

Mindfulness as a Predictor of Migraine-Related Disability: Evidence from a Cross-Sectional Study

Nandana K Nair¹, Arathi Mukundan¹, Sathya Rajkumar¹, Dr. Hunny Kalra²

¹MSc Psychology Student, Department of Psychology, JAIN (Deemed-to-be University), Bengaluru, Karnataka, India

²Assistant Professor, Department of Psychology, JAIN (Deemed-to-be University), Bengaluru, Karnataka, India

Corresponding Author: Dr Hunny Kalra

DOI: <https://doi.org/10.52403/ijrr.20251123>

ABSTRACT

Background: Migraines are prevalent neurological disorders characterized by severe headaches, nausea, and heightened sensory sensitivities, often triggered by various environmental and physiological factors. Although not life-threatening, migraines can significantly impair daily functioning and are associated with increased cardiovascular risk, particularly in cases with aura. Aim: This study aimed to investigate the association between mindfulness and migraine-related disability and to explore whether mindfulness may alleviate migraine impact by reducing stress.

Methods: A cross-sectional design was employed involving 110 adults with clinically diagnosed migraines, aged 18 to 65 years, recruited through purposive sampling. Participants completed the Mindful Attention Awareness Scale and the Migraine Disability Assessment. Data were analyzed using descriptive statistics, Pearson's product-moment correlation, and linear regression analyses.

Results: There was a significant negative correlation between mindfulness and migraine-related disability ($r = -0.334$, $p < .001$), indicating that higher mindfulness is associated with lower disability. Regression analysis confirmed mindfulness as a significant negative predictor of migraine-related disability ($\beta = -0.334$),

accounting for 11.2% of the variance ($R^2 = 0.112$).

Conclusion: These findings highlight the potential of mindfulness-based interventions as non-pharmacological strategies to reduce migraine-related disability by mitigating stress and pain perception. Future research should investigate the neurological and physiological mechanisms underlying this association to inform the development of personalized migraine treatments.

Keywords: Migraine, Mindfulness, Migraine Disability, Stress Reduction, Mindfulness-Based Interventions

Mindfulness as a Predictor of Migraine-Related Disability: Evidence from a Cross-Sectional Study

Headaches, particularly migraines remain globally overlooked, underdiagnosed, and inadequately treated (WHO, 2025). Affecting over 1 billion individuals, migraines contribute significantly to the worldwide socioeconomic burden (Kalkman et al., 2023). These attacks can last from several hours to days, significantly impairing daily functioning and reducing quality of life. Although not considered fatal, untreated migraines can lead to substantial personal and societal burdens. Studies have associated migraines, particularly those with aura, with increased risks of stroke, cardiovascular disease, and other medical complications

(Frimpong-Manson et al., 2024).

Migraines, are among the most prevalent yet often overlooked neurological conditions worldwide. Affecting more than 1 billion individuals, migraines contribute substantially to global disability and socioeconomic burden (Kalkman et al., 2023). Characterized by intense headaches, nausea, and sensory sensitivities, migraine attacks can persist from hours to days, severely compromising daily functioning and reducing quality of life. While migraines are not fatal, their untreated course is associated with considerable personal, societal, and economic impacts. Epidemiological studies indicate a heightened risk of cardiovascular events such as stroke and heart disease in those experiencing migraines, particularly migraine with aura (Frimpong-Manson et al., 2024; Oberg et al., 2013; Rohmann et al., 2020).

The Global Burden of Disease Study ranked migraines as the second leading cause of disability globally, and the foremost cause among women under 50 years, reflecting their disproportional impact (Safiri et al., 2022; Steiner et al., 2020). Indian prevalence rates parallel global trends, with community-based studies reporting an age-standardized one-year migraine prevalence of 25.2% in Karnataka (Ailani et al., 2021) and 26.3% in Delhi and the National Capital Region (Amiri et al., 2022). While these studies are among the most methodologically rigorous in the Indian context, pan-India epidemiological data remain limited.

Several studies have established an association between migraines and elevated risks of cardiovascular complications, including heart disease, stroke, and increased cardiovascular mortality (Boudreau et al., 2015; Oberg et al., 2013; Rohmann et al., 2020). In addition to pain, migraines are associated with a spectrum of cognitive and emotional symptoms including mood changes, fatigue, "brain fog," and impaired memory (Boudreau et al., 2015; Huang et al., 2017; Wachholtz et al., 2017). Chronic sufferers often experience irritability,

anxiety, and depression. These symptoms, compounded by neurological imbalances, hormonal fluctuations, and environmental triggers (Baloh, 1997; Puledda et al., 2017), aggravate the burden of the disorder.

Migraine management predominantly relies on pharmacological interventions such as analgesics, triptans, and preventives. However, many patients experience partial or temporary relief, side effects, or medication-overuse headaches (Ailani et al., 2021; Seng et al., 2019). Newer therapies, including CGRP monoclonal antibodies, though effective, remain costly and inaccessible for many. As a result, there is increasing interest in holistic, non-pharmacological approaches for long-term migraine relief (Khan et al., 2021).

Among such interventions, mindfulness has gained prominence for its capacity to promote present-moment awareness and nonjudgmental acceptance (Eigenbrodt et al., 2021). Mindfulness is associated with reduction in stress, improved emotional regulation, and enhanced relaxation factors closely linked to migraine onset and exacerbation (Goyal et al., 2023; Mungoven et al., 2021). Physiologically, mindfulness may downregulate sympathetic arousal and modulate neuroendocrine pathways, thereby reducing migraine frequency and severity. Clinical research supports the efficacy of mindfulness-based practices in mitigating pain perception and improving psychological resilience (Eigenbrodt et al., 2021; Seng et al., 2019).

Emerging evidence indicates that mindfulness-based interventions offer meaningful benefits for individuals with chronic pain. For example, Wells et al. (2021) found that Mindfulness-Based Stress Reduction improved headache-related disability, quality of life, and self-efficacy in patients with migraines, even if attack frequency remained unchanged.

Theoretical grounding for this research is provided by the biopsychosocial model of health (Engel, 1981), which posits an interaction of biological, psychological, and social factors in determining health

outcomes. Within this framework, mindfulness acts as a psychological intervention targeting stress sensitivity, emotional regulation, and coping domains highly relevant to migraine pathophysiology and experience (Wheeler et al., 2017).

Despite promising evidence from existing studies, most empirical research examining the link between mindfulness and migraine-related disability has been conducted in Western contexts. In the Indian context, the relationship between mindfulness and migraine-related disability, as well as the predictive role of mindfulness in explaining such disability, remains largely understudied. Therefore, the present study aimed to address this gap by investigating the association between mindfulness and migraine-related disability in a diverse adult cohort. Guided by the biopsychosocial model, the study formulated the following hypotheses:

Hypothesis 1: Levels of mindfulness will be significantly and negatively associated with levels of migraine-related disability among adults with migraines.

Hypothesis 2: Mindfulness will significantly and negatively predict migraine-related disability.

MATERIALS AND METHODS

Participants

A quantitative, cross-sectional study was conducted to examine the relationship between mindfulness and migraine-related disability in adults diagnosed with migraine. The final sample consisted of 110 participants, comprising 55 males and 55 females. Participants were recruited using purposive sampling from clinics, headache specialists, and online migraine support communities. Participation was voluntary, and informed consent was obtained from all individuals prior to enrollment. Confidentiality was strictly maintained, and all data were anonymized. Participants were informed of their right to withdraw from the study at any stage without penalty.

Inclusion criteria required participants to be adults aged between 18 and 65 years, with a

confirmed diagnosis of migraine by a qualified healthcare professional, and the ability to read and comprehend the study materials. Exclusion criteria were: (a) presence of other chronic neurological disorders or psychiatric conditions, (b) current or recent participation in mindfulness-based therapy or interventions, and (c) recent changes in migraine medication within the past three months.

Although the study was not formally reviewed by an ethics committee, all procedures complied with the ethical standards set forth in the Declaration of Helsinki, and every effort was made to ensure participants' rights, safety, and well-being.

Measures

1. Mindful Attention Awareness Scale (MAAS; Brown & Ryan (2011)): The MAAS is a self-report instrument developed to assess trait-level mindfulness, with a particular focus on attention and awareness during everyday experiences. The scale consists of items rated on a six-point Likert scale, with higher scores indicating greater mindfulness. The MAAS has demonstrated excellent internal consistency (Cronbach's $\alpha = 0.80-0.87$) and test-retest reliability ($r = 0.81$ over one month). Additionally, its construct validity has been supported by positive correlations with well-being and negative correlations with stress, anxiety, and depression across diverse cultural groups (Brown & Ryan, 2003).
2. Migraine Disability Assessment Questionnaire (MIDAS, Stewart et al., 2001): The MIDAS is a widely used questionnaire designed to evaluate migraine-related disability over the previous three months. It assesses five domains: days missed at work or school, reduced productivity at work or school, days missed in household activities, reduced productivity in household activities, and days missed in social or leisure activities. The total MIDAS score reflects the overall level of disability,

with higher scores denoting greater impairment. The instrument is characterized by strong psychometric properties, including internal consistency coefficients (α) ranging from 0.80 to 0.90 and a test-retest reliability of $r = 0.80$ over a four-week interval.

PROCEDURE

Eligible participants were screened and enrolled in accordance with the defined inclusion and exclusion criteria. After obtaining informed consent, participants were asked to complete a series of standardized questionnaires. Data collection was facilitated through both in-person and online formats. All completed responses were scored following the standardized guidelines outlined in the respective instrument manuals.

Data were subsequently analyzed using SPSS version 21. Descriptive statistics were computed to summarize participant demographics and study variables. The normality of data distribution was evaluated by examining skewness and kurtosis values, all of which fell within the acceptable range of ± 2 . To assess the relationship between mindfulness and migraine-related disability, Pearson’s product-moment correlation was conducted. In addition, linear regression

analysis was performed to evaluate the predictive role of mindfulness in determining levels of migraine-related disability.

RESULTS

Table 1 presents the demographic characteristics of the study participants (N = 110). The sample comprised individuals aged between 18 and 65 years, with the largest proportion belonging to the 18–25 age group (36.4%), followed by participants aged 26–35 years (27.3%). Smaller proportions were observed in the 36–45 (17.3%), 46–55 (14.5%), and 56–65 (4.5%) age groups.

Gender distribution was evenly divided, with 55 male (50.0%) and 55 female (50.0%) participants; no respondents identified as ‘other’. In terms of occupation, most participants were either salaried employees (32.7%) or students (30.9%). A smaller proportion identified as self-employed (20.0%), homemakers (10.9%), or retired (4.5%), while one participant (0.9%) reported another occupational category. Overall, these demographic findings indicate that the study drew from a relatively young and gender-balanced sample, with diverse occupational backgrounds represented.

Table 1: Showing Demographic Characteristics of Participants (N = 110)

Category	Subgroup	Frequency (n)	Percentage (%)
Age Group (in years)	18–25	40	36.4%
	26–35	30	27.3%
	36–45	19	17.3%
	46–55	16	14.5%
	56–65	5	4.5%
Gender	Male	55	50.0%
	Female	55	50.0%
	Other	0	—
Occupation	Student	34	30.9%
	Salaried	36	32.7%
	Self-employed	22	20.0%
	Homemaker	12	10.9%
	Retired	5	4.5%
	Other	1	0.9%

Note. Percentages are rounded to one decimal place.

Building on these demographic findings, Table 2 shows that there is a statistically

significant negative correlation between mindfulness and migraine-related disability

among the participants. Specifically, higher mindfulness was associated with lower migraine-related disability ($r=-0.334$, $p<.001$). This result supports and leads to the

acceptance of Hypothesis 1, highlighting the potential relevance of mindfulness in reducing migraine-related impairment in this sample.

Table 2: Showing Correlation Between Mindfulness and Migraine-Related Disability (N = 110)

Variable	Mindfulness	Migraine Disability
Mindfulness	—	-0.334*
Migraine Disability	-0.334*	—
*p < .001		

Furthermore, to examine the predictive effect of mindfulness on migraine-related disability, a regression analysis was conducted, as summarized in Table 3. The results demonstrated that mindfulness was a significant negative predictor of migraine-related disability, $\beta=-0.334$, $t=-3.89$, $p<.001$; the model accounted for

approximately 11.2% of the variance in migraine-related disability, $R^2=0.112$, $F(1,108) = 15.14$, $p<.001$. These findings support and confirm Hypothesis 2, highlighting the unique contribution of mindfulness in explaining variability in migraine-related outcomes within this sample.

Table 3: Showing Results of Regression Analysis Between Mindfulness and Migraine-Related Disability

Criterion Variable	Predictor	t	β	p-value
Migraine Related Disability	Mindfulness	-3.89	-0.334	< .001
R ² = 0.112, F (1, 108) = 15.14, p < .001				

In summary, the results reveal meaningful relationships between mindfulness and migraine-related disability in a demographically diverse sample. The correlation analysis indicated that higher levels of mindfulness are associated with a reduction in migraine-related disability. Further, regression analysis established mindfulness as a significant negative predictor of migraine-related disability, explaining a substantial portion of the variance. These findings underscore the potential of mindfulness interventions in mitigating the impact of migraine.

DISCUSSION

The present study examined the relationship between mindfulness and migraine-related disability, drawing on a sample with varied demographic backgrounds. The obtained results confirmed both Hypotheses 1 and 2, providing compelling evidence that greater mindfulness is associated with reduced migraine-related disability and that mindfulness serves as a significant negative predictor of migraine impact. These findings

offer important insights into the mechanisms underlying migraine and suggest that enhancing mindfulness may be a valuable strategy for alleviating migraine-related difficulties.

These findings are consistent with prior research demonstrating the efficacy of mindfulness-based interventions (MBIs) in mitigating the frequency, severity, and overall disability associated with migraines. An expanding body of evidence supports the beneficial impact of mindfulness on pain-related conditions. For example, Seng et al., (2019) reported that mindfulness meditation was effective in lowering stress-induced migraines, leading to reductions in both the frequency and intensity of episodes. Likewise, a meta-analysis by Goyal et al. (2014) found that MBIs, when combined with conventional migraine treatments, significantly improved self-efficacy for pain management and decreased disability. Together, these studies reinforce the potential of mindfulness as a valuable non-pharmacological approach for managing migraine-related impairment.

The advantages of mindfulness extend beyond migraine-specific outcomes. Wells et al. (2021), in a randomized clinical trial, identified that while Mindfulness-Based Stress Reduction (MBSR) did not significantly affect migraine frequency, it resulted in improvements in headache-related disability, quality of life, psychological well-being, and self-efficacy. The present study supports these findings, suggesting that mindfulness may reduce the subjective impact of migraines, even in the absence of changes in migraine frequency. In addition, Bakhshani et al. (2015) observed that participation in MBSR programs was associated with reduced pain intensity, enhanced sleep quality, and greater emotional well-being. These multidimensional effects may contribute to decreases in migraine-related disability through interconnected psychological and physiological mechanisms. Furthermore, Grossman et al. (2004) concluded in their meta-analysis that mindfulness is effective in lowering psychological risk factors such as stress, anxiety, and depression, which are recognized as precipitating factors for migraines.

The present findings suggest that higher levels of mindfulness are associated with reduced disability from migraines. One possible explanation is that mindfulness fosters adaptive coping strategies (Krause & Brown, 2023), enabling individuals to respond to migraine episodes with greater acceptance and less emotional reactivity. By promoting increased awareness of bodily sensations and emotional responses, mindfulness may help individuals manage pain more effectively, reduce catastrophic thinking, and limit avoidance behaviors that exacerbate disability. Additionally, the regular practice of mindfulness is known to lower stress, anxiety, and depression (Paz & Davidovitch, 2025), factors strongly linked to migraine onset and severity. Through these psychological pathways, mindfulness may attenuate the subjective impact of migraines, enhance self-efficacy, and facilitate engagement with daily activities

despite pain. Physiologically, mindfulness may also modulate pain perception and autonomic responses (Gard et al., 2012), contributing to decreased disability. Overall, these mechanisms likely operate in concert to reduce the functional impairment experienced by individuals with migraines.

The findings from this study underscore the potential value of mindfulness as a non-pharmacological approach for reducing disability related to migraines. Integrating mindfulness-based interventions into clinical management protocols may offer patients an accessible tool for coping with migraine symptoms and improving daily functioning. By targeting psychological risk factors such as stress and emotional reactivity, mindfulness interventions could complement conventional migraine treatments and contribute to holistic, patient-centered care. Furthermore, these results support the ongoing development of psychoeducational programs that emphasize mindful awareness, which may be broadly beneficial for individuals living with chronic pain conditions.

This study possesses several strengths, including its use of validated and widely recognized instruments to assess both mindfulness and migraine-related disability, enhancing the reliability and comparability of findings. The sample was balanced in terms of gender and included participants from varied demographic and occupational backgrounds, supporting the generalizability of results within similar clinical populations. The combination of both in-person and online data collection methods further improved accessibility and recruitment.

Nevertheless, several limitations should be acknowledged. The cross-sectional design precludes any inference of causality between mindfulness and migraine-related disability, limiting conclusions to associations rather than directional effects. The reliance on self-report measures is vulnerable to potential reporting biases and may not fully capture fluctuations in mindfulness or disability over time. While a purposive sampling approach facilitated efficient recruitment, it may limit

the broader representativeness of the results. Another important limitation is the absence of formal ethical approval, although all procedures adhered to internationally recognized ethical standards.

Future studies should consider employing longitudinal and experimental designs to better establish causal relationships between mindfulness and migraine outcomes. Randomized controlled trials of mindfulness-based interventions targeting migraine management could elucidate the effectiveness and mechanisms underlying symptom change. Additionally, research involving more diverse and larger samples including participants with comorbid conditions or varying migraine severities would enhance the generalizability of findings.

Overall, the current study reinforces the significance of mindfulness in reducing migraine-related disability and supports its integration into holistic migraine care. These findings add to the growing evidence base for mindfulness-based approaches and underscore their potential as adjuncts to conventional treatment. Further research is warranted to clarify causality and optimize intervention strategies for individuals with migraines.

CONCLUSION

This study examined the association between mindfulness and migraine-related disability among adults diagnosed with migraines. The results demonstrated that higher levels of mindfulness are linked to decreased disability, and that mindfulness significantly predicts lower burden from migraines. These findings highlight the promise of integrating mindfulness-based strategies within comprehensive migraine management. By addressing both psychological and functional aspects of migraine, such approaches have the potential to enhance quality of life and overall well-being in affected individuals. Continued investigation through longitudinal and intervention studies is recommended to further elucidate the pathways and effectiveness of mindfulness-based

interventions in migraine care.

Disclosure of use of generative AI

The authors used generative AI tools to assist with language enhancement, paraphrasing, and proofreading during the manuscript preparation process.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: The authors extend their heartfelt gratitude to all the participants for generously taking the time to complete the survey within a short period. They are especially thankful to their esteemed classmate, Ms. K. V. Vidya Pradeep, for her unwavering support and assistance throughout the course of this study.

Source of Funding: Nil.

Conflict of Interest: We have no conflicts of interest to disclose.

REFERENCES

1. Ailani, J., Burch, R. C., Robbins, M. S., & the Board of Directors of the American Headache Society. (2021). The American Headache Society Consensus Statement: Update on integrating new migraine treatments into clinical practice. *Headache: The Journal of Head and Face Pain*, 61(7), 1021–1039. <https://doi.org/10.1111/head.14153>
2. Amiri, P., Kazeminasab, S., Nejadghaderi, S. A., Mohammadinasab, R., Pourfathi, H., Araj-Khodaei, M., Sullman, M. J. M., Kolahi, A.-A., & Safiri, S. (2022). Migraine: A Review on Its History, Global Epidemiology, Risk Factors, and Comorbidities. *Frontiers in Neurology*, 12, 800605. <https://doi.org/10.3389/fneur.2021.800605>
3. Bakhshani, N. M., Amirani, A., Amirifard, H., & Shahrakipoor, M. (2015). The Effectiveness of Mindfulness-Based Stress Reduction on Perceived Pain Intensity and Quality of Life in Patients with Chronic Headache. *Global Journal of Health Science*, 8(4), 142. <https://doi.org/10.5539/gjhs.v8n4p142>
4. Baloh, R. W. (1997). Neurotology of Migraine. *Headache: The Journal of Head and Face Pain*, 37(10), 615–621. <https://doi.org/10.1046/j.1526->

- 4610.1997.3710615.x
5. Boudreau, Grosberg, B., McAllister, P., Lipton, R., & Buse, D. (2015). Prophylactic onabotulinumtoxinA in patients with chronic migraine and comorbid depression: An open-label, multicenter, pilot study of efficacy, safety and effect on headache-related disability, depression, and anxiety. *International Journal of General Medicine*, 79. <https://doi.org/10.2147/IJGM.S70456>
 6. Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822–848. <https://doi.org/10.1037/0022-3514.84.4.822>
 7. Brown, K. W., & Ryan, R. M. (2011). Mindful Attention Awareness Scale [Dataset]. <https://doi.org/10.1037/t04259-000>
 8. Eigenbrodt, A. K., Ashina, H., Khan, S., Diener, H.-C., Mitsikostas, D. D., Sinclair, A. J., Pozo-Rosich, P., Martelletti, P., Ducros, A., Lantéri-Minet, M., Braschinsky, M., Del Rio, M. S., Daniel, O., Özge, A., Mammadbayli, A., Arons, M., Skorobogatykh, K., Romanenko, V., Terwindt, G. M., ... Ashina, M. (2021). Diagnosis and management of migraine in ten steps. *Nature Reviews Neurology*, 17(8), 501–514. <https://doi.org/10.1038/s41582-021-00509-5>
 9. Engel, G. L. (1981). The Clinical Application of the Biopsychosocial Model. *The Journal of Medicine and Philosophy: A Forum for Bioethics and Philosophy of Medicine*, 6(2), 101–124. <https://doi.org/10.1093/jmp/6.2.101>
 10. Frimpong-Manson, K., Ortiz, Y. T., McMahon, L. R., & Wilkerson, J. L. (2024). Advances in understanding migraine pathophysiology: A bench to bedside review of research insights and therapeutics. *Frontiers in Molecular Neuroscience*, 17. <https://doi.org/10.3389/fnmol.2024.1355281>
 11. Gard, T., Hölzel, B. K., Sack, A. T., Hempel, H., Lazar, S. W., Vaitl, D., & Ott, U. (2012). Pain Attenuation through Mindfulness is Associated with Decreased Cognitive Control and Increased Sensory Processing in the Brain. *Cerebral Cortex (New York, NY)*, 22(11), 2692–2702. <https://doi.org/10.1093/cercor/bhr352>
 12. Goyal, M., Haythornthwaite, J. A., Jain, S., Peterlin, B. L., Mehrotra, M., Levine, D., Rosenberg, J. D., Minges, M., Seminowicz, D. A., & Ford, D. E. (2023). Intensive Mindfulness Meditation Reduces Frequency and Burden of Migraine: An Unblinded Single-Arm Trial. *Mindfulness*, 14(2), 406–417. <https://doi.org/10.1007/s12671-023-02073-z>
 13. Goyal, M., Singh, S., Sibinga, E. M. S., Gould, N. F., Rowland-Seymour, A., Sharma, R., Berger, Z., Sleicher, D., Maron, D. D., Shihab, H. M., Ranasinghe, P. D., Linn, S., Saha, S., Bass, E. B., & Haythornthwaite, J. A. (2014). Meditation Programs for Psychological Stress and Well-being: A Systematic Review and Meta-analysis. *JAMA Internal Medicine*, 174(3), 357. <https://doi.org/10.1001/jamainternmed.2013.13018>
 14. Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits. *Journal of Psychosomatic Research*, 57(1), 35–43. [https://doi.org/10.1016/S0022-3999\(03\)00573-7](https://doi.org/10.1016/S0022-3999(03)00573-7)
 15. Huang, L., Juan Dong, H., Wang, X., Wang, Y., & Xiao, Z. (2017). Duration and frequency of migraines affect cognitive function: Evidence from neuropsychological tests and event-related potentials. *The Journal of Headache and Pain*, 18(1), 54. <https://doi.org/10.1186/s10194-017-0758-6>
 16. Kalkman, D. N., Couturier, E. G. M., El Bouziani, A., Dahdal, J., Neefs, J., Woudstra, J., Vogel, B., Trabattoni, D., MaassenVanDenBrink, A., Mehran, R., de Winter, R. J., & Appelman, Y. (2023). Migraine and cardiovascular disease: What cardiologists should know. *European Heart Journal*, 44(30), 2815–2828. <https://doi.org/10.1093/eurheartj/ehad363>
 17. Khan, J., Asoom, L. I. A., Sunni, A. A., Rafique, N., Latif, R., Saif, S. A., Almandil, N. B., Almohazey, D., AbdulAzeez, S., & Borgio, J. F. (2021). Genetics, pathophysiology, diagnosis, treatment, management, and prevention of migraine. *Biomedicine & Pharmacotherapy*, 139, 111557. <https://doi.org/10.1016/j.biopha.2021.111557>
 18. Krause, J. T., & Brown, S. M. (2023). Mindfulness Intervention Improves Coping and Perceptions of Children's Behavior among Families with Elevated Risk.

- International Journal of Environmental Research and Public Health, 20(23), 7092. <https://doi.org/10.3390/ijerph20237092>
19. Migraine and other headache disorders. (n.d.). Retrieved July 23, 2025, from <https://www.who.int/news-room/fact-sheets/detail/headache-disorders>
 20. Mungoven, T. J., Henderson, L. A., & Meylakh, N. (2021). Chronic Migraine Pathophysiology and Treatment: A Review of Current Perspectives. *Frontiers in Pain Research*, 2, 705276. <https://doi.org/10.3389/fpain.2021.705276>
 21. Oberg, E. B., Rempe, M., & Bradley, R. (2013). Self-directed Mindfulness Training and Improvement in Blood Pressure, Migraine Frequency, and Quality of Life. *Global Advances in Health and Medicine*, 2(2), 20–25. <https://doi.org/10.7453/gahmj.2013.006>
 22. Paz, R., & Davidovitch, N. (2025). Mindfulness influence on psychological wellbeing: In search of cultural adaptations. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1550949>
 23. Puledda, F., Messina, R., & Goadsby, P. J. (2017). An update on migraine: Current understanding and future directions. *Journal of Neurology*, 264(9), 2031–2039. <https://doi.org/10.1007/s00415-017-8434-y>
 24. Rohmann, J. L., Rist, P. M., Buring, J. E., & Kurth, T. (2020). Migraine, headache, and mortality in women: A cohort study. *The Journal of Headache and Pain*, 21(1), 27. <https://doi.org/10.1186/s10194-020-01091-9>
 25. Safiri, S., Pourfathi, H., Eagan, A., Mansournia, M. A., Khodayari, M. T., Sullman, M. J. M., Kaufman, J., Collins, G., Dai, H., Bragazzi, N. L., & Kolahi, A.-A. (2022). Global, regional, and national burden of migraine in 204 countries and territories, 1990 to 2019. *Pain*, 163(2), e293–e309. <https://doi.org/10.1097/j.pain.0000000000002275>
 26. Seng, E. K., Singer, A. B., Metts, C., Grinberg, A. S., Patel, Z. S., Marzouk, M., Rosenberg, L., Day, M., Minen, M. T., Lipton, R. B., & Buse, D. C. (2019). Does Mindfulness-Based Cognitive Therapy for Migraine Reduce Migraine-Related Disability in People with Episodic and Chronic Migraine? A Phase 2b Pilot Randomized Clinical Trial. *Headache: The Journal of Head and Face Pain*, 59(9), 1448–1467. <https://doi.org/10.1111/head.13657>
 27. Steiner, T. J., Stovner, L. J., Jensen, R., Uluduz, D., Katsarava, Z., & Lifting the Burden: the Global Campaign against Headache. (2020). Migraine remains second among the world's causes of disability, and first among young women: Findings from GBD2019. *The Journal of Headache and Pain*, 21(1), 137. <https://doi.org/10.1186/s10194-020-01208-0>
 28. Stewart, W. F., Lipton, R. B., Dowson, A. J., & Sawyer, J. (2001). Development and testing of the Migraine Disability Assessment (MIDAS) Questionnaire to assess headache-related disability. *Neurology*, 56(suppl_1), S20–S28. https://doi.org/10.1212/WNL.56.suppl_1.S20
 29. Wachholtz, A. B., Malone, C. D., & Pargament, K. I. (2017). Effect of Different Meditation Types on Migraine Headache Medication Use. *Behavioral Medicine*, 43(1), 1–8. <https://doi.org/10.1080/08964289.2015.1024601>
 30. Wells, R. E., O'Connell, N., Pierce, C. R., Estave, P., Penzien, D. B., Loder, E., Zeidan, F., & Houle, T. T. (2021). Effectiveness of Mindfulness Meditation vs Headache Education for Adults with Migraine: A Randomized Clinical Trial. *JAMA Internal Medicine*, 181(3), 317. <https://doi.org/10.1001/jamainternmed.2020.7090>
 31. Wheeler, M. S., Arnkoff, D. B., & Glass, C. R. (2017). The Neuroscience of Mindfulness: How Mindfulness Alters the Brain and Facilitates Emotion Regulation. *Mindfulness*, 8(6), 1471–1487. <https://doi.org/10.1007/s12671-017-0742-x>

How to cite this article: Nandana K Nair, Arathi Mukundan, Sathya Rajkumar, Hunny Kalra. Mindfulness as a predictor of migraine-related disability: evidence from a cross-sectional study. *International Journal of Research and Review*. 2025; 12(11): 201–209. DOI: <https://doi.org/10.52403/ijrr.20251123>
