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Migraine, its frequency, triggering factors and impact on daily life of medical students-a single center study in a private medical institution of Lahore, Pakistan

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Abstract

Objective: Determine the frequency of migraine, its triggering factors and assessment of the impact on daily life among medical students ofa private medical college in Lahore, Pakistan.
Settings: First to final year MBBS students of Fatima Memorial College of Medicine, Lahore
Period: February to April, 2019.
Material & Methods: In a total of 708 students, 118 students were identified, as having experienced headache for the past one year. They were categorized into those having migraine, tension and cluster headache according to operational definitions. Migraine was identified in 56 participants. Further data was collected from the 56 migraineurs using a structured questionnaire, migraine disability assessment tool and visual analogue scale for pain intensity. Data was analyzed using SPSS version 22.
Results: Migraineurs were 56, mean age 21.16 $\pm$ 1.714, predominant in females 46 (82.1%). Most common triggering factors, sleep deprivation 53 (94.6%), mental stress 51 (91.1%), missing meals 41 (73.2%), bright light 37 (66.1%), physical activity 44 (78.6%), photophobia 44 (78.6%) and phonophobia 36 (64.3%). Most students 20 (35.7%) suffered from moderate to severe disability 19 (33.9%) (MIDAS grade III and IV). Visual Analogue Scale showed 32 (57.14%) had severe pain (VAS scale 7-10). Association of lack of sleep (p=0.017), duration of headache (p = 0.014) with higher VAS score and duration of headache (p=0.046) with moderate to severe MIDAS grade was depicted.
Conclusion: Migraine can be considered to be the commonest type of headache among medical students resulting in major disability and lost days of productivity

Keywords: *MIDAS, Migraine, Triggering Factors, medical students*

INTRODUCTION

Headache is one of the most prevalent and incapacitating neurological disorders occurring worldwide in all the populations regardless of race, geographical or environmental barriers. Neurological disorders; more specifically headaches are ranked as the prime determinants of DALY'S throughout the world [1]. Headaches can be primarily classified into primary, encompassing migraine, tension type headache and cluster headaches, and secondary to an underlying

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medical condition like meningitis and encephalitis [2]. Migraine, as defined by International Headache Society (IHS), is a recurrent headache disorder manifesting in attacks lasting 4-72 hours, being unilateral, intensity either moderate or severe and associated with nausea, photophobia and phonophobia[2] The pain of migraine may be throbbing or pulsating rendering the person unable to actively perform a task or activity [3].

The global picture of studies conducted show that headache disorders are well researched and are fairly common and affect around 50% of total world population with migraine constituting 30% of the total burden [4]. Migraine has been found to be predominant in females (20.7%) compared to males (9.7%) [5]. Migraine is less common in Asia [6] (10.1%) than in USA [5] (15.3%). In the neighboring country, Iran, prevalence of migraine in medical students was found out to be 6.9% [7].In Pakistan a study concluded that the incidence of migraine is 22.5% of all headaches, second only to tension type headaches [8]. Narrowing down to medical students in Pakistan, 52.3% suffered from migraine afflicting females (85.7%) more than males (14.3%) [9].

Triggers leading to an episode of migraine should be recognized. The most probable triggers include environmental factors like stress, noise, changes in sleep-cycle (oversleeping, lack of sleep), eating habits (binge eating, fasting), specific foods like cheese, chocolate, caffeine, preservatives and smoking [10]. Surge of hormones during the menstrual cycle plays an important role to set off an attack of migraine [11]. Genetic susceptibility is also a major predisposing factor [12]. Recurrent migraine attacks cause major disability, leading to loss in productivity and absenteeism, more evident in students and working class [13]. Gauging the impact is important because a study conducted on medical students revealed reduced ability to attend classes in 78.2% [14]. Migraine disability assessment (MIDAS) questionnaire has been designed to quantify effect of migraine on daily life activities over a period of 3 months [15]. Visual analogue scale (VAS) is another tool formulated to assess the intensity of pain [16]. This study was conducted with the objective to determine the frequency of migraine, its triggering factors and assessment of the impact on daily life among medical students of a private medical college in Lahore, Pakistan.

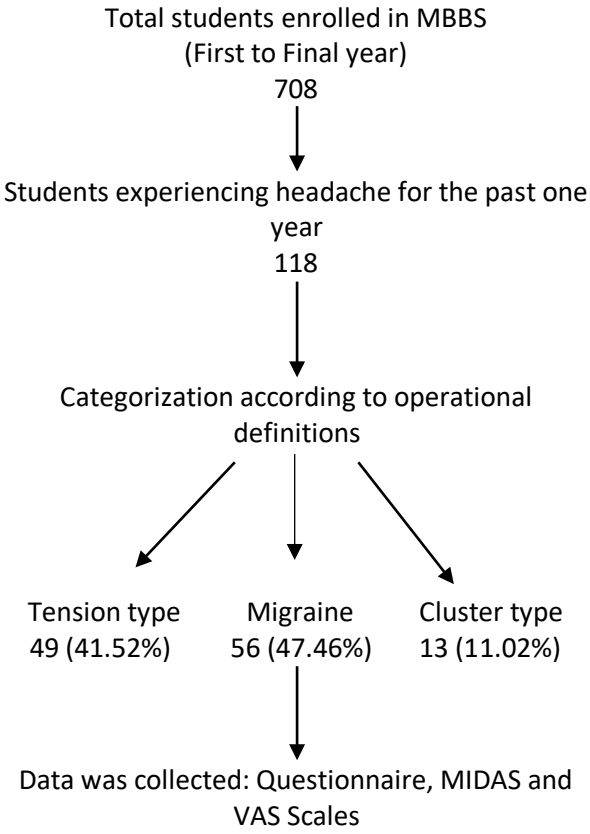
MATERIALS AND METHODS

A cross-sectional study was carried out from February to April, 2019, on first to final year MBBS students of Fatima Memorial College of Medicine, Lahore. Non-probability purposive sampling with take all approach was employed to enroll students of first, second, third, fourth, and final year MBBS. Students who had been experiencing headache for the past one year, were diagnosed cases of migraine, and consented to be a part of the study were enrolled.

In a total of 708 M.B.B.S students, 118 had been experiencing headaches for the past one year. These participants were categorized based on operational definitions taken from International Headache Society criteria, into cases of migraine 56(47.46%), tension type 49(41.52%) and cluster type 13(11.02%) headaches. Migraine was described as a recurrent headache disorder lasting 4–72 hours, unilateral, moderate or severe intensity, aggravated by routine physical activity and associated with nausea, vomiting, photophobia and phonophobia [2]. Tension headache as infrequent episodes of headache, bilateral, mild to moderate intensity, not worsening with routine physical activity and not associated with nausea although photophobia or phonophobia may be present [2]. Cluster headache as attacks of severe, strictly unilateral pain lasting 15–180 minutes, occurring up to eight times a day, associated with lacrimation, nasal congestion, forehead and facial sweating [2].

To determine the frequency of migraine, its triggering factors and assessment of the impact on daily life further data was collected from 56(47.46%) migraneurs. A predesigned, structured questionnaire comprising of socio demographic section and questions pertaining to migraine, its characteristic features, and triggering factors was used. Validated Migraine Disability Assessment questionnaire, MIDAS [14] was used to assess the impact of migraine on sufferer's daily life comprising of five questions pertaining to days of lost productivity within the last three months. The

days were added up to a score which corresponded to four grades: no, mild, moderate, and severe disability. In addition, the intensity of pain in migraine was assessed with the help of Visual Analogue Scale for Pain [15]. Interviews were conducted by the principal investigators each being 10-15 minutes long.



Before conduction of the study an ethical approval was taken from the Institutional Review Board of Fatima Memorial College of Medicine, Lahore, Pakistan.

Analysis was done using SPSS version 22. Frequency tables and bar charts were used to present data. Chi square was the test of significance used at 95% confidence interval with p value < 0.05 being considered as significant to depict associations. Impact of migraine on daily life was assessed, students were asked the number of days they lost in respect with productivity due to migraine and on the basis of their total MIDAS score they were categorized into four grades; Grade 1: little or no disability (0-5), Grade 2: mild disability (6-10), Grade 3: moderate disability (11-20), Grade 4: severe disability (21+) [14]. Pain severity was assessed using VAS (visual analogue scale) ranging from 0-10, categorizing enrolled students into: mild pain (0-3), moderate pain (4-6), severe pain (7-10) [15].

RESULTS

A total of 118 MBBS Students (First to Final Year), having a history of headache for the past one year (2018), were enrolled in our research out of which 56 (47.46%) were confirmed cases of migraine, 49 (41.52%) complained of tension headaches and the remaining 13 (11.02%) suffered from cluster headache.

Further data was collected from 56 migraineurs. Mean age of the respondents was 21.16 ±1.714, frequency of migraine was higher in females 46 (82.1%) than males 10 (17.9%). Among these; 12 (21.4%) were from first year, 2 (3.6%) from second year, 18 (32.1%) from third year, 19 (33.8%) from fourth year and 5 (8.9%) were from final year MBBS respectively with 34 (60.7%) being day scholars and 22 (39.3%) hostelites.

A total of 26 (46.4%) students experienced more than 5 episodes of headache in one month compared to 30 (53.6%) experiencing less than 5 episodes per month. Associated characteristics including headache aggravated by or causing avoidance of physical activity 44 (78.6%), nausea and vomiting 26 (46.4%), photophobia 44 (78.6%), phonophobia 36 (64.3%), pain extending to the orbital and temporal regions 49 (87.5%), lacrimation, nasal congestion, facial sweating, restlessness or agitation 25 (44.6%) in students were recorded respectively. Students experiencing blurring of vision, sparkling of lights or any other visual or sensory symptoms were 28 (50%). Family history of migraine was present in 20 (35.7%) students compared to 36 (64.3%).

Triggering factors namely, weather change 22 (39.3%), missing meals 41 (73.2%), exposure to bright light 37 (66.1%), loud noise 35 (62.5%), patient's perceived lack of sleep 53 (94.6%) and mental stress 51 (91.1%) being the most common. Among foods, triggers were cheese 5 (8.9%), eggs 4 (7.1%), meat 3 (5.4%), caffeine 20 (35.7%) and chocolate 15 (26.8%). A total of 46 females, 14 (30.4%) associated their headaches with

menstruation. Sleep patterns showed that 41 (73.2%) students slept less than 8 hours on average and 15 (26.8%) slept for more than 8 hours. (Table 1)

Table 1: Common Triggering Factors and Associated Symptoms of Migraine

Triggering Factor	Yes n (%)	No n (%)
Physical Activity	44 (78.6)	12 (21.4)
Photophobia	44 (78.6)	12 (21.4)
Phonophobia	36 (64.3)	20 (35.7)
Nausea	26 (46.4)	30 (53.5)
Extension (orbital & frontal region)	49 (87.5)	7 (12.5)
Blurring Of Vision	28 (50)	28 (50)
Lack Of Sleep	53 (94.6)	3 (5.4)
Mental Stress	51 (91.1)	5 (8.9)
Missing Meal	41 (73.2)	15 (26.8)
Bright Light	37 (66.1)	19 (3.9)

MIDAS (Migraine Disability Assessment) score of all the 56 migraneur students was categorized into grades I, II, III, and IV. Grade I (little or no disability Score 0-5) were 6 (10.7%), Grade II (mild disability Score 6-10) were 11 (19.6%), Grade III (moderate disability Score 11-20) were 20 (35.7%) and in Grade IV (severe disability Score 21+) were 19 (33.9%) students (Figure 1).

VAS (visual analogue scale), ranging from 0-10 points was used to assess the pain severity. Among the 56 migraneurs: 2 (3.6%) suffered from mild pain (VAS score 0-3); 22 (39.3%) from moderate pain (VAS score 4-6); and 32 (57.1%) from severe pain (VAS score 7-10) (Figure 2).

In our study MIDAS exhibited significant association with duration of headache (x^2=8.01, p=0.046) but not with frequency of headache (x^2=6.06, p=0.109) or any of the food groups; cheese (x^2=5.46, p=0.141), eggs (x^2=4.35, p=0.226), meat (x^2=0.65, p=0.885), caffeine (x^2=0.32, p=0.999) and chocolate (x^2=3.52, p=0.318). Similarly, no revelatory relation was found between disability score and lack of sleep (x^2=5.04, p=0.169), family history (x^2=0.878, p=0.878) and being a day scholar/ hostellite (x^2=3.84, p=0.280). Even though the majority of people who complained of mental stress being a trigger had grade III, and IV disability depicting a strongrelationship between MIDAS and mental stress, there was no statistically significant association (x^2=5.83, p=0.120) (Table 2)

On statistical data analysis significant association of VAS was found with lack of sleep (x^2=8.21, p=0.017) and duration of headache (x^2=8.51, p=0.014) as well as with diagnosis by a health professional (x^2=9.72, p=0.008). (Table 2)

Table 2: Cross Tabulation: MIDAS and VAS with factors influencing Migraine

MIDAS Grade	Frequency (n)		p value
	Yes	No	
Headache triggered by lack of sleep			
I	6	0	0.169
II	9	2	
III	20	0	
IV	18	1	
Headache triggered by mental stress			
I	6	0	0.120
II	8	3	
III	19	1	
IV	18	1	
Headache linked with menstruation			
I	0	6	0.340

II	2	9	
III	7	13	
IV	5	14	
	Headache: Duration 4-72 hours		
I	3	3	0.046
II	11	0	
III	15	5	
IV	17	2	
VAS Grades	**Frequency (n)**		**p value**
	Yes	**No**	
	Headache triggered by lack of sleep		
Mild	1	1	0.017
Moderate	21	1	
Severe	31	1	
	Headache: Duration 4-72 hours		
Mild	2	0	0.014
Moderate	14	8	
Severe	30	2	
	Diagnosed by a health professional		
Mild	0	2	0.008
Moderate	11	11	
Severe	26	6	

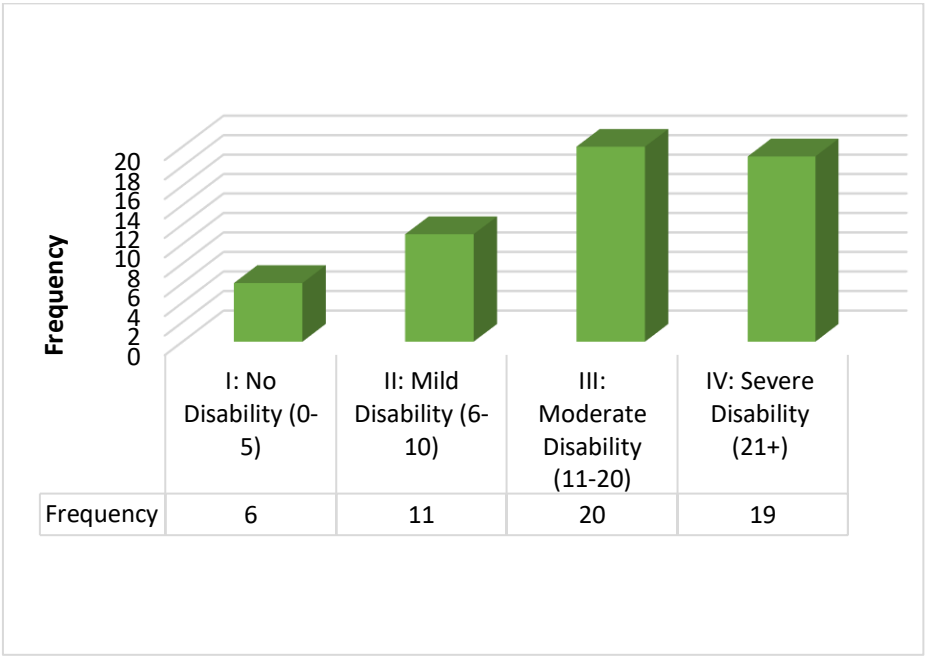


Figure 1: Migraine Disability Assessment Score (MIDAS) Grades of Migraineurs

Number of participants in each category of MIDAS depicting the scale of disability

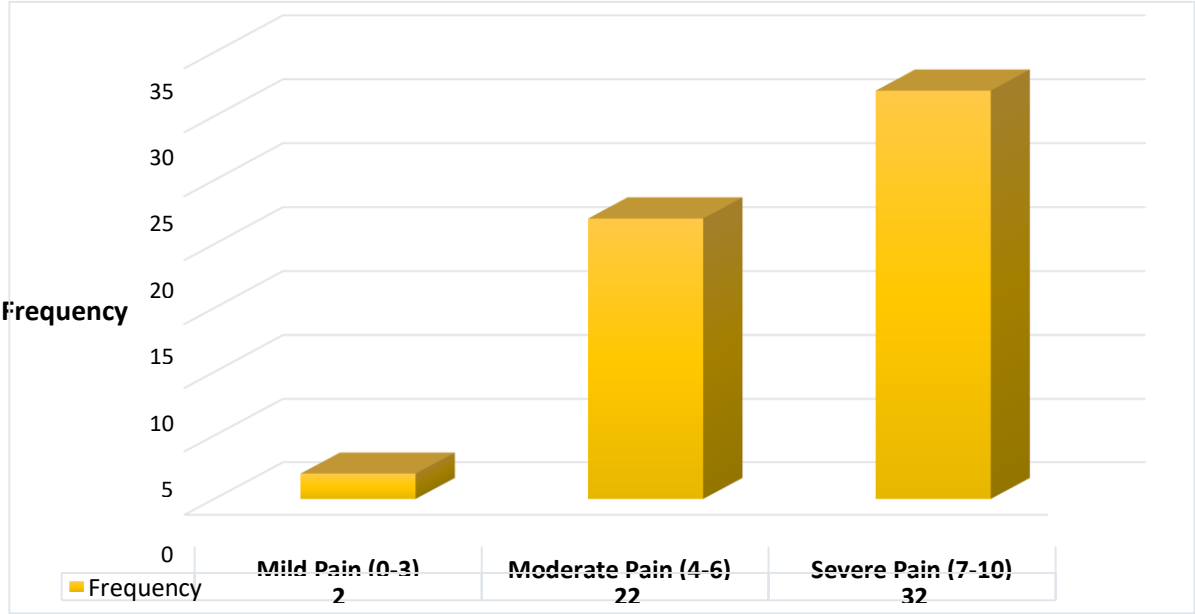


Figure 2: Visual Analogue Scale (VAS) Score of Migraineurs
The severity of pain experienced by participants in an episode of migraine

DISCUSSION

On a global scale migraine affects nearly 11.6% [17] of the population, interfering with routine activities and deterring overall productivity [13]. Consequently, this condition also negatively impacts the student population and is a pressing concern. A cross-sectional study was conducted within three months to measure the frequency of migraine headache and its impact on the daily life of medical students.

In the current a high proportion of young people (21±1.714) were suffering from migraine thus depicting how substantial a burden it is on the lives of students. This fact was corroborated by a study done in Iran [7]. A pressing reason for this could be that at this age these students face imminent academic pressure and proceed to lead strenuous lives [18].

This study witnessed a preponderance of female migraineurs within the students as observed in a study conducted in the United States of America [4]. This could be attributed to the fact that an imbalance in female hormones causes an increased incidence of migraine in females [11] and they tend to report physical and emotional symptoms of stress more often [18]. Stress can be considered a major triggering factor for migraine [14] as observed in our study; day scholars being the main sufferers of stress and having a higher number of migraine cases with a higher MIDAS score- grade IV. Local [9] and international [14] studies provide sufficient evidence that migraine and stress are inter relatable.

Our study, as well as a study conducted in Karachi [9] supports the fact that the most common triggering factors in medical students were stress and lack of sleep, with more than 90% of our and their students reporting having stress and sleep deprivation. Excessive academic burden, peer pressure, psychological stress, strenuous time tables and assessments can be considered to be important contributing factors [18].

Migraine has been associated with different symptoms, nausea, vomiting, photophobia and phonophobia were common complaints in our participants, reinforced by a study conducted in Saudi Arabia [14]. Foods like cheese, eggs, meat, caffeine and chocolate which have been labelled as common migraine-triggering foods in literature globally [10] were not depicting any association with migraine in our study. The most possible explanation could be difference in diet patterns.

The current study did not witness an association between disability levels of migraine with positive family historyreinforced by a study conducted in Netherlands [12] indicating no association

between number of migraine days per month and family history.

Quantification of impact of migraine on daily life is a difficult task, for which Migraine Disability Assessment questionnaire was used, rated as a reliable grading tool [21]. Moderate disability graded as III was observed in majority with severe disability graded as IV being second most common. This is in accordance with results of a study conducted in Ludhiana, India [22], on urban population where most people faced moderate disability (Grade III). In the current study an association was signified between MIDAS and duration of headache proving that the longer the headache severer the disability. Students identify stress as a triggering factor. Medical curriculum may be considered the culprit as it promotes competitive stressful environment, intense academics and disturbed daily life routine[18] highlighting the novelty and uniqueness of our study which targets medical students and quantifies the impact on their daily life. It also pinpoints preventable and modifiable factors which when addressed would reduce the burden of this disabling disease and the daily life suffering of the effected.

Visual Analogue Scale is an easy and reliable tool that is widely used in clinical settings to quantify pain [20]. We employed this tool to have our respondent's rate their pain on a scale of 0-10. Most described their pain as being severe. The VAS grade showed association with duration of headache and lack of sleep, thus proving that students who have prolonged headaches and scarce sleep suffer from more severe headaches. The severity of their headaches might prompt them to seek professional medical help as indicated by our study in which a significant association was seen between VAS score and diagnosis of migraine by a health professional. These results are important as they depict the contribution of pain and its severity on the suffering of the migraineur as well as increased diagnosis of this prevalent disease.

This study has certain limitations, limited sample size selected by non-probability technique, self-funded on a selected population, a single center study results of which cannot be applied to all institutions

CONCLUSION

The study concludes that migraine can be considered to be the commonest type of headache among medical students that considerably effects their life resulting in major disability and lost days of productivity. It is pertinent to review the medical curriculum involving medical students so that plans developed can lead to reduced academic burden and stress promoting better sleep patterns and healthier lifestyle. It is important that all headache cases be explored, diagnosed and managed. Further research on a larger sample size is recommended.

Author declaration

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REFERENCES

1. Feigin VL, Abajobir AA, Abate KH, Abd-Allah F, Abdulle AM, Abera SF, et al. Global, regional, and national burden of neurological disorders during 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet Neurology. 2017 Nov 1;16(11):877-97.
2. Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. Cephalalgia 2018; 38(1): 1–211.
3. Jawed S, Ali W, Yaqoob U, Shah S, Uddin SM, Haq A. Effect of migraine headache on productivity of patients according to migraine disability assessment score: a cross-sectional study. Pain and therapy. 2019 Dec;8(2):233-8.
4. Headache Disorders [online] 8 April 2016 [cited June 18 2020] World Health Organization. Available from URL: https://www.who.int/news-room/fact-sheets/detail/headache-disorders
5. Burch R, Rizzoli P, Loder E. The prevalence and impact of migraine and severe headache in the United States: figures and trends from government health studies. Headache: The Journal of Head and Face Pain. 2018 Apr;58(4):496-505.
6. Woldeamanuel YW, Cowan RP. Migraine affects 1 in 10 people worldwide featuring recent rise: a systematic review and meta-analysis of community-based studies involving 6 million participants. Journal of the neurological sciences. 2017 Jan 15;372:307-15.

7. Zarea K, Rahmani M, Hassani F, Hakim A. Epidemiology and associated factors of migraine headache among iranian medical students: A descriptive-analytical study. Clinical Epidemiology and Global Health. 2018 Sep 1;6(3):109-14.
8. Herekar AA, Ahmad A, Uqaili UL, Ahmed B, Effendi J, Alvi SZ, et al. Primary headache disorders in the adult general population of Pakistan–a cross sectional nationwide prevalence survey. The journal of headache and pain. 2017 Dec;18(1):28.
9. Anwar F, Bilal Sheikh A, Taher T, Iqbal Khan M, Masoom A, Khursheed A, Saeed S, Nasim M, Sohail H, Fatima SH, Noor K. Prevalence and predictors of migraine among medical students in Karachi. Journal of Basic Research in Medical Sciences.:19-27.
10. Tai ML, Yap JF, Goh CB. Dietary trigger factors of migraine and tension-type headache in a South East Asian country. Journal of pain research. 2018;11:1255.
11. Delaruelle Z, Ivanova TA, Khan S, Negro A, Ornello R, Raffaelli B, Terrin A, Mitsikostas DD, Reuter U. Male and female sex hormones in primary headaches. The journal of headache and pain. 2018 Dec 1;19(1):117.
12. Pelzer N, Louter MA, van Zwet EW, Nyholt DR, Ferrari MD, van den Maagdenberg AM, et al. Linking migraine frequency with family history of migraine. Cephalalgia. 2019 Feb;39(2):229-36.
13. Seddik AH, Branner JC, Ostwald DA, Schramm SH, Bierbaum M, Katsarava Z. The socioeconomic burden of migraine: An evaluation of productivity losses due to migraine headaches based on a population study in Germany. Cephalalgia. 2020 Dec;40(14):1551-60.
14. Ibrahim NK, Alotaibi AK, Alhazmi AM, Alshehri RZ, Saimaldaher RN, Murad MA. Prevalence, predictors and triggers of migraine headache among medical students and interns in King Abdulaziz University, Jeddah, Saudi Arabia. Pakistan journal of medical sciences. 2017 Mar;33(2):270.
15. The Migraine Disability Assessment Test [document on the internet] Innovative Medical Research 1997, AstraZeneca Pharmaceuticals, LP, 2007 [cited June 18 2020]. Available from URL: https://headaches.org/wp-content/uploads/2018/02/MIDAS.pdf
16. Bodyharmonix Pain Rating Scale, 2017 [Online]. Bodyharmonix, Beginners Guide To Tension Headaches. [cited June 18 2020]. Available from URL:https://bodyharmonix.com.au/wp-content/uploads/visual-analogue-scale-pain-measure-brunswick-bodyharmonix.jpg
17. Woldeamanuel YW, Cowan RP. Migraine affects 1 in 10 people worldwide featuring recent rise: a systematic review and meta-analysis of community-based studies involving 6 million participants. Journal of the Neurological Sciences. 2017 Jan 15;372:307-15.
18. Oku AO, Owoaje ET, Oku OO, Ikpeme BM. Prevalence of stress, stressors and coping strategies among medical students in a Nigerian medical school. African Journal of Medical and Health Sciences. 2015 Jan 1;14(1):29.
19. Calvarese M. The effect of gender on stress factors: An exploratory study among university students. Social Sciences. 2015 Dec;4(4):1177-84.
20. Ismail AK, Ghafar MA, Shamsuddin NS, Roslan NA, Kaharuddin H, Muhamad NA. The assessment of acute pain in pre-hospital care using verbal numerical rating and visual analogue scales. The Journal of emergency medicine. 2015 Sep 1;49(3):287-93.
21. Shaik MM, Hassan NB, Tan HL, Gan SH. Quality of life and migraine disability among female migraine patients in a tertiary hospital in Malaysia. BioMed research international. 2015 Jan 1;2015.
22. Sagar M, Sharma S, Chaudhary A, Girdhar S, Satija M, Kaushal P. Assessment of Prevalence of Migraine and Associated Disability in Selected Urban Population of Ludhiana City in Punjab.