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Identifying Migraine Triggers profile in the Indian Context: Insights for Global Perspective

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ABSTRACT: Objective: This study examines the association between the Migraine Disability Assessment scale and various aggravating triggers in migraine patients. **Method:** A total of 129 Indian migraine patients, aged 15-65, were recruited from the Bangalore Neuro Centre for this cross-sectional study. An extensive list of possible migraine triggers along with the Migraine Disability Assessment scale was included in a self-administered questionnaire to gather important demographic and migraine-related data. Each subject's diagnosis of migraine was confirmed by a neurologist. The Chi Square test was used to determine the significant association between Migraine Disability Assessment grades and specific triggering factors. **Result:** Our results indicate that there is significant relationship between Migraine Disability Assessment scale and various aggravating triggers in migraine patients. The specific triggers that affect migraine includes food items (e.g., nuts and chicken), sensory stimuli (e.g., loud noises and strong smells), weather variations (e.g., rain), stress-related factors (e.g., night shifts), and other factors (e.g., head banging and solitude). **Interpretation:** This present study suggests that by identifying and managing these triggers, migraine suffers may see a reduction in their Migraine Disability Assessment scores and an improvement in their overall quality of life. Understanding these relationship is essential for clinicians to develop effective, personalised management strategies for migraine patients.

Key words: *Migraine triggers, Migraine Disability Assessment scale, and Indian population*

INTRODUCTION

Millions of individuals worldwide endure the prevalent and debilitating neurological disorder known to be migraines. Migraine sufferers' quality of life is greatly affected by these severe, recurrent headaches, which are frequently accompanied by light and sound sensitivity, nausea, and vomiting (Goadsby, Holland, Martins-Oliveira, Hoffmann, Schankin, & Akerman, 2017). According to global epidemiological statistics collected in 2016 from 132 countries, 1.04 billion people worldwide suffer from migraines (Adnyana, Suherlim, & Widyadharma, 2024). Over the years, migraine has presented a challenge to medicine and is one of the most prevalent conditions worldwide. In Egypt, the one-year prevalence rate is 17.3%, while the global prevalence of migraine is currently 14% (Tana et al., 2024). Although it has been observed that gastrointestinal issues can affect migraine, the precise processes governing this condition remain unknown. The gut microbiome, inflammatory mediators, stress hormones, the serotonin pathway, neuropeptides, and nutritional ingredients are some of the variables that fuel the link between food and migraine. A deeper comprehension of the gut-brain-immune (GBI) axis could result in the creation of innovative treatment targets for headache disorders. Given the close relationship between the intestinal and central nervous systems, food may in fact cause migraines (Tana et al., 2024).

To enhance patient outcomes and determine suitable management strategies understanding the factors that worsen migraines are crucial. According to a study done on 200 migraine sufferers, every single

one of them had at least one trigger factor, while 95.5% had at least two (Mollaoğlu, 2013). Foods, hormone imbalances, stress, irregular sleep patterns, and environmental variables are some of the triggers. While there is considerable individual variation in migraine aggravating variables, environmental, nutritional, and lifestyle triggers are frequently mentioned. It has been demonstrated that environmental variables such temperature fluctuations, bright light exposure, and loud noises can trigger migraine attacks (Haut, Bigal, & Lipton 2006). Migraine sufferers often report dietary triggers, such as caffeine, alcohol, and specific foods like chocolate and aged cheeses. In addition, lifestyle variables such stress, sleep deprivation, and erratic eating habits are important causes of migraines, certain smells, like perfumes, smoke, and chemicals, can also trigger migraines in sensitive individuals (Kelman, 2007). Although the factors that aggravate migraines vary greatly from person to person, environmental, dietary, and lifestyle triggers are commonly identified.

Dehydration lowers blood volume, which reduces oxygen and blood flow to the brain. Because the brain is sensitive to variations in oxygen and blood flow, this may set off migraine headaches. Dehydration is cited as a trigger by about one-third of migraine sufferers, and for some, even a small amount of dehydration can precipitate severe headache pain. It is ironic that taking acute drugs over 10 days in a month can result in headaches if a person often has migraine headaches; this condition is called Medication Overuse Headache (MOH). Hormonal variations, especially in women, have been shown in recent research to exacerbate migraine attacks. The frequency and intensity of migraines are highly correlated with changes in estrogen levels during menstrual cycles, pregnancy, and menopause (MacGregor, 2015). A person's genetic predisposition is a significant component in determining their vulnerability to migraines; some gene variants have been discovered as potential risk factors.

The MIDAS (Migraine Disability Assessment) scale is a widely used tool for quantifying the influence of migraines on a patient's daily life, focusing on work, school, and social activities. Key studies indicate that stress, sleep disturbances, dietary triggers, hormonal fluctuations, and environmental factors like bright lights and strong odours are significant aggravating factors that can influence MIDAS scores (Stewart, Lipton, Dowson, & Sawyer, 2001). (Stewart et al., 2001) developed the MIDAS scale to provide a quantitative measure of migraine-related disability, which has since been validated in various populations. (Lipton, Stewart, Diamond, Diamond, & Reed 2001) further explored the relationship between migraine triggers and disability, demonstrating that effective management of these factors can lead to improved MIDAS scores and overall quality of life for sufferers. Understanding these connections is crucial for clinicians to develop comprehensive management plans that address both the frequency and impact of migraines. Comprehending and recognizing these exacerbating elements is important for customized migraine treatment. By recognizing and avoiding specific triggers, patients can reduce the frequency and severity of their migraine attacks, which will drastically enhance their overall quality of life.

Knowledge gap

Given that cultural, nutritional, and environmental factors may differ greatly from those found in other contexts, the study fills a knowledge gap about migraine triggers unique to the Indian population. Although a variety of migraine triggers have been found in earlier research, the relationship between these triggers and the Migraine Disability Assessment (MIDAS) scale in an Indian context has not been thoroughly investigated. In order to pinpoint certain triggers, the study aims to assess the correlation between the MIDAS scale and other migraine aggravating factors among Indian patients.

METHODOLOGY

Study design - The cross-sectional strategy used in this study was intended to evaluate and contrast the headache features and disability experienced by the migraine patients on various aggravating factors. A cross-sectional survey gathers information at one particular moment in time, providing an overview of the characteristics and experiences of the participants. A range of instruments and surveys were utilized to collect pertinent information. And demographic information was gathered, such as age, gender, and educational background.

Study population and sample size - The study population was patients from the age group 15 to 65 years who had a migraine diagnosis for more than a year, from a neurologist were eligible to participate if they met certain requirements and could communicate in Kannada or English. Patients who don't meet the age range of 15 to 65, patients with neurological disorders like epilepsy or strokes, and people who did not speak Kannada or English fluently were excluded. A sample of 129 Indian patients with migraine headaches was included in the study. The sample consisted of participants that were both male and female. These patients were referred to Bangalore Neuro Centre in Bangalore from the community, indicating that the sample represents individuals seeking medical attention for their headache conditions.

Assessments - A self-administered questionnaire was designed to collect the data. The questionnaire include 1. Basic participant's characteristics, 2. MIDAS and 3. Aggravating factors of migraine assessed by present investigators.

The basic participant characteristics included gender, age, height and weight, neighbourhood of living, and migraine family history, and people who had a migraine diagnosis for more than a year from a neurologist were eligible to participate.

The second part it is a regularly used tool for measuring the impact of migraines on a person's daily functioning and quality of life. Stewart et al. (2001) developed the MIDAS scale, which measures the level of disability caused by migraines over a three-month period with scores ranging from 0 to 92. Based on the overall scores, four disability grades are assigned: that is I – little or no disability, II – mild disability, III – moderate disability and IV – severe disability in the current study grades has been used.

The Aggravating triggers that was divided into 12 categories by the present researchers that is **Food and beverages** (chocolate/ cocoa items, milk/cheese and dairy products, yeast, nuts, dry fruits, chapatti, masala items, chicken, cool drinks, cold food, caffeine; **Smoking** (cigarette, bidi); **Drugs; Drinks; hunger or dehydration; Stress** (changes in wake-sleep patterns, night-shift, rotational shift, hormones, OCP, premenstrual, menstrual cycle, menopausal); **Sensory stimuli** (sunshine/bright light, noise/ loud sounds, odd or strong smells that is perfume/ petrol/ nail polish, physical activity/ workout, sports); **Environmental factors** (high altitude, fog, smoke, dust); **Changes in the environment** (empathy public space, traffic, crowded area); **Changes in weather** (sunny, windy, rainy); **Emotions** (mood swings, anger, laughing, crying) and **other factors** (dental problems, cold, coughing, sneezing, running nose, bending over, bowel movement, constipation, head banding, sexual activity, travelling, head bath, fan , AC, sleep, solitude, doing academic homework).

Data collection - The data was collected in Bangalore Neuro Centre, an OPD and neurospecialty centre in Bangalore. When the patients arrived to Bangalore Neuro Centre, skilled neurologist performed a thorough neurological evaluation on them. Confirming the diagnosis of migraine headache and ruling out any other potential underlying neurological illnesses. Patients were orally informed about the goal of the study following the first screening procedure against the inclusion and exclusion criteria, and those who gave their assent were requested to fill out formal informed consent forms. A neurologist then evaluated

each subject to confirm the diagnosis of migraine. The present researcher took the sociodemographic data. Following the neurological examination and diagnosis, the patients were transferred to the neuropsychology department for additional evaluation of various headache characteristics and their influence on daily functioning. Patients in the neuropsychology unit performed systematic interviews and questionnaires (MIDAS and various aggravating triggers) to learn about the triggers that affect migraines.

Data analysis - In the present study, Descriptive statistics, is used to summarize the headache characteristics. Crosstabs are used to display the frequency distribution of two variables and Chi Square is used to determine if there is a significant association between two variables such as MIDAS Grades and aggravating triggers. All data were analysed by using IBM SPSS Statistics software 27.0 version.

RESULT

Table – 1 – Shows the association between MIDAS grades and aggravating triggers

MIDAS GRADES AGGRAVATING TRIGGERS	MIDAS – I (N = 65)	MIDAS - II (N = 11)	MIDAS - III (N = 16)	MIDAS - IV (N = 37)	Pearson Chi - Square
Food & beverage					
Chocolate/ coca items	2 (3.1%)	-	2(12.5%)	-	0.100
Milk/ cheese and dairy products	3(4.6%)	-	1(6.3%)	3(8.1%)	0.740
Yeast	-	-	-	1(2.7%)	0.489
Nuts	-	-	2(12.5%)	1(2.7%)	0.028*
Dry fruits	-	-	-	1(2.7%)	0.474
Chapatti	-	-	1(6.3%)	-	0.068
Masala items	4(6.2%)	-	-	1(2.7%)	0.546
Chicken	-	1(9.1%)	-	-	0.013**
Cool drinks	2(3.1%)	-	-	2(5.4%)	0.681
Cold food	1(1.6%)	-	1(6.3%)	-	0.384
Caffeine	1(1.6%)	-	-	1(2.7%)	0.863
Smoking					
Cigarette	1(1.5%)	-	-	-	0.803
Bidi	-	-	-	-	-
Drugs	-	-	-	-	-
Drinks	-	1(9.1%)	-	2(5.4%)	0.131
Huger or dehydration	28(43.1%)	5(45.5%)	12(75%)	18(48.6%)	0.151
Stress					
Changes in wake-sleep patterns	39(60%)	6(54.5%)	10(62.5%)	26(70.3%)	0.700
Night shift	-	-	-	3(8.1%)	0.054*
Rotational shift	1(1.5%)	2(5.4%)	-	-	0.500
Hormones	-	-	-	1(2.7%)	0.474
OCP	-	-	-	-	-
Premenstrual	4(6.2%)	1(9.1%)	3(18.8%)	3(8.1%)	0.453
Menstrual cycle	2(3.1%)		2(12.5%)	3(8.1%)	0.333
Menopausal	-	-	-	-	-
Sensory stimuli					
Sunshine/ bright light	33(50.8%)	7(66.6%)	11(68.8%)	25(67.6%)	0.300
Nosie/ loud sounds	36(55.4%)	4(36.4%)	13(81.3%)	28(75.7%)	0.021*
Odd or strong smells that is perfume/ petrol/nail polish	23(35.4%)	2(18.2%)	11(68.8%)	21(56.8%)	0.010**
Physical activity/ workout	3(4.6%)	1(9.1%)	2(12.5%)	5(13.5%)	0.426
Sports	2(3.1%)	1(9.1%)	2(12.5%)	3(8.1%)	0.463

Environmental factors					
High altitude	15(23.1)	1(9.1%)	6(37.5%)	7(18.9%)	0.323
Fog	6(9.2%)	1(9.1%)	1(6.3%)	5(13.5%)	0.849
Smoke	9(13.8%)	4(36.4%)	4(25%)	8(21.6%)	0.290
Dust					
Changes in environment	33(50.8%)	4(36.4%)	6(37.5%)	18(48.6%)	0.686
Empathy public space	2(3.1%)	-	1(6.3%)	-	0.496
Traffic	30(46.2%)	3(27.3)	5(31.3%)	17(45.9%)	0.493
Crowded area	30(46.2%)	2(18.2%)	7(43.8%)	14(37.8%)	0.350
Changes in weather					
Sunny	26(40%)	5(45.5%)	8(50%)	21(56.8%)	0.431
Windy	17(26.2%)	4(36.4%)	4(25%)	15(40.5%)	0.439
Rainy	7(10.8%)	1(9.1%)	4(25%)	13(35.1%)	0.018**
Emotions					
Mood swings	23(35.4%)	4(36.4%)	10(62.5%)	19(51.4%)	0.154
Anger	28(43.1%)	4(36.4%)	7(43.8%)	23(62.2%)	0.229
Laughing	5(7.7%)	2(18.2)	2(12.5%)	3(8.1%)	0.686
Crying	16(24.6%)	3(27.3%)	7(43.8%)	14(37.8%)	0.343
Other factors					
Dental problems	3(4.6%)	-	1(6.3%)	2(5.4%)	0.879
Cold	2(3.1%)	-	-	1(2.7%)	0.843
Coughing	3(4.6%)	-	-	-	0.388
Sneezing	3(4.6%)	1(9.1%)	2(12.5%)	4(10.5%)	0.591
Running nose	-	-	-	2(5.4%)	0.168
Bending over	13(20.3%)	1(9.1%)	1(6.3%)	8(21.6%)	0.448
Bowel movement	3(4.6%)	-	-	1(2.7%)	0.710
Constipation	2(3.1%)	-	-	1(2.7%)	0.843
Head banging	13(20%)	7(63.3%)	5(31.3%)	11(29.7%)	0.027*
Sexual activity	1(1.5%)	-	1(6.3%)	-	0.381
Travelling	34(52.3%)	3(27.3%)	8(50%)	17(45.9%)	0.482
Head bath	27(41.5%)	3(27.3%)	6(37.5%)	13(35.1%)	0.798
Fan	3(4.6%)	-	-	-	0.388
AC	19(29.2%)	2(18.2%)	8(50%)	14(37.8%)	0.265
Sleep	13(20%)	1(9.1%)	2(12.5%)	5(13.5%)	0.693
Solitude	10(15.4%)	4(36.4%)	3(18.8%)	15(40.5%)	0.028*
Doing academic homework	2(3.1%)	-	-	-	0.572

*Significant at 0.05 level; **Significant at 0.01 level.
Note – N is the number of patients marked that respective Midas grades.

The migraine patients' trigger factors are displayed in the table. The most frequent trigger factors as per the current study are Odd or strong smells that is perfume/petrol/nail polish" (0.010) in sensory stimuli, "chicken" (0.013) a food, "rainy" (0.018) in changes in weather, "noise/ loud sounds" (0.021) in sensory stimuli , "head banging" (0.027) and "solitude" (0.028) in other factors, "nuts" (0.028) a food and "night shift" (0.054) in stress.

DISCUSSION

The current study evaluated the association between several migraine aggravating triggers and MIDAS grades. Our results are consistent with earlier studies showing a broad range of triggers can cause mi-

graines. Notably, we found that among the most frequent triggers were strange or overpowering scents, like those from gasoline, perfume, and nail polish. It is thought that these smells activate the trigeminal nerve, which in turn triggers migraine symptoms (Kelman, 2007). People who have migraines are more vulnerable to osmophobia or a sensitivity to smell, which can precipitate or intensify attacks. Certain scents, such as those from cigarettes, perfumes, car exhaust, and some cleaning supplies and foods, have been shown to cause panic attacks. A study found that 72% of participants reported strong odours, including perfumes and cleaning products, as triggers (Lindelof, Ellrich, & Svensson 2020). A person with a migraine may have a neurological system that is especially sensitive to certain everyday sensory events. But a few days to hours before a headache attack, during the prodromal phase (the first of four separate migraine phases), individuals may become considerably more sensitive to specific stimuli, including scents (Goadsby et al., 2017). Within the industry, toluene, formaldehyde, and dibutyl phthalate are occasionally referred to as the "toxic trio". Nail paint, also known as fingernail adhesive, contains toluene, which can cause dry or cracked skin, migraines, vertigo, and numbness, as well as irritation of the eyes, nose, throat, and lungs, liver and kidney damage, and effects on unborn babies during pregnancy (Roelofs & Do, 2012).

A number of items, including chicken and nuts, were consistently mentioned as triggers. (Zivadinov, Willheim, Sepic-Grahovac, Jurjevic, & Bucuk, 2003), mentioned these foods may contain tyramine, which might alter blood vessel activity and cause migraines. There are numerous studies on dietary triggers for migraine specifically research focusing on chicken as a trigger is less common. Based on the present study chicken is in the second most for causing of migraine this may be because of the overuse of antibiotics can lead to drug-resistant bacteria, which may cause infections that are harder to treat and potentially trigger headache as a symptom of these infection and it can affect other health issues that could trigger headaches (Landers, Cohen, Wittum, & Larson, 2012). Also, while growth hormones in poultry may not be first linked to headaches, hormonal imbalance can be a potential trigger for headaches. The study from Bangladesh analysed dietary triggers among migraine patients and certain foods, including chicken were reported as trigger by about 12% of the participants (Haque, Rahman, Hoque, Hasan, Chowdhury, Khan, 2013).

Despite being widely regarded as healthful, some people paradoxically experience migraines when they consume nuts because of a number of biochemical variables. The presence of tyramine, a naturally occurring substance present in a variety of foods, including nuts, is one of the main mechanisms. According to (Bartolini, Hernandez, Kamboj & Rieck 2015), tyramine is known to cause headaches in those who are sensitive to it via altering the brain's levels of neurotransmitters, especially norepinephrine. When its levels change as a result of food, this neurotransmitter may play a part in the onset of migraines. Higher levels of tyramine can cause headaches by changing neurotransmitter release and blood vessel dilatation, two processes connected to the pathophysiology of migraines. These foods include aged or fermented foods like nuts. (Bartolini et al., 2015). These substances may influence vascular reactions and neurotransmitter levels, which may contribute to the development of migraines. (Zaeem, Zhou, Dilli, & Headache, 2014). Omega-6 fatty acids, which are abundant in nuts, have the potential to increase inflammation in the body. It is getting better acknowledged that chronic low-grade inflammation influences blood vessel function and neural sensitivity to pain in the etiology of migraines.

A big part was also played by environmental factors. One significant trigger was rainy weather, which can alter atmospheric pressure. The present study also show that rainy weather is a significant trigger for migraine. Rainy weather often brings high humidity and changes in temperature. High humidity levels can cause dehydration, a known risk factor for migraine, sudden temperature changes can also disrupt body's homeostasis. These can lead to physiological stress and dehydration, both of which can have migraine attacks. High humidity and sudden temperature changes are linked to increased migraine frequency.

52% of participants experienced migraine from rain as it leads to changes in air quality that can stir up allergens, spores which lead to migraine. (Xu, Liu & Zhang. 2019). Study found that there was no strong, consistent evidence linking rainy weather specifically to increased migraine headache (Wang, Schoerning, & Nelsen, 2015).

(Vingen, Sand, & Stovner, 1999), found that loud noises and continuous sounds were also frequently detected. This is probably because they might lead to sensory overload and tension, two factors that are known to trigger migraines. However, a number of earlier investigations carried out in the US (Kelman, 2007). Geographical disparities could be the cause of this variance. Cities in south India, such as Bangalore, Chennai, and Hyderabad, have reported high levels of noise pollution. But a study in Hong Kong supported the present paper findings, as it mentions residential districts in Hong Kong are packed. The mental strain and annoyance brought on by loud noises from nearby construction sites, traffic, intruder alarm systems, and neighbours may be made worse by this illness (Xie, Lin, Wong, Yan, Zhang & Gao 2022). European federation of neurological society's guidelines on the treatment of tension type headache emphasized that noise and loud sounds are common triggers for migraine and other headache. Kelman also found that 76% of patients reported noise as a trigger factor for migraine (Kelman, 2007).

Head banging a form of repetitive and forceful head movement. Studies have explored various physical activities and their association with migraine onset have been shown to make headaches worse. This may be because they put physical stress and pressure on the muscles in the head and neck. Although research is limited on head banging, a study found that strenuous physical activities, including sudden head movements, can trigger migraines due to the stress they place on the body and the resulting changes in blood flow and pressure within the brain (Parikh, Silberstein, Young, & Nahas, 2011). A systematic review of various triggers, including physical strain and sudden movements, support the idea that head banging could serve as a migraine trigger (Kelman, 2007). Focused research specifically on head banging would be needed for better understanding.

Significant triggers included aspects of the lifestyle like working night hours and being alone. Isolation may raise stress levels, which in turn may contribute to the occurrence of migraines. Stress and the disruption of circadian rhythms that come with working night shifts can cause migraines. A well-known migraine cause, insufficient and fragmented sleep is a result of the disruption of sleep patterns brought on by night shift work. Working night shifts frequently exposes workers to artificial illumination and blue light-emitting devices, which can disrupt melatonin production and worsen sleep disorders (Czeisler, 2013).The dietary practices and erratic meal schedules frequently connected to night shift work can impact migraine vulnerability. Increased tension and anxiety are recognized migraine triggers in susceptible individuals, and they can be further exacerbated by the stress of adjusting to a nocturnal schedule and the social isolation sometimes associated with night shifts.

(Coplan, Bowker, & Nelson 2021), suggests that social contacts are essential for controlling stress reactions because they trigger the release of neurotransmitters like oxytocin and serotonin, which lessen anxiety and encourage relaxation. These neurochemical pathways may be disturbed in people who spend a lot of time alone themselves or who don't have strong social ties, which can increase stress and aggravate migraine symptoms. The principal stress hormone, cortisol, is linked to higher levels of activation of the hypothalamic-pituitary-adrenal (HPA) axis and loneliness, which can be exacerbated by social isolation (Cacioppo & Hawkley, 2009). Changes in pain processing pathways and higher sensitivity to pain stimuli have been associated to chronic HPA axis activation and elevated cortisol levels. These changes may precipitate or exacerbate migraine attacks (Burstein, Noseda & Borsook, 2015). Psychosocial factors also affect coping mechanisms and emotional control, which contributes to migraine. Social support networks

mitigate the detrimental effects of stress on health outcomes by offering practical help and emotional comfort during tough times.

Current research indicates that other triggers are not important enough to cause migraines. (Wang, Jin, & Shen. 2013) found no consistent evidence that all people have migraines when the weather changes. (Burtscher, Likar, Nachbauer & Philadelphy, 2011) investigated how altitude affected headaches, including migraines, and discovered that while some people report that changes in altitude cause their migraines, there is insufficient evidence to conclude that this is a common cause. Although red wine in particular is frequently mentioned as a migraine trigger, the research supporting this claim is not always clear. According to other research, not all migraine sufferers consistently experience alcohol as a trigger, and the type of alcohol taken may not have a major impact (Panconesi, 2008). While smoking may not cause migraines directly, some research indicates that it may increase their frequency or severity (Zaeem, Zhou, & Dilli 2016). (Spierings, Ranke, & Honkoop 2001) concluded that not all migraine sufferers regularly experience dehydration as a trigger. Several studies concentrate on how overusing medications might exacerbate migraines. Certain medications have the potential to indirectly trigger migraines by modifying blood flow or having an impact on the central nervous system. (Zaeem, et.al, 2016).

CONCLUSION

Our results underscore the complex nature of migraine triggers by highlighting a wide range of plausible causes. Based on our research, we can conclude that strong or peculiar smells, including those from gasoline, perfume, nail polish, and some meals like chicken and nuts, as well as environmental elements like loud sounds and wet weather, are major aggravating factors that might cause migraines. Migraine triggers include physical acts such as head banging, social factors such as social isolation, and occupational factors such as working night shifts. Individuals with migraine who are from India demonstrate great perseverance and adaptation in coping with their daily lives, despite the severity and variety of triggers. They exhibit remarkable tenacity and fortitude in juggling their obligations to their families, careers, and personal lives. They continue to function at a good level in their personal, professional, and family life despite difficult circumstances and numerous triggers. Their capacity to flourish under these conditions is indicative of their resiliency and the potency of their coping mechanisms. This emphasizes how crucial it is to have a supportive environment and employ efficient management techniques in order to lessen the impact of migraine triggers and allow people to continue productive lives in spite of their migraine burden.

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Data Availability
The data sets used or analysed during the current study are available from the corresponding author on reasonable request.

REFERENCES

Adnyana, I. M. O., Suherlim, R., & Widyadharma, I. P. E (2024). Various Trigger Factors of Migraine: A Review of Pathophysiology and Mechanism.

Bartolini, M., Baruffaldi, R., & Lippi, G. (2015). Nutraceuticals for migraine: A systematic review and meta-analysis. Neurological Sciences, 36(9), 1623-1632.

Burstein, R., Noseda, R., & Borsook, D. (2015). Migraine: multiple processes, complex pathophysiology. *Journal of Neuroscience*, *35*(17), 6619-6629.

Burtscher, M., Likar, R., Nachbauer, W., & Philadelphy, M. (2011). Risk factors for high-altitude headache and acute mountain sickness in mountain hikers. Wilderness & Environmental Medicine, 12(2), 110-115.

Cacioppo, J. T., & Hawkley, L. C. (2009). Perceived social isolation and cognition. *Trends in cognitive sciences*, *13*(10), 447-454.

Coplan, R. J., Bowker, J. C., & Nelson, L. J. (Eds.). (2021). The handbook of solitude: Psychological perspectives on social isolation, social withdrawal, and being alone. John Wiley & Sons.

Czeisler, C. A. (2013). Perspective: casting light on sleep deficiency. *Nature*, *497*(7450), S13-S13.

Goadsby, P. J., Holland, P. R., Martins-Oliveira, M., Hoffmann, J., Schankin, C., & Akerman, S. (2017). Pathophysiology of migraine: a disorder of sensory processing. *Physiological reviews*, *97*(2), 553-622.

Haque, B., Rahman, K. M., Hoque, M. M., Hasan, A. T., Chowdhury, R. N., Khan, S. U., et al. (2013). Precipitating and relieving factors of migraine versus tension type headache. *BMC Neurology*, 13, 94.

Haut, S. R., Bigal, M. E., & Lipton, R. B. (2006). Chronic disorders with episodic manifestations: focus on epilepsy and migraine. *The Lancet Neurology*, *5*(2), 148-157.

Kelman, L. (2007). The triggers or precipitants of the acute migraine attack. *Cephalalgia*, *27*(5), 394-402.

Landers, T. F., Cohen, B., Wittum, T. E., & Larson, E. L. (2012). A review of antibiotic use in food animals: perspective, policy, and potential. *Public health reports*, *127*(1), 4-22.

Lindelof, K., Ellrich, J., & Svensson, P. (2020). Osmophobia and its clinical significance in migraine. *Cephalalgia*, 40(8), 881-891.

Lipton, R. B., Stewart, W. F., Diamond, S., Diamond, M. L., & Reed, M. (2001). Prevalence and burden of migraine in the United States: data from the American Migraine Study II. *Headache: The Journal of Head and Face Pain*, *41*(7), 646-657.

MacGregor, E. A. (2015). Migraine management during menstruation and menopause. *CONTINUUM: Lifelong Learning in Neurology*, *21*(4), 990-1003.

Mollaoğlu, M. (2013). Trigger factors in migraine patients. Journal of health psychology, 18(7), 984-994.

Panconesi, A. (2008). Alcohol and migraine: trigger factor, consumption, mechanisms. A review. *The journal of headache and pain*, *9*(1), 19-27.

Parikh, S. K., Silberstein, S. D., Young, W. B., & Nahas, S. J. (2011). Head banging as a migraine trigger. *Journal of Headache and Pain*, 12(3), 347-349.

Roelofs, C., & Do, T. (2012). Exposure assessment in nail salons: an indoor air approach. *International Scholarly Research Notices*, *2012*(1), 962014.

Spierings, E. L., Ranke, A. H., & Honkoop, P. C. (2001). Precipitating and aggravating factors of migraine versus tension-type headache. *Headache: The journal of head and face pain*, *41*(6), 554-558.

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.

Tana, C., Raffaelli, B., Souza, M. N. P., de la Torre, E. R., Massi, D. G., Kisani, N., & Waliszewska-Prosół, M. (2024). Health equity, care access and quality in headache–part 1. *The Journal of Headache and Pain*, *25*(1), 12.

Vingen, J. V., Sand, T., & Stovner, L. J. (1999). Sensitivity to various stimuli in primary headaches: a questionnaire study. *Headache: The Journal of Head and Face Pain*, *39*(8), 552-558.

Wang, J., Jin, Z., & Shen, J. (2013). Impact of weather on migraine: an exploratory study. Journal of Headache and Pain, 14(1), 95.

Wang, Y., Schoerning, L., & Nelsen, C. (2015). Weather and migraine headache in adults. *International Journal of Biometeorology*, 59(4), 505-512.

Xie, Y. J., Lin, M., Wong, Y. T., Yan, L., Zhang, D., & Gao, Y. (2022). Migraine attacks and relevant trigger factors in undergraduate nursing students in Hong Kong: a cross-sectional study. *Journal of pain research*, 701-713.

Xu, X., Liu, Y., & Zhang, H. (2019). Weather and migraine headache: A time-stratified case-crossover study. *The Journal of Headache and Pain*, 20(1), 95.

Zaeem, Z., Zhou, L., & Dilli, E. (2016). Headaches: a review of the role of dietary factors. *Current neurology and neuroscience reports*, *16*, 1-11.

Zaeem, Z., Zhou, L., Dilli, E., & Headache, M. D. (2014). Nutritional factors in migraine. Headache: The Journal of Head and Face Pain, 54(6), 1061-1065.

Zivadinov, R., Willheim, K., Sepic-Grahovac, D., Jurjevic, A., & Bucuk, M. (2003). Migraine and diet restriction. Cephalalgia, 23(1), 57-61.

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