

Perceived Stress and Migraine Severity among Young Adults: A Cross-Sectional Online Survey

Jeyakumar A (Jeyakumar Arumugam)

M.Sc. Psychology, Centre for Distance and Online Education, JAIN (Deemed-to-be University), Bengaluru, Karnataka, India

Email: [sophiajeyakumar\[at\]gmail.com](mailto:sophiajeyakumar[at]gmail.com)

Abstract: *Migraine is one of the leading causes of disability among young adults, and stress is the trigger most often reported by people who experience headaches. This study examined whether perceived stress is associated with headache-related disability and headache severity among young adults aged 18 to 36 years. A cross-sectional online survey was distributed through social media and WhatsApp during August and September 2026. Participants completed the Perceived Stress Scale (PSS-10), the Migraine Disability Assessment (MIDAS) and a 0 to 10 headache severity rating. Of 50 responses, 36 met the inclusion criteria (18 women, 18 men; mean age 26 years), of whom 20 reported migraine or recurring headaches. Spearman rank correlation showed no significant association between perceived stress and headache severity ($p = .05$, $p = .79$) or between perceived stress and MIDAS disability ($p = .13$, $p = .47$). Participants with headaches reported significantly greater disability ($p = .001$) and severity ($p < .001$) than those without, but did not differ significantly in perceived stress ($p = .18$). The small sample, approximated MIDAS totals and low internal consistency of the PSS-10 in this sample ($\alpha = .54$) limit the conclusions, and the study could detect only strong associations. Larger studies of clinically diagnosed young adults using within-person designs are recommended.*

Keywords: perceived stress, migraine, headache disability, MIDAS, young adults

1. Introduction

Migraine places a heavy burden on young adults. Global Burden of Disease estimates show that the number of people aged 15 to 39 years living with migraine rose by nearly 40% between 1990 and 2021, from about 426 million to 594 million [1]. In a survey of 438 young adults aged 18 to 24 years in Chennai, India, headaches were linked with disrupted studies and with avoiding other people, and personal and academic stress were among the most commonly reported triggers [2].

Stress is a useful target for research because, unlike many migraine risk factors, it can be modified. The present study focuses on *perceived* stress, defined as the degree to which individuals appraise their lives as unpredictable, uncontrollable and overloaded [3]. Earlier work found higher perceived stress among people with migraine than among healthy controls [4], and higher stress among Indian university students with more frequent migraine [5]. Much of this evidence, however, comes from clinical samples or from adults outside South Asia.

The present study therefore examined, in a community sample of young adults aged 18 to 36 years, whether perceived stress is associated with (a) headache-related disability and (b) headache severity, and whether people who report migraine or recurring headaches differ in perceived stress from those who do not. It was hypothesised that perceived stress would be positively associated with both disability and severity.

2. Methodology

2.1 Research design and participants

A cross-sectional survey design with convenience sampling was used. The online survey was shared through social

media and WhatsApp during August and September 2026. Adults aged 18 to 36 years were eligible, whether or not they experienced headaches. Fifty people responded. Responses were excluded when age was not reported ($n = 2$), when the respondent was older than 36 years ($n = 7$) or when questionnaire items were left unanswered ($n = 5$), leaving a final sample of 36.

2.2 Measures

- **Perceived Stress Scale (PSS-10)** [3]: ten items scored 0 to 40, with higher scores indicating greater perceived stress. Internal consistency in this sample was low (Cronbach's $\alpha = .54$).
- **Migraine Disability Assessment (MIDAS)** [6]: five items counting the days in the previous three months on which headaches limited paid work or study, household work, or family, social and leisure activities. The survey recorded day ranges rather than exact counts, so each item was scored at the midpoint of its range (21 for "21 or more") and summed. The resulting total approximates the standard MIDAS score and was graded using the standard cut-offs (Grade I: 0 to 5; II: 6 to 10; III: 11 to 20; IV: 21 and above).
- **Headache severity:** a single self-rating from 0 (no pain) to 10 (worst pain).

2.3 Procedure

Participants read an informed consent statement before beginning the survey. Participation was voluntary and anonymous, and respondents could stop at any point before submitting. Demographic details were collected, followed by the PSS-10, the MIDAS and the severity rating.

2.4 Statistical analysis

Because scores were not normally distributed, Spearman rank correlation was used to examine the association of

Volume 15 Issue 10, October 2026

Fully Refereed | Open Access | Double Blind Peer Reviewed Journal

www.ijsr.net

perceived stress with MIDAS disability and with headache severity. The Mann–Whitney U test compared participants who did and did not report migraine or recurring headaches. Two-tailed tests with $\alpha = .05$ were used throughout. With $n = 36$, the study had 80% power to detect only correlations of about $|\rho| \geq .45$.

3. Results

3.1 Sample characteristics

The final sample comprised 36 young adults aged 18 to 36 years (Table 1). Twenty participants reported migraine or recurring headaches and 16 did not; only four reported a medical diagnosis of migraine.

Table 1: Sample characteristics ($n = 36$)

Characteristic	n (%)
Women	18 (50.0)
Men	18 (50.0)
Age, years (range 18–36)	Mean 26
Migraine / recurring headaches	20 (55.6)
No migraine / recurring headaches	16 (44.4)
Medically diagnosed migraine	4 (11.1)

3.2 Perceived stress, disability and severity

Perceived stress was not significantly associated with headache severity or with MIDAS disability (Table 2; Figure 1). When the analysis was restricted to the 20 participants with headaches, the association was slightly negative and again not statistically significant.

Table 2: Spearman correlations with perceived stress ($n = 36$)

Variable	ρ	p
Headache severity (0–10)	.05	.79
MIDAS disability (estimated days)	.13	.47

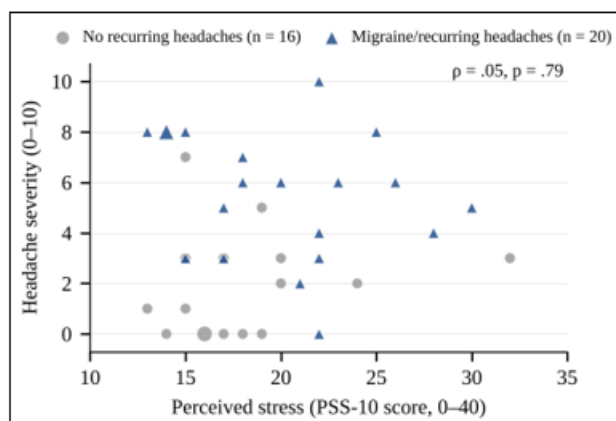


Figure 1: Perceived stress and headache severity ($n = 36$).
Larger markers indicate overlapping respondents

3.3 Comparison of participants with and without headaches

Participants who reported migraine or recurring headaches had significantly greater disability and severity than those who did not, but the difference in perceived stress was small and not significant (Table 3; Figure 2).

Table 3: Comparison of participants with and without migraine or recurring headaches

Measure	No ($n = 16$)	Yes ($n = 20$)	p^*
PSS-10, mean	18.1	20.1	.18
MIDAS days, median	1.5	8.0	.001
Severity (0–10), mean	1.9	5.5	< .001

*Mann–Whitney U test. MIDAS totals are estimated from day ranges.

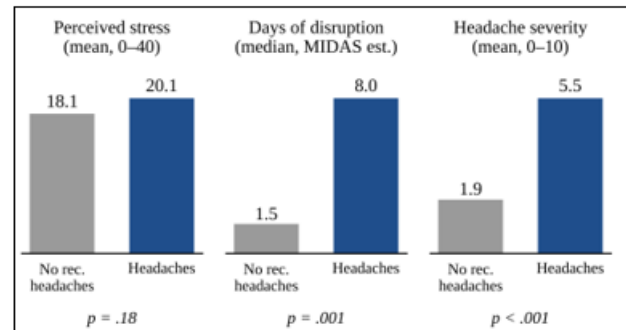


Figure 2: Perceived stress, disability and severity by headache status

3.4 Distribution of MIDAS grades

Twelve of the 36 participants (33%) fell in the moderate or severe MIDAS grades (Figure 3). Many of the low scores belonged to participants who did not report migraine or recurring headaches. One participant's estimated total of 88.5 days was far above the rest of the sample.

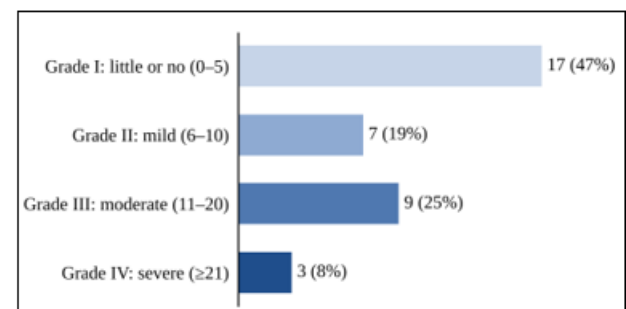


Figure 3: Distribution of MIDAS disability grades based on estimated totals ($n = 36$)

4. Discussion

Contrary to the hypothesis, perceived stress was not associated with headache-related disability or severity in this sample. Participants with headaches were clearly more disabled and reported more severe pain than those without, yet their perceived stress was only slightly higher. These results do not show that stress is harmless for people with migraine, and they do not overturn earlier studies that found higher stress in people with migraine [4], [5].

Several explanations are possible. First, the sample was too small to detect a modest association; only a fairly strong relationship could have reached significance. Second, perceived stress was measured imprecisely, as shown by the low internal consistency of the PSS-10. Third, a single group-level correlation may hide meaningful differences between individuals. A daily-diary study of people with chronic migraine found that the relationship between stress and pain severity varied considerably from person to person

[7]. For some young adults stress may be an important trigger, while for others it may not, and a cross-sectional design cannot separate these patterns.

In practical terms, perceived stress scores alone were not useful for identifying who experienced the most disability. Assessment and support for young adults with headaches may therefore need to consider each person's own pattern of triggers rather than relying on stress level as a general marker.

5. Limitations

- **Small sample.** Thirty-six participants is well below the planned sample of 100, which limited the power to detect modest effects.
- **Mixed group.** Sixteen participants did not report migraine or recurring headaches, so many low disability scores reflect occasional headaches rather than mild migraine. Only four participants had a medical diagnosis of migraine.
- **Approximate disability scores.** MIDAS totals were estimated from day ranges, and one very high estimate (88.5 days) may have influenced group summaries.
- **Measurement reliability.** The PSS-10 showed low internal consistency in this sample ($\alpha = .54$).
- **Design.** Convenience sampling online and a single time point limit generalisation and do not permit causal conclusions.

6. Conclusion and Recommendations

In this small online sample of young adults aged 18 to 36 years, perceived stress was not significantly associated with headache-related disability or severity, although participants with headaches were substantially more affected than those without. Future studies should recruit at least 100 young adults with clinically diagnosed migraine, collect exact day counts for each MIDAS item, and use daily-diary or other longitudinal designs that compare each person's stress with their own headaches over time. Sleep, anxiety and coping should be measured alongside perceived stress.

Acknowledgement

This paper is derived from the author's M.Sc. Psychology dissertation at the Centre for Distance and Online Education, JAIN (Deemed-to-be University), Bengaluru. The author thanks Ms. Evangeline Supriya, Assistant Professor, Department of Psychology, for her guidance, and all participants for their time.

References

- [1] Z.-F. Chen, X.-M. Kong, C.-H. Yang, X.-Y. Li, H. Guo, Z.-W. Wang, "Global, Regional, and National Burden and Trends of Migraine among Youths and Young Adults Aged 15–39 Years from 1990 to 2021: Findings from the Global Burden of Disease Study 2021," *The Journal of Headache and Pain*, 25 (1), Article 131, 2024. doi:10.1186/s10194-024-01832-0
- [2] B. S. Mahendran, A. A. Kumar, M. Manoharan, "The Impact of Headaches in Young Adults: An Analysis of Types, Triggers, and Daily Functioning Through the Headache-Attributed Restriction, Disability, Social Handicap, and Impaired Participation (HARDSHIP) Questionnaire," *Cureus*, 16 (11), e74792, 2024. doi:10.7759/cureus.74792
- [3] S. Cohen, T. Kamarck, R. Mermelstein, "A Global Measure of Perceived Stress," *Journal of Health and Social Behavior*, 24 (4), pp. 385–396, 1983.
- [4] H.-J. Moon, J.-G. Seo, S.-P. Park, "Perceived Stress in Patients with Migraine: A Case-Control Study," *The Journal of Headache and Pain*, 18 (1), Article 73, 2017. doi:10.1186/s10194-017-0780-8
- [5] A. Mitra, "Perceived Stress and Sleep Quality on Migraine Frequency among University Students in India," *International Journal of Indian Psychology*, 13 (2), 2025. doi:10.25215/1302.286
- [6] W. F. Stewart, R. B. Lipton, A. J. Dowson, J. Sawyer, "Development and Testing of the Migraine Disability Assessment (MIDAS) Questionnaire to Assess Headache-Related Disability," *Neurology*, 56 (6 Suppl. 1), pp. S20–S28, 2001. doi:10.1212/wnl.56.suppl_1.s20
- [7] M. Vives-Mestres et al., "Perceived Stress and Pain Severity in Individuals with Chronic Migraine," *Headache*, 61 (8), pp. 1245–1254, 2021. doi:10.1111/head.14199

Author Profile



A Jeyakumar is pursuing the M.Sc. in Psychology at the Centre for Distance and Online Education, JAIN (Deemed-to-be University), Bengaluru. He holds an M.Sc. in Data Analytics from BITS Pilani and a BCA from Madurai Kamaraj University. He is Head of the Learning and Training Department at Affluent Academy, Madurai, Tamil Nadu where he trains learners in soft skills, emotional intelligence and industry readiness. He has 20 years of professional experience in Information Technology, including 12 years in training and development and 8 years of international work experience in Singapore.