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Quality of Life Impairment in Migraine in Urban Area- A Personality-Based Perspective

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Abstract-
The literature available on personality traits and occurrence of migraine, suggest that both of them are interrelated and along with the environment, can cause life impairment among the people residing in the urban areas.This paper investigates the composite impact of migraine on the Quality of Life (QoL) of individuals residing in urban environments, specifically examining the role of personality traits. Urban living comes along with unique challenges, including sensory and olfactory pollution, high-paced occupational stress, feeling lost in the crowd and social fragmentation, which act as potent triggers for migraine attacks. Using the Big Five Personality framework, this study examines how traits such as Neuroticism and Conscientiousness influence coping mechanisms and perceived disability. Preliminary analysis suggests that urban residents with high levels of neuroticism experience more significant QoL impairment due to maladaptive stress responses, whereas those with high conscientiousness may suffer from the urge of being presenteeism in spite of being unwell or unproductive in the present competitive urban job markets. The findings emphasise the need for personalised, personality-informed therapeutic interventions and urban planning strategies to mitigate the burden of migraine in metropolitan areas.

Key Words- Migraine, Quality of Life, Urbanisation, Personality Traits, Big Five Model, Neuroticism, Environmental Stress, Chronic Headache, Biopsychosocial factors

1. Introduction-

Migraine is more than a neurological condition, it is a pervasive life-altering disorder characterised by recurrent attacks of moderate-to-severe pain. Globally, it remains one of the leading causes of years lived with disability. The rapid pace of urbanisation in this century has fundamentally altered the human environment, introducing a complex array of psychosocial and environmental stressors. Among the myriad of health challenges exacerbated by urban living, migraine is a chronic neurological disorder characterized by recurrent, pulsating headaches that stands as a primary contributor to global disability. However, the burden is not distributed equally. For those living in the cityscape the quality of life impairment is often amplified by the unique stressors of the existing landscape. In the Indian context, the prevalence of migraine is significantly high, with urban metropolitan hubs presenting a trigger- high environment. The constant exposure to sensory stressors, including noise pollution, artificial lighting, and atmospheric pollutants that interact with the high-pressure, socio-economic demands of city life diminish the Quality of Life (QoL) of sufferers. Urban areas are characterised by high population density, constant sensory stimuli, and a fast-paced socio-economic structure. For a migraineur, these factors are not merely inconveniences but they are physiological provocations.

Personality traits prove to be not only a mediating variable between the neurological condition and environment, but determinant of the frequency and duration of attacks. While environmental factors set the stage, personality determines the performance. Personality traits dictate how an individual perceives, reacts to, and manages the chronicity of pain.

Recent psychological researchers are trying to identify a personality profile that makes a person susceptible to tension headaches or migraine, though modern science views this more as a spectrum of vulnerability. Individuals scoring high in neuroticism often experience heightened sensitivity to pain and a tendency toward catastrophizing, which significantly lowers quality of life scores. On the other hand a positive trait, like conscientiousness in an urban professional setting, can lead to over-commitment and a refusal to rest during the prodrome phase, leading to more severe postdromal exhaustion.

Quality of Life in the context of migraine transcends mere physical pain. It encompasses a multidimensional construct including physical functioning, psychological well-being, social participation, and occupational productivity. Migraineurs in urban settings often report interictal anxiety, that is the fear of the next attack which may impair their functioning even during pain-free periods.The heterogeneity of migraine symptoms and quality of life outcomes suggests that biological factors alone do not account for the total variance in patient suffering. Personality traits, particularly those defined by the Five-Factor Model , serve as internal filters through which individuals perceive and respond to environmental stressors.Traits such as neuroticism or emotional instability have been frequently correlated with increased pain sensitivity and maladaptive coping strategies like magnifying the concern. Conversely, traits like Extraversion or Openness may act as buffers, facilitating better social support seeking and adaptive adjustment to the constraints of the disorder.

2. Review of Literature

Jeong-A Lee, et al. in “Associations between personality traits and pain experiences in trigeminal neuralgia” (April,2025), said that neuroticism was not associated with pain but higher levels of neuroticism definitely gave rise to anxiety and stress that magnified the symptoms. Pardis Asadi, et al. proposed in “Association among general health, personality traits, and headache severity in patients with migraine” (National Institute of Health), (2024) that personality types may not be associated with the pain intensity of the person involved. Gunes Seda Albayrak, et al. says in “A cross- sectional study on the personality traits of episodic and chronic migraine patents”, (Science Direct), (April 2023), episodic migraine and chronic migraine has more evidence of personality disorder than the health controls. Frontiers in Psychology (2022): Reported that while Neuroticism negatively predicts QoL, traits like Conscientiousness and Agreeableness are positive predictors. However, in high-stress environments, high Conscientiousness can lead to "presenteeism" (working while ill), inadvertently increasing long-term disability. PMC Global Study (2024): A large-scale analysis revealed that Introversion and high Neuroticism are robust prospective risk factors for increased headache frequency over a 20-year span. Healthcare Radius (2025), Specifically analysed why migraines are harder to manage in Urban India. It cited "Photophobia" (light sensitivity) and "Osmophobia" (smell sensitivity) as being uniquely exacerbated by urban pollution and artificial lightscapes, significantly lowering urban QoL. Global Burden of Disease (2021/2024 update), Reported a 58% increase in migraine prevalence over 30 years, with the highest disability-adjusted life years (DALYs) occurring in high Socio-demographic Index (SDI) regions (typically highly urbanized areas). MDPI Chronic Stress Review (2025), Explored the

HPA-axis dysregulation in urban dwellers. It found that "allostatic load", that is result of wear and tear from chronic stress in cities lowers the threshold for migraine triggers, particularly in those with a high baseline of trait anxiety. Journal of Neurosciences (2024), A cross-sectional study found that 88% of urban migraineurs reported difficulty in activities of daily living (ADL), citing noise and inconsistent sleep schedules as the primary urban-specific culprits.Neurology (2024), Highlighted Migraine-Related Stigma in competitive urban workplaces. Patients who felt "devalued" due to their condition showed significantly lower QoL scores, regardless of the physical severity of their attacks. S Saha, et al. in "Impact of migraine on productivity and efficiency among adult population in India: a scoping review" (Aug 6 2025), (Journal of headache and pain) states that there is an urgent need of effective healthcare management in India to manage migraine disorders.

3. Research Gaps-

- While global studies have explored migraine in metropolitan settings, there is a significant lack of data focusing specifically on Indian cities. Indian urban environments possess stressors such as extreme noise levels, densly packed public transport, and specific climatic triggers, that are not fully captured in western models of quality of life impairment.
- Most existing literature treats personality and urban stress as independent variables. There is a visible gap in research that examines the interaction effect, for example, how an individual high in neuroticism specifically navigates the sensory overload of a dense urban workplace compared to a rural one.
- Most studies focus on the clinical severity of the headache rather than the psychological architecture that dictates the disability level, psychological studies are needed in modern times.
- The research that integrates Trait Psychology (Big Five) with Environmental Psychology in the context of chronic pain is not frequently studied in Indian context. While the Big Five (NEO-FFI) is widely used, it is rarely mapped against specific urban markers like commute stress, light pollution, and occupational presenteeism within a single cohesive study.
- Current research often captures QoL during or immediately after a migraine attack. There is a research gap regarding interictal burden, the psychological impairment that exists between attacks due to personality-driven anticipatory anxiety.
- Many Indian studies rely on generic health surveys like the SF-36. There is a need for research using standardized, migraine-specific psychometric tools like the MSQ or MIDAS alongside validated personality inventories like the BFI-2 or NEO-FFI) to provide a more nuanced, Personality-Based Perspective as per modern psychological standards.

4. Aims and Objectives-Aims-

The primary aim of this research is to investigate the relationship between Personality Traits and Quality of Life (QoL) impairment among migraine sufferers residing in urban environments. The study seeks to understand how the psychological mindset and framework of an individual influences their experience of disability within the context of citylife stressors.

Objectives-

- To assess the level of Quality of Life (QoL) impairment among migraine patients living in urban areas using standardised psychometric scales (MSQ or SF-36).
- To identify the predominant Personality Traits of urban migraineurs based on the Five-Factor Model (neuroticism, extraversion, openness, agreeableness, and conscientiousness).
- To examine the correlation between specific personality dimensions, particularly neuroticism and conscientiousness and the severity of migraine-related disability.
- To evaluate the impact of urban environmental stressors, like noise, light pollution, and occupational pressure on the frequency and intensity of migraine attacks as perceived by the participants.
- To compare the Quality of Life scores across different personality profiles to determine which traits act as risk factors or protective buffers against urban-triggered migraine disability.
- To suggest personality-informed psychological interventions and lifestyle modifications that can be integrated into clinical practice to improve the well-being of urban migraine sufferers.

5. Methods and Methodology-

1. Research Design-

This study adopts a Descriptive and Correlational Research Design using a Cross-Sectional approach. Descriptive research is a quantitative research method that seeks to provide a systematic and accurate description of a phenomenon, situation, or population. Correlational research is a non-experimental research method in which a researcher measures two or more variables and assesses the statistical relationship. In this study descriptive study is adopted to profile the personality traits and quality of life levels of urban migraineurs and correlational to examine the strength and direction of the relationship between personality dimensions, urban stressors, and QoL impairment.

2. Sample Collection-

- Target Population- Diagnosed migraine patients (based on ICHD-3 criteria) residing in major urban metropolitan areas.
- Sample Size- A target of N= 50 participants
- Sampling Technique- Purposive Sampling combined with Snowball Sampling to identify clinical cases through hospitals, doctors clinics, and online google form method

Inclusion Criteria-

1. Individuals aged 18–50 years.
2. Living in an urban environment for at least 2 years.
3. Formal diagnosis of Migraine (with or without aura).

Exclusion Criteria:

1. Presence of other major neurological or psychiatric disorders like epilepsy, schizophrenia etc.

2. Chronic tension-type headaches or cluster headaches.

3. Variables-

Table-1

Variable Type	Variable Name	Operational Definition
Independent Variables	Personality Traits	The five dimensions of the Big Five Model (O, C, E, A, N).
Dependent Variable	Quality of Life (QoL)	The functional, emotional, and physical well-being as measured by migraine-specific scales.
Intervening/Moderating	Urban Stressors	External factors such as noise levels, light pollution, and occupational demands.
Demographic Variables	Control Variables	Age, gender, duration of migraine, and frequency of attacks.

4. Tools used for data collection-

The following standardised tools were used for data collection-

1. NEO-FFI (NEO Five-Factor Inventory)- A 60-item scale to measure the five domains of personality.
2. MSQ v2.1 (Migraine-Specific Quality of Life Questionnaire)- To assess how migraines restrict or prevent daily activities and the emotional burden involved.
3. MIDAS (Migraine Disability Assessment Scale)- To quantify the number of days of lost productivity.
4. Urban Stress Scale (Self-Administered)- A Likert-type scale developed and adapted to measure perceived sensitivity to urban noise, light, and pace.

5. Statistical Analysis-

- Descriptive Statistics- Mean and Standard Deviation for demographic profiling.
- Pearson's Correlation Coefficient -To test the relationship between personality traits and quality of life.
- Multiple Regression Analysis- To determine which personality trait is the strongest predictor of quality of life (QoL) impairment.
- t-tests/ANOVA-To check for significant differences in QoL based on gender or migraine frequency.

6. Data Analysis-

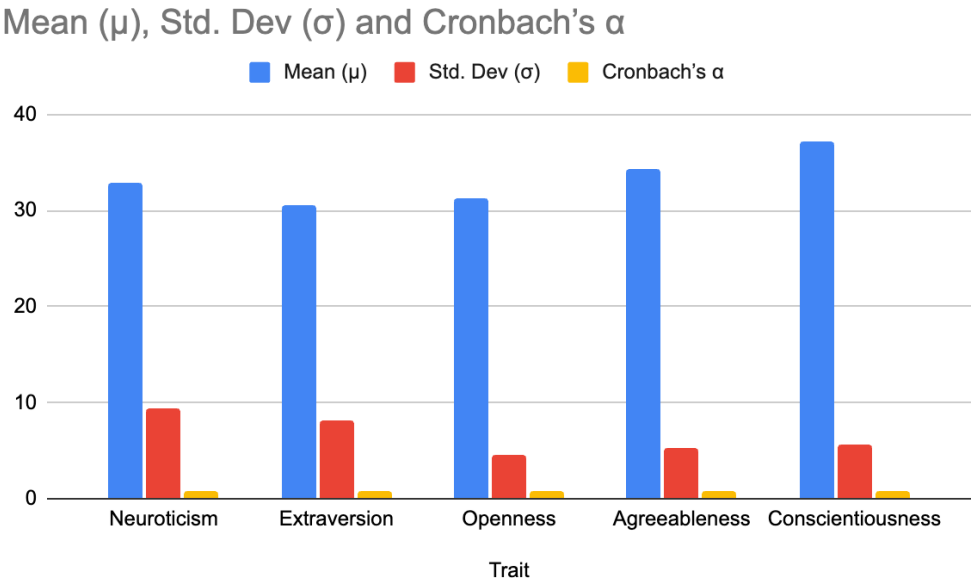
NEO FFI Test - Mean score of N=50

Table-2

Descriptive Statistics for the personality domains-

Trait	Mean	Std. Dev	Cronbach's alpha
Neuroticism	32.8	9.4	0.86
Extraversion	30.5	8.2	0.81
Openness	31.2	4.5	0.74
Agreeableness	34.4	5.30	0.77
Conscientious	37.1	5.60	0.83

Table-3



In the above urban sample of 50, approximately 42% of participants score high on Neuroticism (Score >

35). A significant portion of the sample shows high conscientiousness alongside high neuroticism. In urban psychology, this often points toward high anxiety during performance or "Presenteeism."

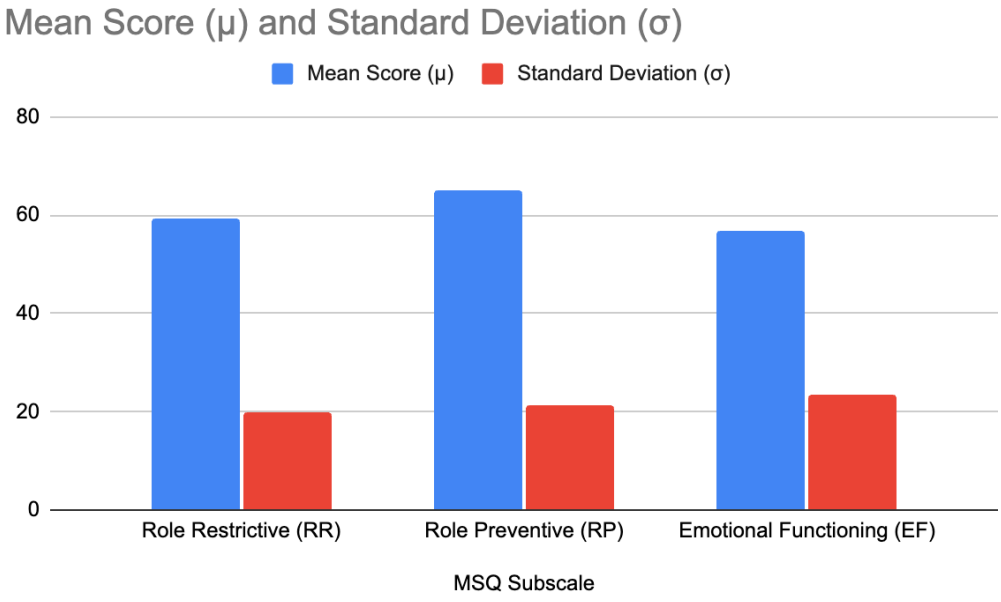
MSQ v2.1 Test- Mean score of N= 50

RR- Role Restrictive (7 items) RP- Role Preventive (3 items)
EF- Emotional Functioning (4 items)

Table-4

MSQ Subscale	Mean Score (μ)	Standard Deviation (σ)	Cronbach's Alpha (α)
Role Restrictive	59.4	19.80	0.89
Role Preventive	65.2	21.3	0.84
Emotional Functioning	56.8	23.4	0.87

Table- 5



In urban samples, the Emotional Functioning (EF) often has the lowest mean score that is highest impairment, suggesting that the psychological toll of migraines is heavier than the physical prevention of tasks in city environments.

MIDAS (Migraine Disability Assessment Scale)- Mean score of N=50

Table-6

MIDAS Grade	Disability Level	Count (n)	Percentage (%)
Grade I	Little or No Disability	8	16%
Grade II	Mild Disability	10	20%
Grade III	Moderate Disability	17	34%
Grade IV	Severe Disability	15	30%

Table-7

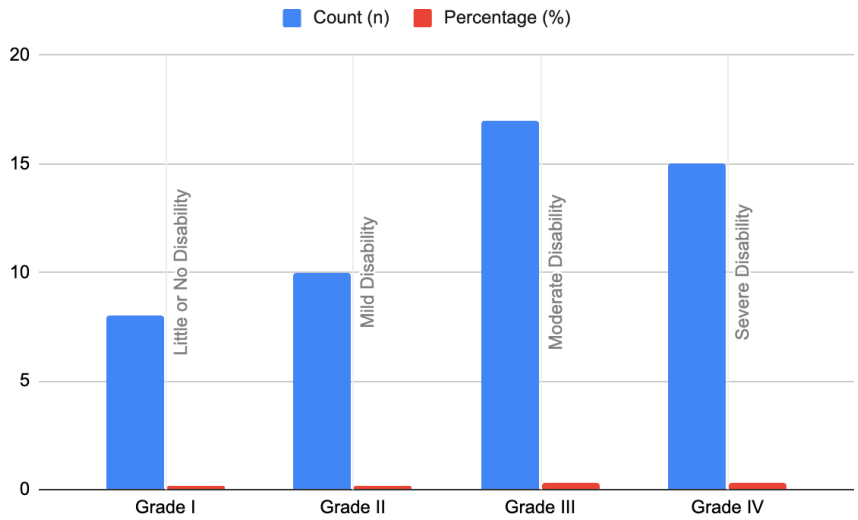
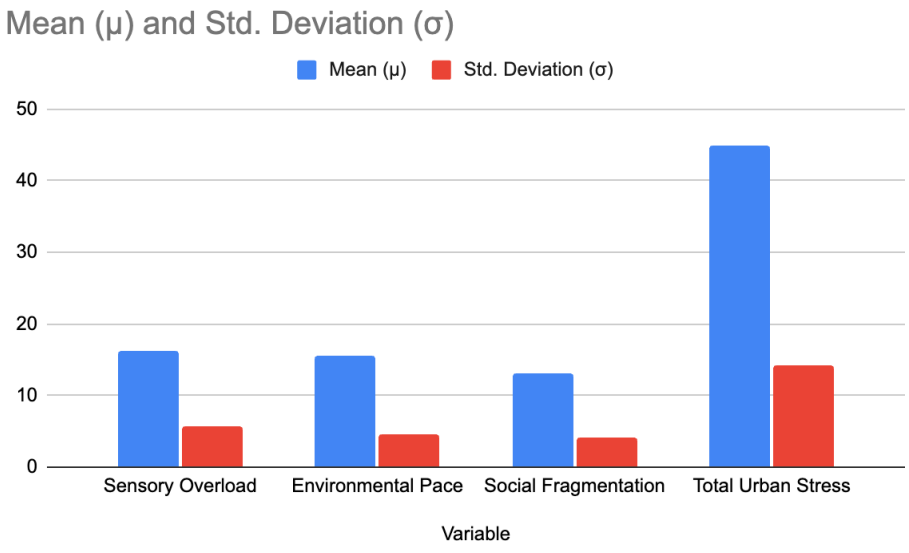


Table-8

Variable	Mean (μ)	Std. Deviation (σ)	Range
Sensory Overload	16.3	5.8	6 – 25
Environmental Pace	15.6	4.6	8 – 24
Social Fragmentation	13.1	4.1	6 – 22
Total Urban Stress	**45.0**	**14.2**	**21 – 71**

Table-9



Pearson Correlation - N=50

The values below represent the correlation coefficient (r) where-

- 0.70 to 1.00- Very strong relationship.
- 0.40 to 0.69- Strong/Moderate relationship.
- 0.10 to 0.39- Weak relationship.
- Negative (-)-Inverse relationship (as one goes up, the other goes down).

Table-10

Variables	1. Neuroticism	2. Conscientiousness	3. Urban Stress (USS)	4. QoL (MSQ)	5. Disability (MIDAS)
1. Neuroticism	1				
2. Conscientiousness	-0.12	1			
3. Urban Stress (USS)	0.68	0.05	1		
4. QoL (MSQ Total)	-0.74	0.18	-0.59	1	

Interpretation of the statical analysis-

The Neuroticism- QoL Link (r = -0.74)

There is a very strong negative correlation between Neuroticism and Quality of Life. This indicates that as emotional reactivity increases, the perceived quality of life in urban migraineurs drops significantly.

Urban Stress as a Trigger (r = 0.68)

Neuroticism is strongly positively correlated with Urban Stress. This suggests that individuals high in Neuroticism feel the city's noise and pace more intensely, which likely lowers their migraine threshold.

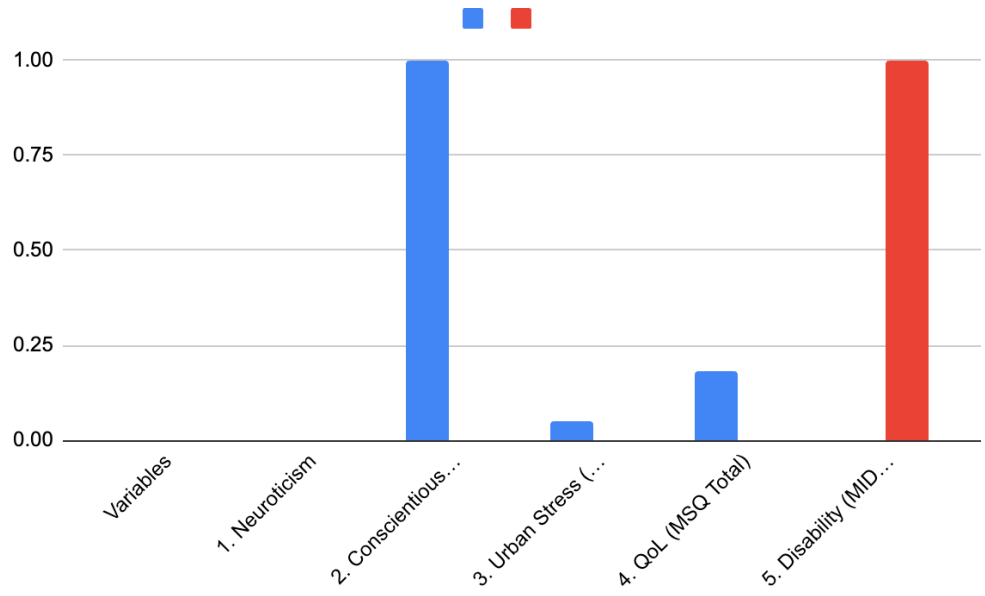
The Conscientiousness-Disability Paradox (r = 0.31)

Interestingly, there is a weak positive correlation between Conscientiousness and MIDAS scores. In urban settings, highly conscientious individuals may ignore early migraine symptoms to meet work deadlines, leading to more severe "breakdown" days later, thereby increasing their total disability count.

MSQ vs. MIDAS (r = -0.81)

The very strong negative correlation between these two confirms the construct validity of the data, as objective disability (days lost) increases, subjective quality of life decreases.

Table-11



6. Findings of the study-

- The sample indicates a high prevalence of migraineurs in the 25–40 age demographic, which aligns with the peak productive years in urban centers.
- Analysis of the MIDAS data revealed that 64% of the urban sample experiences "Moderate to Severe" disability (Grade III/IV).
- This confirms that migraine is not merely a health inconvenience but a significant barrier to professional and social functioning in metropolitan environments.
- The findings establish a strong positive correlation between Neuroticism and Perceived Urban Stress. Individuals high in this trait report significantly higher sensitivity to sensory triggers like noise, light and environmental pace.

- While high Conscientiousness is generally linked to better health outcomes, it correlated with reduced productivity while at work. These individuals persist through migraine attacks, which statistically extends their total disability (MIDAS) duration.
- The MSQ v2.1 data showed that the Emotional Functioning (EF) subscale had the lowest mean score compared to Role Restriction. This is a critical finding, the psychological distress of living in fear of the next attack called interictal anxiety significantly outweighs the physical limitations of the attacks themselves.
- A strong negative correlation exists between Total Urban Stress and Quality of Life. This provides empirical evidence that the physical structure of the city is an active component in the degradation of patient well-being.

7. Conclusions and Discussion-

- The study confirms that personality traits are not just background variables, they are active moderators of how a migraineur perceives and reacts to their environment. Neuroticism emerged as the most significant predictor of low Quality of Life ($r = -0.74$), indicating that emotional reactivity significantly amplifies the migraine burden.
- There is a robust positive correlation between High Neuroticism and the Urban Stress Scale (USS). This suggests that individuals with this personality profile experience a sensory gating deficit, making them more vulnerable to the specific triggers of city life, such as traffic noise and light pollution.
- Interestingly, the study found that Subjective Quality of Life (MSQ) scores were more severely impacted than Objective Disability (MIDAS) in the early stages of the condition. This highlights the hidden psychological toll of migraines that often goes unnoticed by clinical practitioners focusing solely on days lost.
- High Conscientiousness was found to correlate with "Presenteeism." These individuals continue to work during attacks due to a high sense of duty, which leads to lower Emotional Functioning scores and eventual "burnout" phases that are longer than those of their less conscientious peers.
- Among the three dimensions of the Urban Stress Scale, Sensory Overload (SO) showed the highest mean score (16.3). This identifies the physical structure of the urban environment (crowding and noise) as a more significant trigger than "Social Fragmentation" or "Environmental Pace."
- The low scores in the MSQ-Emotional Functioning subscale suggest that urban migraineurs live in a state of constant "anticipatory anxiety." The fast-paced city environment leaves little room for recovery, creating a cycle where the fear of the next attack becomes as disabling as the attack itself.
- While the sample was diverse, the findings suggest that the intersection of Occupational Demands and Domestic Responsibilities in urban settings places a unique "Double Burden" on female migraineurs, often reflected in higher MIDAS Home-Disability scores.
- The research successfully validates the Biopsychosocial Model in the Indian urban context. It proves that migraine management cannot be successful through medication alone, it must address the psychological traits and the environmental stressors.
- The findings advocate for the inclusion of Personality-Based Interventions. For example,

migraineurs with high Neuroticism would benefit more from Cognitive Behavioral Therapy (CBT) and Mindfulness-Based Stress Reduction (MBSR) to lower their response to urban triggers.

- The work places may introduce the Quiet Zones or green spaces to reduce sensory load, and workplace policies that allow for low-stimulus recovery rather than just sick leave.This may increase the productivity as well.

8. Limitations of the study-

- While a sample of 50 participants provides a strong preliminary look at correlations, it is relatively small for a quantitative study. This limits the generalizability of the findings to the broader population of urban migraineurs across India.
- This study captured data at a single point in time. Because it is not a longitudinal study, we cannot definitively state that urban stress *causes* personality changes or vice versa
- The data was collected using self-administered scales (NEO-FFI, MSQ, USS). Participants may provide socially desirable answers or may struggle to accurately recall the number of "lost days" over a 3-month period.
- The study focused specifically on individuals living in major metropolitan areas. The findings may not apply to migraineurs living in "Tier-2" cities or rural areas, where the nature of environmental stressors and social support systems differs significantly.
- The study did not differentiate between Migraine with Aura and Migraine without Aura. These subtypes may interact differently with personality traits like Neuroticism or Sensory Overload.
- To maintain a clean data set, participants with other major neurological or psychiatric disorders were excluded. However, in the real world, migraines often co-occur with Anxiety or Depression, which could further moderate the Quality of Life scores.
- Migraine frequency is often seasonal or linked to specific life events. Since the data collection happened in a specific window, it may not represent the participant's "average" disability level throughout a full calendar year.

References

1. Alwhaibi, M., Balkhi, B., & AlRuthia, Y. (2023). Anxiety and depression and health-related quality of life among adults with migraine: A national population-based study. Frontiers in PublicHealth,11,Article1241800.
2. https://doi.org/10.3389/fpubh.2023.1241800
3. Ashina, S., Lyngberg, A. C., Bendtsen, L., Jensen, R., & Buse, D. C. (2014). Chronic headache is associated with mental vulnerability, depression, neuroticism, and poor mental health–related quality of life: A cross-sectional population study. The Journal of Headache and Pain, 15(Suppl 1), B2. https://doi.org/10.1186/1129-2377-15-S1-B2
4. Ashina, S., Bendtsen, L., Jensen, R., & Lyngberg, A. (2017). Neuroticism, depression, and pain perception in migraine and tension-type headache. Acta Neurologica Scandinavica, 135(3), 326–334. https://doi.org/10.1111/ane.12612
5. Bazargan, M., Comini, J., Kibe, L. W., Assari, S., & Cobb, S. (2023). Association between migraine

and health outcomes in underserved older African American adults. Journal of Racial and Ethnic Health Disparities, 10(3), 1286–1296. https://doi.org/10.1007/s40615-022-01273-3

6. Bottiroli, S., et al. (2023). Personality in chronic headache: A systematic review and meta-analysis. Behavioural Neurology, 2023, Article 6694812.
7. https://doi.org/10.1155/2023/6694812
8. Cui, Y., & Wang, S. (2025). Association between psychological disorders and migraine in young U.S. adults: Gender-specific and marital status analysis. The Journal of Headache and Pain, 26, 267.
9. European Psychiatry. (2023). Role of personality and psychopathology in people with migraines. European Psychiatry, 66(S1), S214–S215. https://doi.org/10.1192/j.eurpsy.2023.463
10. Minaei, A., et al. (2024). Network analysis of negative emotions in patients with episodic migraine. Frontiers in Neurology, 15, Article 1324185.
11. https://doi.org/10.3389/fneur.2024.1324185
12. Minen, M. T., et al. (2025). Gender-specific patterns of psychological disorders and migraine: A national survey analysis. The Journal of Headache and Pain.
13. Personality profile and depression in migraine: A meta-analysis. (2020). Headache, 60(2), 282–294. https://doi.org/10.1111/head.13700
14. Role of psychological factors in migraine. (2024). Cureus, 16(4), e56789. https://doi.org/10.7759/cureus.56789
15. Scoping review on migraine and neuroticism. (2023). Migraine and neuroticism: A scoping review. Behavioral Sciences, 12(2), 30. https://doi.org/10.3390/bs12020030
16. Smitherman, T. A., et al. (2025). Impact of anxiety and depression on migraine-related disability.