productivity.

Figure 1. Adelphi Migraine Disease Specific Programme – Methodology

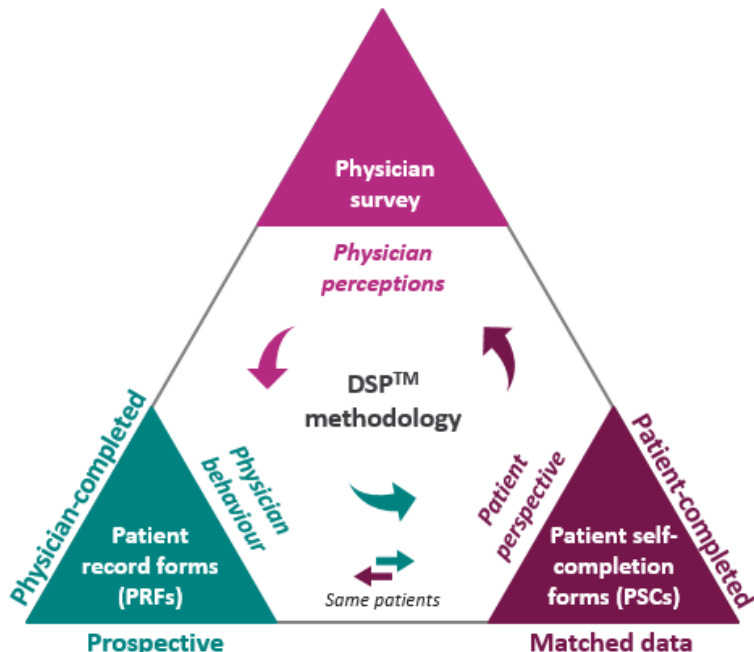
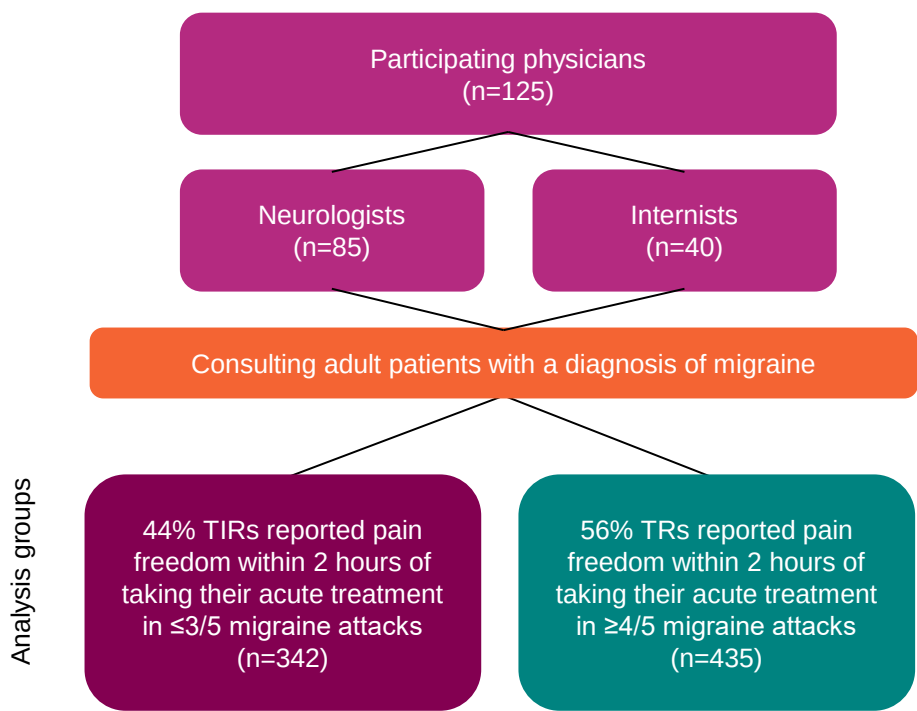


Figure 2. Adelphi Migraine Disease Specific Programme – Analysis Flow Diagram of Treatment Insufficient Responders (TIRs) and Treatment Responders (TRs)



DISCLOSURES

- Data collection was undertaken by Adelphi Real World as part of an independent survey, entitled the Adelphi Migraine Disease Specific Programme (DSP™). Eli Lilly and Company, Indianapolis, IN, USA subscribed to the dataset from which this analysis is derived.
- Diego Novick is employee of Eli Lilly & Company, London, UK; Lei Zhang, Shiyong Zhong and Jinnan Li are employees of Eli Lilly China, Shanghai, China; James Jackson, Lewis Harrison and Chloe Walker are employees of Adelphi Real World, Bollington, UK.
- Data availability: the data that support the findings of this study are available from Adelphi Real World, but restrictions apply to the availability of these data, which were used under license for the current study and so are not publicly available.

REFERENCES

- Fayyaz A. Headache disorders: differentiating and managing the common subtypes. 2012; 6(3): 124–132.
- C Yao et al. Burden of headache disorders in China, 1990–2017: findings from the Global Burden of Disease Study 2017. 2017;20:102
- Steiner et al. The Journal of Headache and Pain. 2020; 21: 137
- National institute for health and care excellence. British national formulary. Migraine. 2022
- Hao H, et al. treatment patterns and real-world outcomes among patients with episodic migraine in China. ISPOR. 2012;24(Supplement 1):S171.
- Anderson P et al. Current Medical Research and Opinion. 2008; 24 (11): 3063–72
- Stewart WF et al. Neurology. 2001; 56 (6 Supplement 1): S20–28
- Reilly MC et al. Pharmacoeconomics. 1993; 4 (5): 353–365

RESULTS

- 85 neurologists and 40 internists completed 1125 PRFs for patients with migraine; 951 of these patients completed their own PSC questionnaire (Figure 2).
- Patients' demographic and concomitant conditions are detailed in table 1. Further patient clinical characteristics are detailed in table 2.
- The analysis included 777 patients prescribed acute migraine treatment (TIRs n=342, 44%; TRs n=435, 56%) (Figure 2).

Table 1. PRF-reported Patient demographic/clinical characteristics

	Total	TIRs	TRs	P-value
Demographics, n	777	342	435	
Patient age, mean years (SD)	44.1 (13.4)	44.9 (14.4)	43.5 (12.5)	0.1326
Female, n (%)	421 (54.2)	192 (56.1)	229 (52.6)	0.3463
BMI, mean (SD)	23.5 (2.7)	23.7 (3.0)	23.4 (2.5)	0.0983
Patient's employment status, n	775	342	433	
Employed - full time, n (%)	470 (60.7)	186 (54.4)	284 (65.6)	0.0019
Employed - part time, n (%)	13 (1.7)	9 (2.6)	4 (0.9)	0.0900
Student, n (%)	30 (3.9)	20 (5.9)	10 (2.3)	0.0141
Unemployed, n (%)	18 (2.3)	6 (1.8)	12 (2.8)	0.4728
Retired, n (%)	207 (26.7)	108 (31.6)	99 (22.9)	0.0070
Homemaker, n (%)	37 (4.8)	13 (3.8)	24 (5.5)	0.3099
Concomitant Conditions*, n	774	339	433	
Hypertension, n (%)	105 (13.6)	38 (11.1)	67 (15.5)	0.0905
Diabetes, n (%)	70 (9.0)	41 (12.0)	29 (6.7)	0.0118
None, n (%)	365 (47.2)	170 (49.7)	195 (45.1)	0.2181

SD, standard deviation

BMI, body mass index

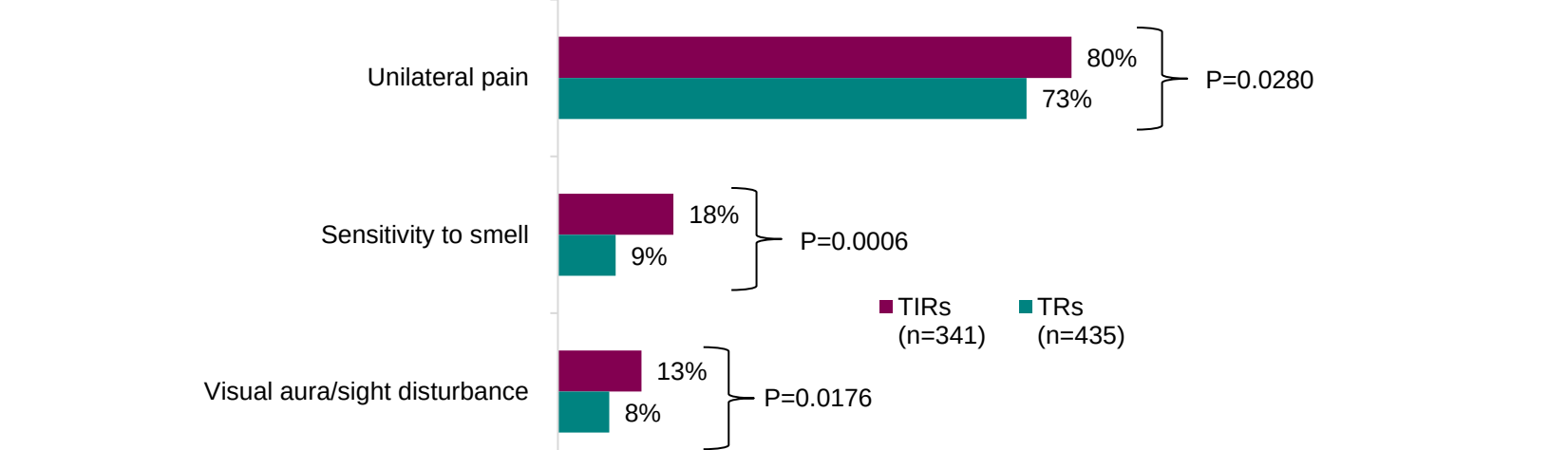
*Concomitant condition expression thresholded at >10%

Table 2. PRF-reported Patient migraine characteristics

	Total	TIRs	TRs	P-value
Migraine diagnosis, n	775	340	435	
Migraine with aura, n (%)	138 (17.8)	81 (23.8)	57 (13.1)	0.0001
Migraine without aura, n (%)	563 (72.7)	224 (65.9)	339 (77.9)	0.0002
Number of headache days per month, n	775	341	434	
Headache days per month (mean ± SD)	3.3 (1.9)	3.22 (2.13)	3.37 (1.75)	0.3044
Other headache conditions, n	376	192	184	
Tension headaches, n (%)	138 (36.7)	46 (23.96)	92 (50.00)	0.0001
Rebound (medication over-use) headaches, n (%)	16 (4.3)	14 (7.29)	2 (1.09)	0.0036

- A greater number of TRs were in full-time employment when compared to TIRs. Alternatively, a greater proportion of TIRs were a student or retired compared to TRs (Table 1.) (p<0.05).
- TIRs were more likely to have diabetes as a concomitant condition than TR counterparts (Table 1.) (p<0.05).
- Significantly fewer TIRs were diagnosed with migraine with aura compared with TRs (Table 2.) (p<0.0001).
- A greater number of TRs also experienced tension headaches, compared to TIRs (Table 2.) (p<0.001).
- TRs experienced significantly fewer medication over-use headaches compared to TIRs (Table 2.) (p<0.01).

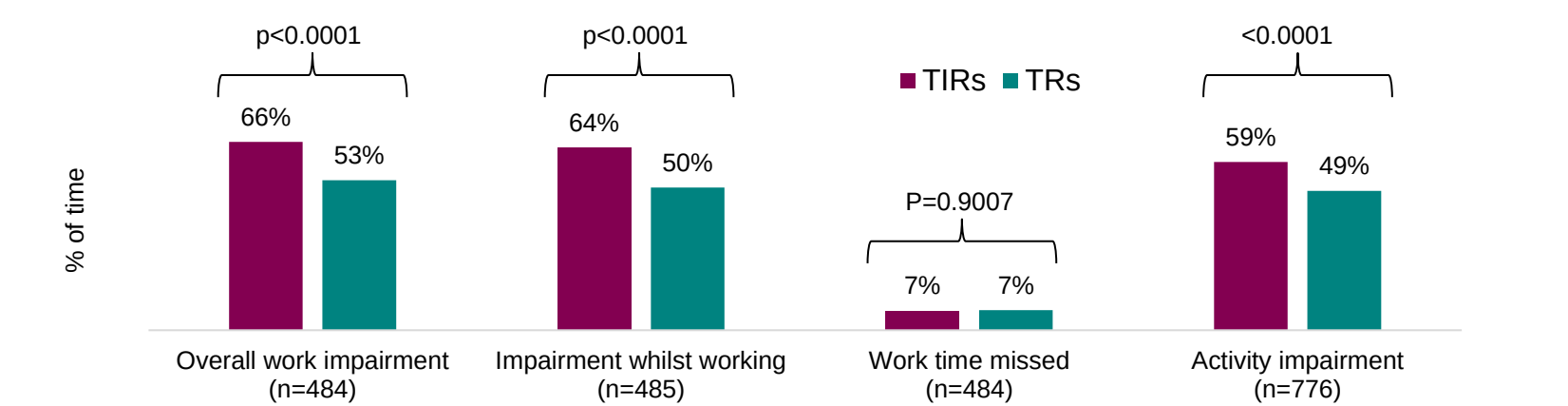
Figure 3. Symptoms experienced during an attack



TIRs: Treatment insufficient responders; TRs: treatment responders

- Physicians reported TIR patients were significantly more likely to experience unilateral pain, sensitivity to smell, visual aura/sight disturbance compared to TR patients (Figure 3.) (all p<0.05).

Figure 4. Work Productivity & Impairment (WPAI) scores



TIRs: Treatment insufficient responders; TRs: treatment responders

- For employed patients, TIR patients reported higher overall work impairment (p<0.0001), although work time missed was the same among both patient cohorts (Figure 4).
- Approximately half of TIR and TR patients' regular, non-working activity time was also impaired (Figure 4.) (p<0.0001).

Figure 5. Patient ratings of disability severity (MIDAS results)



TIRs: Treatment insufficient responders; TRs: treatment responders

- TIR Patients reported a mean significantly higher MIDAS score of 6.6 (9.1) compared to TR patients who reported a mean (standard dev.) score of 5.5 (5.5) (p<0.05) with a higher portion of TIRs reporting severe disability as opposed to moderate disability when compared to TRs. (Figure 5.).

CONCLUSIONS

- Diagnosis:** TIRs are diagnosed with *migraine with aura* significantly more than TRs, while TRs are diagnosed as migraine without aura significantly more TIRs.
- Concomitant Conditions:** TIRs are diagnosed with *diabetes* significantly more than TRs.
- Other headache types:** TIRs experience *medication over-use* headaches significantly more than TRs, while TRs experience tension headaches significantly more than TIRs.
- Symptoms during the attack:** A significantly higher proportion of TIRs report experiencing symptoms during the attack (*including unilateral pain, sensitivity to smell, visual aura/sight disturbance*) than TRs.
- Work Impairment:** TIRs report significantly higher overall work impairment and activity impairment than TRs. No difference was found in the amount of work time missed.
- Disability severity:** The mean MIDAS score was statistically significantly higher (greater disability) for TIRs vs TRs.

The study highlights specific differences in diagnosis and comorbidities between TIRs and TRs. Additionally, this study shows TIRs experience significantly higher work impairment and disability severity than TRs. These findings indicate a need for more effective treatments for patients experiencing insufficient response.

LIMITATIONS

- While minimal inclusion criteria governed the selection of participating physicians, participation was influenced by willingness to complete the survey.
- Patients were actively consulting, which limits the generalizability of the results to all patients with migraine.
- All data collected relied on accurate reporting by physicians and patients.

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