Original Article

Aggravating and Relieving Factors of Migraine and Tension Type Headache in the Adult General Population of Karachi, Pakistan

Ubaid Ahmed Khan[1], Surriyya Sarwat[1*], Mawara Amin[2], Sadaf Hamid[1], Muhammad Ammad Hussain[1]

ABSTRACT

OBJECTIVE: To determine the common aggravating and relieving factors among tension-type headache patients.

METHODOLOGY: This study employed a cross-sectional design, with data collected from patients who frequently visited the outpatient neurology clinic at M. Rab Medical Centre and the neurology clinic. The study duration was one year, and the sample size was calculated using the online software Open Epi. At a 95% confidence level, the resulting sample size consisted of 500 participants from both sexes and the data collection instrument was a structured questionnaire.

RESULTS: All study responses included both males (30.6%) and females (69.4%). It revealed that the most common aggravating factors increasing the intensity of headaches were Stress and anxiety (64%) along with sleep deprivation (61.4%) as well as exposure to loud noise. Regarding the reliving factors, it was revealed that 71.2% of individuals showed a significant reduction in headache intensity with Sleep, while Tea was identified as a relieving factor among 258 individuals (51.6%). Other interesting factors were also identified, including Ablution and recitation of the Holy Quran.

CONCLUSION: The study revealed that migraine and tension-type headaches in Karachi's adult population are exacerbated by factors such as anxiety, bright lights, hunger, loud noises, family problems, and insufficient Sleep. These causes differ among genders, age groups, and individuals. Women are more sensitive to anxiety, loud noises, and family problems, while younger individuals are more affected by bright lights and excessive Sleep.

KEYWORDS: Migraine, Tension, Headache, Anxiety

INTRODUCTION

Headache is the most common neurological condition in terms of the number of individuals affected. Headache is defined as a continuous or persistent pain in the head caused by the dilution of cerebral arteries or muscle contractions. It can be classified into two categories: Primary headache and Secondary headache. Most medical disorders do not typically cause primary headaches. The most prevalent primary headaches are migraine and tension-type headaches (TTH)[1]. According to the 2016 Worldwide Burden of Malady (GBD), tension-type headache is the third most prevalent condition in the world, and migraine headache is the Sixth[1]. Many studies have discussed the prevalence of headaches in Pakistan, Europe[2], China[3], Iraq[4] and India[5]. Factors that increase or decrease the severity of headaches play a core role in patient treatment. Aggravating and relieving factors of headache types should be identified to reduce the prevalence of these headaches.

[1]*Department of Anatomy, Jinnah Sindh Medical University, Karachi, Sindh-Pakistan*
[2]*Sindh Institute of Urology and Transplantation, Karachi, Sindh-Pakistan*
Correspondence: *surriyyasarwat101@gmail.com*
doi: 10.22442/jlumhs.2025.01220
Received: 04-12-2024 *Revised: 23-01-2025*
Accepted: 27-01-2025 *Published Online: 16-04-2025*

The perception of the general population in Karachi regarding how they attempt to relieve symptoms related to different types of headaches could enhance treatment strategies and help address existing knowledge gaps. Properly investigating headaches and lifestyle, approximately 50–75% of migraine and tension-type headache patients could identify factors that provoked and subsided their headaches[6]. Similarly, the article published in China shows many common reasons that can trigger migraine and tension-type headaches[7]. As far as the investigator's knowledge is concerned, there has been scarce work done to identify the provoking and alleviating factors of migraine and tension-type headaches in the adult population of Karachi.

The objectives of this study are to identify common aggravating factors and relieving factors among patients with tension-type headaches, to determine common aggravating factors and relieving factors among patients with migraine, and to compare gender differences in aggravating factors and relieving factors among patients with migraine and tension-type headaches.

METHODOLOGY

This cross-sectional study collected data from patients who regularly attend the outpatient neurology clinic at M. Rab Medical Centre and a private neurology clinic. The data collection and study duration was 1 year, and the IRB of Jinnah Sindh Medical University

approved the project. The sample size was calculated using the online software Open Epi. We calculated a 76.6% prevalence using a 95% confidence level and a 4% bound of error. The sample size was 431, accounting for a 10% non-response rate. With the convenience sampling technique used, the final size was approximately 500. The study population consisted of male and female participants aged 18 to 23. Participants who provided informed consent and visited the neurology clinic, as well as individuals over 18 years of age, were included in this study. At the same time, patients with other medical conditions like hypertension, diabetes and other comorbidities were excluded.

Data collection tool and analysis

A structured questionnaire comprising three sections was distributed, including a demographic enquiry, screening and diagnostic questions for headaches, and questions about aggravating and relieving factors. The first section covered basic demographic and socio -economic details, including age, gender, marital status, and occupation. The second section consisted of a diagnostic part constructed according to The International Classification of Headache Disorders (ICHD-III). The third section has questions regarding aggravating and relieving factors. Questionnaires typically take 20-30 minutes to complete. The data were analyzed using SPSS 21 software. Frequency and percentage were used to illustrate common characteristics, and the Chi-square test was employed to examine the relationship between gender and these factors.

RESULTS

The response rate of the research was 100%. The majority of participants included in this study were between 18 and 23 years old. Among these 500 participants, 347(69.4%) were females, and 153 (30.6%) were males. 369(73.8%) participants were single, 127(25.4%) were married, and 4(0.8%) were widows. The participants in the research were students and individuals from diverse professional backgrounds.

Table I:

Demographic descriptive analysis of participants

Demography		Frequency	Percent
Gender	Male	153	30.6
	Female	347	69.4
Age Group	<=24	354	70.8
	> 24	146	29.2
Marital status	Single	369	73.8
	Married	127	25.4
	Widow	4	0.8
Have you ever had a headache?	Yes	492	98.4
	No	8	1.6
Have you had a headache in the last 3 months?	Yes	467	93.4
	No	33	6.6
How often did you have a headache in the last 3 months?	>= 3 times a week	123	24.6
	once a month	202	40.4
	More than twice a month	175	35.0
	Total	500	100.0

When asked whether they had ever experienced a headache in their life, 492(98.4%) people gave an affirmative response, while 8(1.6%) people reported never experiencing a headache. 467 (93.4%) people reported having a headache in the last 3 months, while 33(6.6%) people didn't experience it. When participants were questioned about the frequency of headaches in the previous 3 months, 202(40.4%) reported headaches once a month, 175(35%) reported headaches more than twice a month, and 123(24.6%) reported headaches three or more times a week.

Aggravating factors of headache

People were assessed for the aggravating factors of headaches. Interestingly, anxiety or Stress was found at the top of the list, with 320(64%) reporting it to be their sole reason for the increase in the intensity of headaches. 306(61.4%) people experienced too little Sleep as their primary aggravating factor of headache. 267(53.4%) people reported loud noises as their aggravating factor for headaches. Hot weather aggravates headaches in 196(39.2%) people. Surprisingly, 178(35.6%) people reported allergy or flu as their aggravating headache factor. Sunlight exposure was the fifth most common aggravating factor of headaches, accounting for 173(34.6%) of cases. Meanwhile, 153(30.6%) people reported hunger to be their aggravating factor for headaches. Exposure to bright light was also a causative factor for the increased headache among 140(28%) people. Furthermore, 130(26%) people marked family problems, while 128(25.6%) marked too much Sleep as the aggravating factor of their headache. 114 (22.8%) people reported an increase in their

Figure I: Graphical presentation of Aggravating factors of Headache

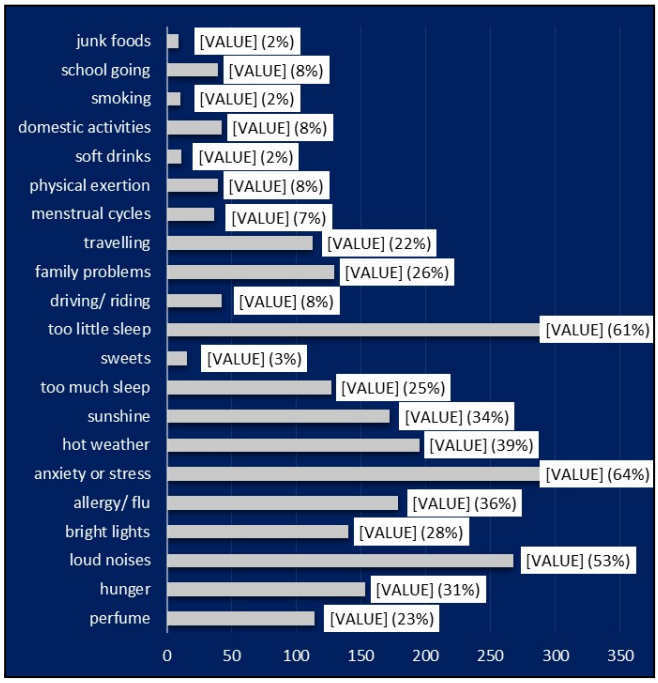


Table II: Factors Involved in Aggravation of Headache

Things That Increase Headache		Age Group			Gender		
		<=24	> 24	P-Value	Male	Female	P-Value
Perfume	Yes	75 (21.2%)	39 (26.7%)	0.181	31 (20.3%)	83 (23.9%)	0.369
	No	279 (78.8%)	107 (73.3%)		122 (79.7%)	264 (76.1%)	
Hunger	Yes	116 (32.8%)	37 (25.3%)	0.101	30 (19.6%)	123 (35.4%)	0.001
	No	238 (67.2%)	109 (74.7%)		123 (80.4%)	224 (64.6%)	
Loud Noises	Yes	195 (55.1%)	72 (49.3%)	0.240	63 (41.2%)	204 (58.8%)	0.001
	No	159 (44.9%)	74 (50.7%)		90 (58.8%)	143 (41.2%)	
Bright Lights	Yes	116 (32.8%)	24 (16.4%)	0.001	33 (21.6%)	107 (30.8%)	0.033
	No	238 (67.2%)	122 (83.6%)		120 (78.4%)	240 (69.2%)	
Allergy/ Flu	Yes	122 (34.5%)	56 (38.4%)	0.408	58 (37.9%)	120 (34.6%)	0.474
	No	232 (65.5%)	90 (61.6%)		95 (62.1%)	227 (65.4%)	
Anxiety Or Stress	Yes	225 (63.6%)	95 (65.1%)	0.749	79 (51.6%)	241 (69.5%)	0.001
	No	129 (36.4%)	51 (34.9%)		74 (48.4%)	106 (30.5%)	
Hot Weather	Yes	131 (37%)	64 (43.8%)	0.155	52 (34%)	143 (41.2%)	0.127
	No	223 (63%)	82 (56.2%)		101 (66%)	204 (58.8%)	
Sunshine	Yes	116 (32.8%)	56 (38.4%)	0.232	45 (29.4%)	127 (36.6%)	0.119
	No	238 (67.2%)	90 (61.6%)		108 (70.6%)	220 (63.4%)	
Too Much Sleep	Yes	107 (30.2%)	20 (13.7%)	0.001	38 (24.8%)	89 (25.6%)	0.848
	No	247 (69.8%)	126 (86.3%)		115 (75.2%)	258 (74.4%)	
Sweets	Yes	8 (2.3%)	7 (4.8%)	0.131	3 (2%)	12 (3.5%)	0.570
	No	346 (97.7%)	139 (95.2%)		150 (98%)	335 (96.5%)	
Too Little Sleep	Yes	221 (62.4%)	85 (58.2%)	0.380	100 (65.4%)	206 (59.4%)	0.205
	No	133 (37.6%)	61 (41.8%)		53 (34.6%)	141 (40.6%)	
Driving/ Riding	Yes	34 (9.6%)	8 (5.5%)	0.131	14 (9.2%)	28 (8.1%)	0.688
	No	320 (90.4%)	138 (94.5%)		139 (90.8%)	319 (91.9%)	
Family Problems	Yes	75 (21.2%)	54 (37%)	0.001	30 (19.6%)	99 (28.5%)	0.036
	No	279 (78.8%)	92 (63%)		123 (80.4%)	248 (71.5%)	
Travelling	Yes	65 (18.4%)	47 (32.2%)	0.001	34 (22.2%)	78 (22.5%)	0.950
	No	289 (81.6%)	99 (67.8%)		119 (77.8%)	269 (77.5%)	
Menstrual Cycles	Yes	29 (8.2%)	7 (4.8%)	0.181	0 (0%)	36 (10.4%)	NA
	No	325 (91.8%)	139 (95.2%)		153 (100%)	311 (89.6%)	
Physical Exertion	Yes	30 (8.5%)	9 (6.2%)	0.381	14 (9.2%)	25 (7.2%)	0.455
	No	324 (91.5%)	137 (93.8%)		139 (90.8%)	322 (92.8%)	
Soft Drinks	Yes	8 (2.3%)	3 (2.1%)	0.887	4 (2.6%)	7 (2%)	0.743
	No	346 (97.7%)	143 (97.9%)		149 (97.4%)	340 (98%)	
Domestic Activities	Yes	27 (7.6%)	15 (10.3%)	0.332	10 (6.5%)	32 (9.2%)	0.318
	No	327 (92.4%)	131 (89.7%)		143 (93.5%)	315 (90.8%)	
Smoking	Yes	9 (2.5%)	1 (0.7%)	0.177	5 (3.3%)	5 (1.4%)	0.179
	No	345 (97.5%)	145 (99.3%)		148 (96.7%)	342 (98.6%)	
School Going	Yes	38 (10.7%)	1 (0.7%)	0.001	13 (8.5%)	26 (7.5%)	0.700
	No	316 (89.3%)	145 (99.3%)		140 (91.5%)	321 (92.5%)	
Junk Foods	Yes	6 (1.7%)	3 (2.1%)	0.783	5 (3.3%)	4 (1.2%)	0.140
	No	348 (98.3%)	143 (97.9%)		148 (96.7%)	343 (98.8%)	

headaches due to the fragrance of perfume. 113 (22.6%) people reported headaches due to travelling. 42(8.4%) people experienced increased headaches with domestic activities and driving. Physical exertion was also aggravating among 40(8%) people. School-going children also experienced aggravation of headaches, which was reported in 39(7.8%) of the study population.

Females of reproductive age also experienced aggravation in their headache during the Menstrual cycle 37(7.4%) women. 16(3.2%) people marked sweet intake as the causative factor for increased headaches. In comparison, 11(2.2%) participants reported some increase in headaches with the usage of soft drink intake, while 10(2%) people experienced headaches due to smoking. Junk food was also noticed as a cause of the increase in headaches among 9(1.8%) people.

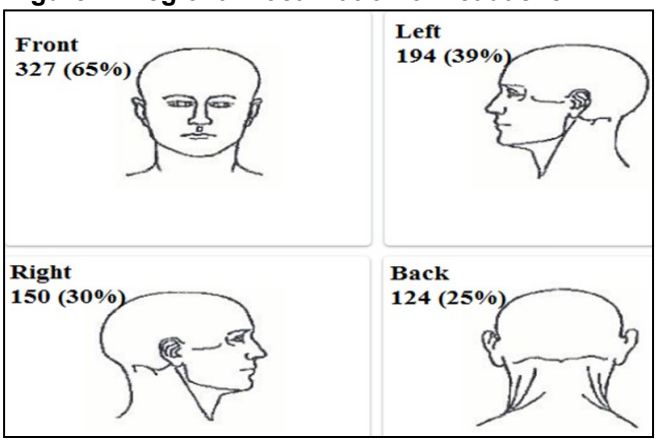
When checked for the site of pain during headaches, 327 (65.4%) people reported a frontal headache, 194 (38.8%) people reported a left temporal headache, and 150 (30%) people reported a right temporal headache. In comparison, 124 (24.8%) people reported an occipital headache.

According to the survey, 250 (50%) people used to take medications to relieve their headaches, while 250 (50%) people didn't.

Perfume caused headaches for 20.3% of males and 23.9% of females. Hunger significantly affected headaches more commonly in females (35.4%) than males (19.6%), with a significant p-value of 0.001. Loud noises more frequently trigger headaches in females (58.8%) than in males (41.2%), indicating a significant gender difference (p = 0.001). Bright Lights are also more common among females (30.8%) than males (21.6%) for creating headaches, with a p-value of 0.033. Anxiety or Stress was reported by 69.5% of females compared to 51.6% of males, showing a statistically significant difference (p=0.001). Family Problems Are more common in females (28.5%) who reported family issues as a headache trigger than in males (19.6%), with a p-value of 0.036. Other causes, such as hot weather, sunshine, insufficient or excessive Sleep, driving, physical Exercise, domestic activities, smoking, soft drinks, and junk food, did not show statistically significant gender differences.

Perfume: Triggered headaches for 21.2% of those aged 24 or younger and 26.7% of those older than 24, with a non-significant difference (p=0.181). Hunger was more common among younger participants (32.8%) compared to the older group (25.3%), although the difference was not statistically significant (p = 0.101). Loud noises were slightly more common in the younger age group (55.1%) than in those over 24 (49.3%), with no significant age difference (p = 0.240). Bright lights were more common among participants under 24 years old (32.8%) than in the older group (16.4%), with a significant age difference (p = 0.001). Too much Sleep was reported by 30.2% of those under 24, but only 13.7% of participants were 24 years of age, resulting in a significant difference (p = 0.001). Family problems are frequently cited by older people (37%) compared to those under 24 years old (21.2%), showing a considerable difference (p = 0.001). Travelling is particularly more of a trigger for the older group (32.2%) than, the younger age group (18.4%), with a significant p-value of 0.001. Other triggers, such as allergies/flu, hot weather, sunshine, physical Exercise, smoking, school, and junk food, are factors that displayed statistically non-significant differences by age group.

Figure II: Regional Localization of headache



Relieving factors of headache

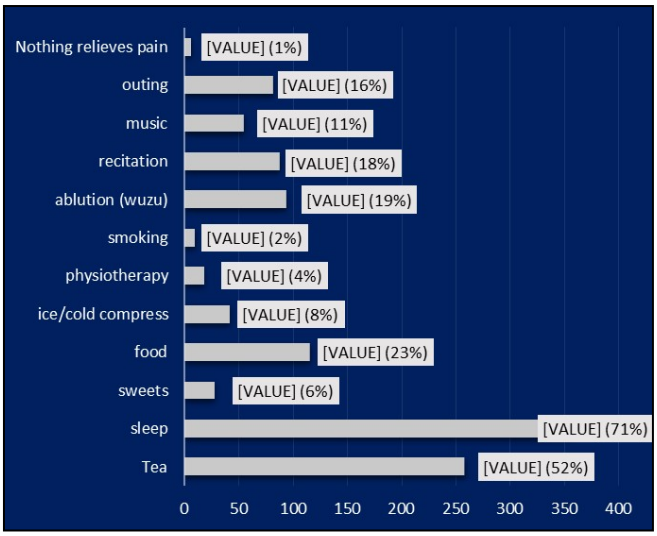
People were also assessed for the relieving factors of headaches. Surprisingly, 356 (71.2%) people experienced a significant improvement in headache intensity with Sleep. Tea was a relieving factor for 258 (51.6%) people. 115 (23%) people reported a decrease in headache intensity with food intake. Ablution (wuzu) was also considered a relieving factor among 95(19%) people. 88 (17.6%) people marked recitation as their relieving factor for headaches.

82(16.4%) people experienced some relief from headaches with the outing. 55(11%) people observed improvement in headaches with music. The use of cold compresses to decrease headache pain was also observed among 42 (8.4%) individuals. 27 (5.4%) people reported improvement in their headaches with the intake of sweets. 18(3.6%) participants responded positively with physiotherapy as their relieving factor, while 11(2.2%) people marked smoking as the reason for significant improvement in their headaches. Only 6 (1.2 %) people reported no improvement in headaches with any remedies.

Interestingly, 426 (85.2%) people didn't consult a doctor regarding their headache, while 74 (14.8%) did. People were asked about the reliability of investigations for headaches in their view. The Eye test was at the top of the list, with 299(59.8%) people marking it. 202 (40.4%) people selected an MRI brain scan as a reliable investigation for headaches. 102 (20.4%) people ticked blood sugar, while 88 (17.6%) people ticked complete blood count (CBC) as a dependable investigation for headaches. According to

79 (15.8%) people, EEG was a definitive investigation for headaches. Surprisingly, 30(6%) people had no idea about the investigations for headaches. Twenty-two (4.4%) people marked lumber puncture, while only 5 (1%) people were in favour of a liver function test (LFT).

Figure III: Graphical presentation of Relieving Factors of Headache



DISCUSSION

Headache is one of the most frequent complaints of patients seen in the outpatient clinic. Pain perception changes with age and differs in very young and very old patients. However, this study was conducted in the young population, so the responses were recorded accordingly. The analysis yielded a 100% response rate, with 500 respondents, of whom 69.4% were female, and 30.6% were male, representing the adult sample population of Karachi. 98.4% of the study population experienced a headache in their lifetime, which corresponds with a study that revealed a range of 64% to 77% of individuals having had a headache at some point in their lives[8]. The frequency of headache episodes reported is 93.4%, with 40.2% of them experiencing it twice a month, which agrees with the review conducted in 2022[8]. It also aligned with the study conducted on Iranian students, which revealed that only 7.5% of the subjects spent fewer than 3 days a week without headache[9].

The study population reported anxiety or Stress (64%) as the common factor for the aggravation of the primary headache, while 61.4%people experienced too little Sleep as their primitive aggravating factor of headache. That is in agreement with a study conducted in Malaysia, which revealed the most common trigger factors for migraines and TTHs were sunlight, sleep deprivation and Stress. Although ethnic variations played a vital role in the aggravation, the focus of our study was not on ethnicity. Another study by Zivadinov R et al. [11] revealed that the most common trigger factors for TTHs were sleep deprivation, Stress, and weather changes. In addition, the most common trigger factors for migraines in previous studies were Stress, sleep deprivation and weather changes.

The study revealed that 53.4% of people reported loud noises as the aggravating factor of their headache, which is consistent with a study conducted by Straube A 2019[12], which also found that some sufferers identified certain factors that exacerbate headaches, with loud noise being the most significant, reported by 48.1% of them. By comparing the triggering factors in chronic and episodic migraines, the study demonstrated that noise was a more substantial trigger for patients with chronic migraines as compared to those with episodic migraines[13]. Another factor identified in the study was hot weather, which aggravated headaches in 196 individuals (39.2%) of the sample population. Another study has shown that a hot and dry climate moving towards the ocean is reported to trigger migraines, which also correlates with the results of our research. Along with the hot weather, Sunlight exposure was identified as the fifth most common aggravating factor of headaches, as reported by 173 individuals (34.6%).

Additionally, 153 people (30.6%) reported hunger as their aggravating factor of headaches[14]. The study conducted on university students also showed the aggravation of primary headaches caused by missed meals, as revealed (59.8%) in the students. Another study also revealed various triggers of headache attacks[15]. The majority of participants cited sleep disturbance (86.2%), noise exposure (83.3%), excessive studying (81.6%), and fatigue (75.9%) as significant factors affecting their well-being. The present study revealed that bright light was an aggravating factor in 28% of the study population, which is in agreement with a study conducted on university students, showing that more than half (60.9%) were affected by bright light[15].

The present study also showed that 114 individuals, constituting 22.8% of the participants, reported that their headaches worsened due to the fragrance of the perfume. The study mentioned above indicated that nearly half of the participants (48.9%) identified certain odours as their triggering factor for headaches. Another study by Zarea K 2018 [16] reported that among Iranian medical students, triggering factors for headaches included Stress (63%), sunlight or fluorescent light (55.6%), loud noise (48.1%), fatigue (77.8%), odors such as cigarette smoke or perfume (37%), and overheating (51.9%). This study also showed physical exertion as an aggravating factor among 40 individuals, representing 8% of the study population. Additionally, 39 school-going participants (7.8%) reported experiencing aggravation of headaches, which agrees with a study that showed only 17.2% of the population found physical activity to

be a triggering factor for headaches in the younger population[16].

The present study also showed that women of reproductive age experienced aggravation in their headaches during the Menstrual cycle 37 (7.4%) women. These findings align with a previous study that evaluated the prevalence of headaches and average pain intensity according to gynaecological age. As the gynaecological age increased, the incidence of headaches significantly rose from 60% to 73% ($p = 0.004$), and the mean pain intensity score increased from 1.6 to 1.9 ($p = 0.03$)[18]. Another scoping review examined whether the menstrual cycle phase (menstruation, luteal phase, ovulation, or follicular phase) was considered a confounding factor in studies comparing pressure pain sensitivity between patients with tension-type headache (TTH) or migraine and healthy controls. The review found that the menstrual cycle phase has not been consistently considered in existing studies on pressure pain sensitivity in primary headaches, such as tension-type headaches (TTH) or migraine, despite evidence suggesting its potential importance in pain perception. Only one study on TTH patients and one on migraine patients included data on the last day since menstruation. Still, they did not provide further details or compare these data with other variables that disagreed with the present study; more research is required in this perspective[19]. These findings are also similar to the previously indicated significant relationship between migraine and female sex hormones. Women with migraines outnumber men by at least a 2:1 ratio, with many of them experiencing their first attacks at menarche and throughout menstruation. In a studied population, 58% of women reported menses and related hormonal disturbances as triggers for migraines, particularly those aged between 30-49 years[19]. Literature also reported that climacteric factors, including the final menstrual period, menstruation, ovulation, oral contraceptives, hormone replacement therapy (HRT) and menopause, can all trigger migraine attacks in women[20].

The study on eating habits revealed that 16(3.2%) people reported that sweet intake was the causative factor for increased headaches. In comparison, 11 participants reported (2.2%) some increase in headaches with the usage of soft drink intake, while 10(2%) people experienced headaches due to smoking. Junk food was also noticed as a cause of the increase in headaches among 9(1.8%) people. These findings were correlated with those of another study, which revealed that headaches were triggered in 28.2% of the study population after the intake of ice cream. In comparison, after receiving certain drugs and certain types of foods, they were reported aggravated by (10.9%) and (8%) respectively[16].

In our study, we observed the location of pain during headaches: 327 participants (65.4%) reported frontal headaches, 194 participants (38.8%) reported left temporal headaches, 150 participants (30%) reported right temporal headaches, and 124 participants (24.8%) reported occipital headaches. The study revealed that approximately a quarter of the participants (24.1%) experienced frontal headaches, specifically at the site of the headache. This was followed by undetermined headache sites (22.4%), occipital headaches (17.8%), temporal headaches (17.8%), bilateral headaches (15.5%), vertex headaches (10.3%), and occipital headaches again (9.8%) respectively[16].

According to the current survey, 250 participants (50%) used medications to relieve their headaches, while the other 250 participants (50%) did not. The study conducted by Al-Shimmery is also aligned with the result, which revealed that the use of NSAIDs was reported to terminate migraine attacks in 50% of both male and female participants[4]. In the present study, people were also assessed for factors that relieve headaches. Surprisingly, 356 individuals (71.2%) experienced a significant improvement in headache intensity with Sleep. Al-Shimmery EK 2010[4] also reports that many authors have described Sleep as a relieving factor for migraine attacks. However, both excess Sleep and sleep deprivation are thought to initiate migraine attacks. Another study revealed that Tea was a headache-relieving factor among 258 individuals (51.6%).

Additionally, 115 individuals (23%) reported a decrease in headache intensity with food intake. The findings are in alignment with the review studies as Caffeine has been shown to effectively stop migraine attacks when combined with aspirin and acetaminophen in combination analgesics. However, it can also trigger headaches when withdrawn by habitual caffeine consumers[21].

This study also reported novel findings that Ablution (wuzu) was considered a relieving factor among 95 individuals (19%). Additionally, 88 people (17.6%) found recitation to be a relieving factor for headaches. The studies revealed that listening to deep Qur'an recitations has a positive effect on reducing anxiety as well as having a positive impact on the mental health of personnel in medical science universities, reducing headache episodes[22]. A similar study using EMG-based research showed a more significant decrease in relaxation compared to non-training tasks for clients. After training, Salah reported a substantial reduction in headaches and less exhaustion the day after work[23]. Meanwhile, research on Wadu's effect on headaches remains limited.

Another factor was identified in the study: 82 (16.4%) participants experienced some relief from headaches with outings, while 55 (11%) observed improved headaches with music. A study showed similar results in the randomized trial. The participant received either medical therapy alone or medical therapy combined

with music therapy. The primary outcome was a decrease in headache severity one hour after treatment[24]. Another study conducted in the adult population showed a similar finding as participating in outdoor activities reported a reduction in psychological symptoms (depression, irritability, anxiety) and somatic distress (headache)[25].

This study also showed that cold compression decreases the intensity of headaches among 42 (8.4%) of the study population. A similar finding in another study has shown that the relieving factors identified for alleviating headaches include Sleep, meditation, relaxation, lying down, eating, massage, ice/cold application, Exercise, and vomiting[26].

The study revealed that 27(5.4%) people improved their headaches with the intake of sweets. This finding disagrees with a study conducted over a 3-month trial of diet restriction, as headache intensity was significantly reduced following the low-glycemic index diet[27]. The study also showed that 18 (3.6%) participants responded positively to physiotherapy as a relieving factor. These findings align with a systematic review evaluating the most effective physiotherapy interventions, which revealed a reduction in headache frequency of 7.5 headache days per month. For headache duration, it was a reduction of 7.3 hours[28].

Smoking is indeed recognized as a significant risk factor for headaches. In our study, 11(2.2%) people marked positively smoking as the reason for substantial improvement in their headaches, which is in disagreement with the various studies. According to a national survey conducted in the UK, a significant number of people who frequently complain of headaches are active smokers or ex-smokers, as well as a study conducted in Norway, found that heavy smokers under the age of 40 have a higher prevalence of headaches compared to nonsmokers[29]. In contrast, another study by Roslan MZ 2020[30] regarding the association between smoking and headache revealed a non-significant (p-value of 0.624) relationship between the number of cigarettes smoked per day and headache intensity among the 2016 batch of students in the Faculty of Medicine at Universitas Sumatera Utara.

This has been interesting in the study, as 426(85.2%) people didn't consult a doctor regarding their headaches, while only 74(14.8%) sought medical help. Another study conducted on medical assistance due to migraine and headaches revealed the contrary result that 41% of the study population consulted for their headache with the healthcare providers, and out of them, only 25% of the participants received the inaccurate diagnosis[31].

Research also revealed that among the research population, 78.9% consulted at least one lifetime medical for headaches/migraine. Among them, 70.3% of consultations were in primary care, followed by consultations in neurology (28.1%) and headache specialists (15.6%). 31.0% had consulted at least once at an emergency department or urgent care centre[32].

In this study, regarding reliable and relevant investigations for headaches, the appropriate responses were revealed. Specifically, 299(59.8%) people responded that eye tests were a reliable investigation, and MRI brain scans were considered a reliable investigation by 202(40.4%) individuals. Blood sugar was considered by 102(20.4%) people, and 88 (17.6%) chose a complete blood count (CBC) as a reliable investigation for headaches. According to 79 (15.8%) participants, EEG was a definitive investigation for headaches. Surprisingly, 30(6%) people were unsure about the investigations for headaches.

Additionally, 22(4.4%) individuals marked lumbar puncture, while only 5(1%) favored a liver function test (LFT). Most research recommends diagnosing headaches and migraines in a primary healthcare setting based on a thorough history and physical examination. In contrast, research conducted for the diagnosis of primary headache and migraine disorders for the diagnostic criteria by the International Headache Society (ICHD-3-beta) in 2016 and the European Headache Alliance invited to review and comment on the consensus before the final draft that revealed the diagnostic criteria as per the conditions recommended consensus recommends brain MRI for the case of migraine with aura that persists on one side or in brainstem aura[33].

CONCLUSION

Our study briefly describes that migraines and headaches in the Karachi adult population have findings related to aggravating and relief factors that are similar to, or comparable to, those in other populations and studies. At the same time, less data is available on the Recitation of the Quran and Wudu as a relieving factor for headaches; further research is required in this perspective. In contrast, the diagnostic test agreement finding is still less about the primary headache in the PHC setting.

RECOMMENDATION

The study suggests several strategies to manage headaches, including public awareness campaigns, healthcare guidance, lifestyle modifications, and further research. It suggests educating the public about common roots and focusing on gender and age-specific sensitivities. Clinicians should consider patients' age and gender when advising on headache management and encourage lifestyle adjustments to minimize exposure to triggers. Further research could help develop targeted interventions for migraine and tension-type headaches across diverse populations.

Ethical permission: Jinnah Sindh Medical University, Karachi, IRB letter No. JSMU/IRB/2020/-378.

Conflict of Interest: No conflicts of interest, as stated by authors.

Financial Disclosure / Grant Approval: No Funding agency was involved in the research

Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publicly.

AUTHOR CONTRIBUTION

Khan UA: Conception, data collection
Sarwat S: Data interpretation, drafting
Amin M: Data collection
Hamid S: Data collection
Hussain MA: Analysis

REFERENCES

1. Xie W, Li R, He M, Cui F, Sun T, Xiong J et al. Prevalence and risk factors associated with headache amongst medical staff in South China. J Headache Pain. 2020; 21(1): 1-10.
2. Toom K, Raidvee A, Allas K-H, Floria E, Juhkami K, Klimušev G et al. The prevalence of primary headache disorders in the adult population of Estonia. Cephalalgia. 2019; 39(7): 883-91.
3. Straube A, Andreou A. Primary headaches during lifespan. J Headache Pain. 2019; 20(1): 35.
4. Al-Shimmery EK. Precipitating and relieving factors of migraine headache in 200 Iraqi Kurdish patients. Oman Med J. 2010; 25(3): 212.
5. Rao GN, Kulkarni GB, Gururaj G, Rajesh K, Subbakrishna DK, Steiner TJ et al. The burden of headache disorders in India: methodology and questionnaire validation for a community-based survey in Karnataka State. J Headache Pain. 2012; 13(7): 543-50.
6. Wang J, Huang Q, Li N, Tan G, Chen L, Zhou J. Triggers of migraine and tension□type headache in China: a clinic□based survey. European J Neurol. 2013; 20(4): 689-96.
7. Tai M-LS, Yet SXE, Lim TC, Pow ZY, Goh CB. Geographical differences in trigger factors of tension-type headaches and migraines. Curr Pain Headache Reports. 2019; 23(2): 12.
8. Maity MK, Naagar M. A Review on Headache: Epidemiology, Pathophysiology, Classifications, Diagnosis, Clinical Management and Treatment Modalities. Int J Sci Res. 2022; 11(7): 506-15.
9. Zarea K, Rahmani M, Hassani F, Hakim A. Epidemiology and associated factors of migraine headache among Iranian medical students: A descriptive-analytical study. Clin Epidemiol Glob Health. 2018; 6(3): 109-14.
10. Current Pain and Headache Reports (2019) 23:12 doi: 10.1007/s11916-019-0760.
11. Zivadinov R, Willheim K, Sepic-Grahovac D, Jurjevic A, Bucuk M, Brnabic-Razmilic O et al. Migraine and tension-type headache in Croatia: a population-based survey of precipitating factors. Cephalalgia. 2003; 23(5): 336-43.
12. Straube A, Andreou A. Primary headache during lifespan. J Headache Pain. 2019; 20: 35.
13. Friedman DI, De ver Dye T. Migraine and the environment. Headache. 2009; 49: 941-52.
14. Wilkinson M, Woodrow M. Migraine and weather headache. Headache. 1979; 19: 375-8.
15. Abd El-Mawgod MM, Hashem HA, Elboraei YA. Primary Headache among University Students: Across Sectional Study. Pak J Med Health Sci. 2022; 16(03): 421-25
16. Zarea K, Rahmani M, Hassani F, Hakim A. Epidemiology and associated factors of migraine headache among Iranian medical students: A descriptive-analytical study. Clin Epidemiol Glob Health. 2018; 6(3): 109-114.
17. Bianchin L, Bozzola M, Battistella Pier A, Bernasconi S, Bona G, Buzi F et al. Menstrual cycle and headache in teenagers. Indian J Pediatr. 2019; 86: 25-33.
18. Curiel-Montero F, Alburquerque-Sendín F, Fernández-de-Las-Peñas C, Rodrigues-de-Souza DP. Has the phase of the menstrual cycle been considered in studies investigating pressure pain sensitivity in migraine and tension-type headache: a scoping review. Brain Sci. 2021; 11(9): 1251.
19. Fukui PT, Gonçalves TR, Strabelli CG, Lucchino NM, Matos FC, Santos JP et al. Trigger factors in migraine patients. Arq Neuropsiquiatr. 2008; 66 (3A): 494-499.
20. Raskin NH. Headache. In: Kasper DL, Braunwald E, Fauci A, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 17th ed. New York (NY): McGraw-Hill. 2008 CD.
21. Goldstein J, Silberstein SD, Saper JR. Acetaminophen, aspirin, and Caffeine versus sumatriptan succinate in the early treatment of migraine: Results from the ASSET trial. Headache. 2005; 45: 973-982.
22. Aini S. The Effect Of Reading The Quran On Health. Al-Kauniyah. 2023; 4(2): 76-86.
23. Jing W, Nubli M, Wahab A, Abdalla AN, Ming G, Yao L. The influence of relaxation with electromyography and Islamic prayer programs for female Muslim. Int J Physical Sci. 2012; 7(22): 2897-904.
24. Diamante P, Roxas A. Music Medicine as a Component of Acute Migraine Attack Management in The Emergency Room: A Randomized Controlled Open-Label Trial. Ann Headache Med J. 2020; 4(1): 1-0.
25. Piccininni C, Michaelson V, Janssen I, Pickett W. Outdoor play and nature connectedness as potential correlates of internalized mental health symptoms among Canadian adolescents. Prev Med. 2018; 112: 168-175. doi: 10.1016/ j.ypmed.2018.04.020. Epub 2018 Apr 18.

26. Basdav J. The prevalence and impact of primary headaches on students at the Durban-based campuses of the Durban University of Technology (DUT). Thesis, Durban University of Technology, Durban. 2016.
27. Razeghi Jahromi S, Ghorbani Z, Martelletti P, Lampl C, Togha M, School of Advanced Studies of the European Headache Federation (EHF-SAS). Association of diet and headache. J Headache Pain. 2019; 20(1): 106.
28. JungA, Eschke RC, Struss J, Taucher W, Luedtke K. Effectiveness of physiotherapy interventions on headache intensity, frequency, duration and quality of life of patients with tension-type headache. A systematic review and network meta -analysis. Cephalalgia. 2022; 42(9): 944-65.
29. Waldie KE, McGee RA, Reeder I, Poulton R. Associations Between Frequent Headaches, Persistent Smoking, and Attempts to Quit. Am Headache Soc. 2008; 48(4): 545-552.
30. Roslan MZ. Relationship Between the Number of Cigarettes Per Day and Caffeine Intake on Headache Intensity in Faculty of Medicine Student Batch 2016 of Universitas Sumatera Utara. Asian Australasian Neuro Health Sci J. 2020; 2(1): 1-8.
31. Dodick DW, Loder EW, Manack Adams A, Buse DC, Fanning KM, Reed ML et al. Assessing barriers to chronic migraine consultation, diagnosis, and treatment: results from the chronic migraine epidemiology and outcomes (CaMEO) study. Headache. J Head Face Pain. 2016; 56(5): 821-34.
32. Lipton RB, Nicholson RA, Reed ML, Araujo AB, Jaffe DH, Faries DE et al. Diagnosis, consultation, treatment, and impact of migraine in the US: results of the OVERCOME (US) study. J Head Face Pain. 2022; 62(2): 122-40.
33. Mitsikostas DD, Ashina M, Craven A, Diener HC, Goadsby PJ, Ferrari MD et al. European Headache Federation consensus on technical investigation for primary headache disorders. J Headache Pain. 2015; 17: 1-8.