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QUESTIONNAIRE BASED STUDY ON PREVALENCE, RISK FACTORS AND DISABILITY ASSOCIATED WITH PRIMARY HEADACHE DISORDERS.

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ABSTRACT

Background: Headache is one of the most prevalent disorder of the nervous system. Headache can be primary or secondary. Primary headache exists independently and are not accompanied by any other medical condition. In majority of suffering populations the disease remains underdiagnosed and undertreated. There is an increased incidence of headache that probably lies in lifestyle and/ or environment factors and hence the quality of life is affected in individuals with headache due to the negligence of this condition. **Objective:** To analyse the prevalence, risk factors and disability of types of primary headache. **Materials and Methods**: The study was conducted as prospective observational study on 150 individuals with primary headache. The study was conducted among the students and faculties of Bapuji Pharmacy College and Bapuji Dental College, Davangere, for a period of 6 months. **Results:** 78% of females and 22% of males suffered from primary headache. The mean age group was found to be 23.48± 4.83. 58% of subjects were identified with Tension-type headache, followed by Migraine 36.7% and Cluster headache 1.3%. **Conclusion:** Tension type headache was the most prevalent type of primary headache and was most frequently seen in females. The commonly identified risk factors were stress, sunlight, sound, lack of sleep and skipping meals.

KEYWORDS: Primary Headache; Migraine; Tension-Type Headache; Cluster Headache.

INTRODUCTION

Headache is found to be one of the frequent disorder of the nervous system.[1] Worldwide incidence of the headache is 47% and it involves medical aid; additionally, headaches can

also lead to loss of efficiency at work, a decrease in social communications, and worsening in the quality of lifetime.[2] It is a common health problem which can affect each age set that has a negative impact on the quality of life of the individual who is affected by causing alteration in day-to-day routines.[3] All over the world about a part of the adulthood experience headache.[4]

According to International Headache Society (IHS), headache is classified into Primary and Secondary headaches. Primary headaches take place independently and are not triggered by other medical condition. The most frequently occurring primary headache disorders are Migraine, Tension-Type Headache (TTH), and Cluster Headache. Secondary headaches are resulted due to any underlying disorders and include, for example, headache accompanying with medication overdosing, giant cell arteritis, elevated intracranial pressure, and infection.[5] TTH and migraine have ranked second and third in the survey conducted by the Global Burden of Disease Survey in 2010 (GBD2010) as the most common diseases worldwide.[6] The current global rate of primary headache throughout the world is 47%; Migraine headache 10%, TTH 38%.[7] In Asia, the overall prevalence of migraine range is between 8.4 - 12.7% and 15.6 -25.7% for TTH.[4] Nearly 15% and 40% of the overall population suffers from migraine and TTH, respectively, with an increased prevalence within the age of 25 and 55.[8] The lifetime rate of incidence are higher in men, 93 % for headache of any type, 8% for migraine and 69% for tension-type headache. In women, the lifetime prevalence is 99% for the headache of any type, 25% for migraine, and 88% for tension-type headache.[7] The Global Burden of Disease Study updated in 2013(GBD2013) revealed that tension-type headache and migraine are in the top ten causes of disability across the globe and ranked 3rd when estimated for the years of life lost to disability.[9] As reported by the World Health Organization (WHO), migraine alone is the 19th highest cause of disability worldwide.[10]

The word migraine comes from the Greek hemicranias.[11] Migraine is one of the most pervasive neurologic disabilities worldwide.[4] It is a common, recurring, severe headache that interrupts with routine functioning. The pain develops during a period of minutes to hours, progressing from a dull ache to more penetrating pulsating pain that worsens with each pulse, that when not treated can persist for 4 to 72 hours.[11] Because of the hormonal impact migraine is more often seen in women.[1] The pain is usually unilateral (one-sided), and it can shift to the opposite side or bilateral (two-sided). However, the pain can appear at any time

and it is not unusual for migraineurs to be aroused by the pain. The pain can be deteriorated by physical activities and is followed by phonophobia, photophobia, osmophobia, nausea and vomiting.[12] Anorexia, food cravings, constipation, diarrhea, abdominal cramps, nasal stuffiness, blurred vision, diaphoresis, facial pallor, localized facial, and scalp or periorbital edema are the other indications relatable during the headache period.[13] Migraine headaches can be subdivided into migraine with aura and migraine without aura.[11]

Tension-type headache (earlier known as tension or muscle contraction headaches) is the most common primary headache disorders.[13] Globally it is the most frequent type of headache in all categories of age.[14] Although TTH is the most prevalent form of headache, it receives limited attention from the healthcare authorities, clinical researchers or industrial pharmacologists than migraine does.[15] The characteristic of TTH is a dull, persistent headache occurring bilaterally around the head in a hatband distribution. The pain is typically mild to moderate in intensity and has a non-pulsating quality. TTH often occurs a lot during or after stress. Aura symptoms are not associated with TTH and they are neither accompanied by nausea, vomiting or photophobia.[11] There is a slight disability resulting from TTH when compared with migraine headache, and the headache severity will not affect the daily physical activity.[13]

Cluster headache is a type of trigeminal autonomic Cephalalgia. It is an infrequent type of headache disorder with an estimated rate of 0.07%-0.4%. Cluster headache is the most severe form of the primary headache disorders and is defined by attacks of severe, unilateral head pain that appears in a range lasting for weeks or months (cluster period) separated by remission periods often lasting months or years. It is usually focused in or around one eye, with tearing and redness of eye.[1] The headache attacks develop commonly at night and they occur abruptly, with pain reaching the peak soon after the attack and last for about 15 to 180 minutes. No aura symptoms are given by cluster headaches. Conjunctival injection, lacrimation, nasal stuffiness, rhinorrhea, eyelid edema, facial sweating, miosis/ ptosis, and restlessness or agitation are the other symptoms accompanying the cluster headache. Throughout the cluster period, an attack occurs from once every other day to 8 times per day.[13]

MATERIALS AND METHODS

The study was conducted among students and faculties of Bapuji Pharmacy College and Bapuji Dental College, Davangere. Subjects above 18 years of age were included in the

study. The exclusion criteria was subjects with secondary headache and pregnant women. Based on the inclusion criteria 150 individuals with primary headache were selected for the study. The study was conducted with the help of HARDSHIP questionnaire, VAS and MIDAS. The collected data will be analyzed for demographic details, risk factors, prevalence of types of primary headache.

Data analysis

- The collected data was analyzed by applying suitable statistical method. All extracted data were pooled and analyzed using the statistical package for the social sciences (SPSS) software. We used Chi-square test and Fisher's exact test to determine the association between risk factors and demographic characteristics with primary headache. We regarded $p<0.05$ as significant.

RESULTS

Demographic characteristics of the subjects

Among the 150 individuals, 78% (117) of females and 22% (33) of males suffered from primary headaches. There was a significant association between gender and types of primary headache ($p=0.018$). 76% (114) of the subjects belongs to the age group of 21-30 years. The mean age group was found to be 23.48±4.83 years. Out of total population it was observed that 92% (138) of the individuals were students and 8% (12) were professionals and 90.6% (136) were single and 9.4% (14) were married.

Table 1: Demographic characteristics of the subjects.

CHARACTERISTICSICS	NO. OF SUBJECTS	PERCENTAGE (%)	p value
GENDER			
Male	33	22	0.018
Female	117	78	
AGE			
<20	27	18	
21-30	114	76	0.229
31-40	6	4	
41-50	2	1.3	
51-60	1	0.7	
MARITAL STATUS			
Single	136	90.6	0.177
Married	14	9.4	
OCCUPATION			
Students	138	92	0.133
Professionals	12	8	

Distribution based on types of primary headache

TTH 58% (87) was the most common primary headache disorder followed by migraine 36.7% (55), cluster headache 1.3% (2) and undetermined headache 4% (6).

Table 2: Distribution based on types of primary headache.

TYPES OF PRIMARY HEADACHE	NO: OF SUBJECTS	PERCENTAGE (%)
Migraine	55	36.7
Tension-Type Headache	87	58
Cluster Headache	2	1.3
Undetermined Headache	6	4

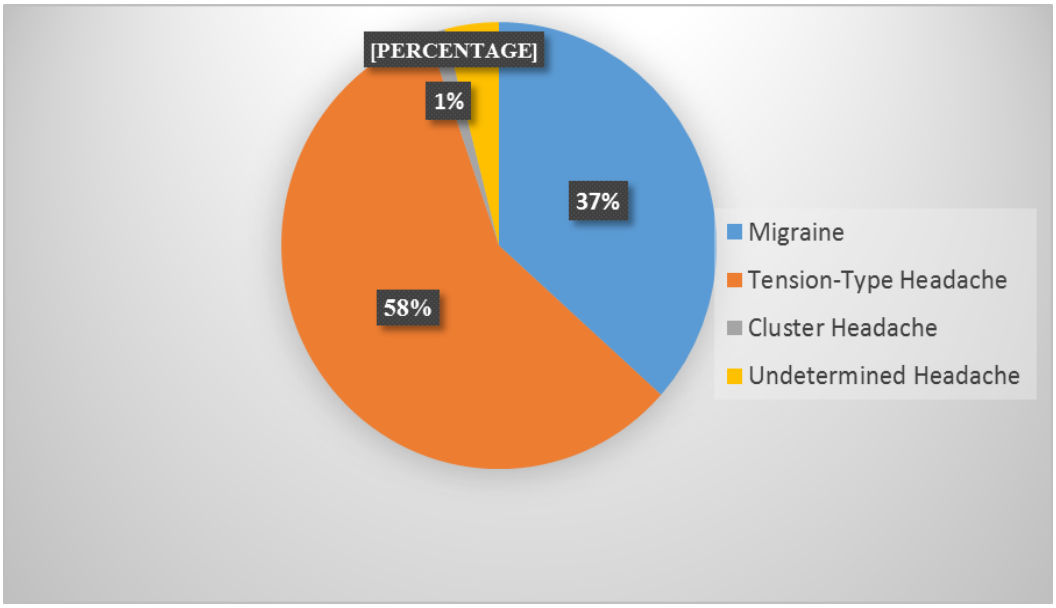

Figure 1: Distribution based on types of primary headache.

Gender difference in types of primary headache

In our study, TTH was found to be the most frequent primary headache, which was predominantly identified among females 77.02% (67), migraine more often occurred among females 85.46% (47). Cluster headache was found only in 2 individuals.

Table 3: Gender difference in types of primary headache (n=150)

Types Of Primary Headache	Male	Percentage (%)	Female	Percentage (%)
Migraine	8	14.54	47	85.46
Tension-type Headache	20	22.98	67	77.02
Cluster Headache	1	50	1	50
Undetermined Headache	4	66.66	2	33.34

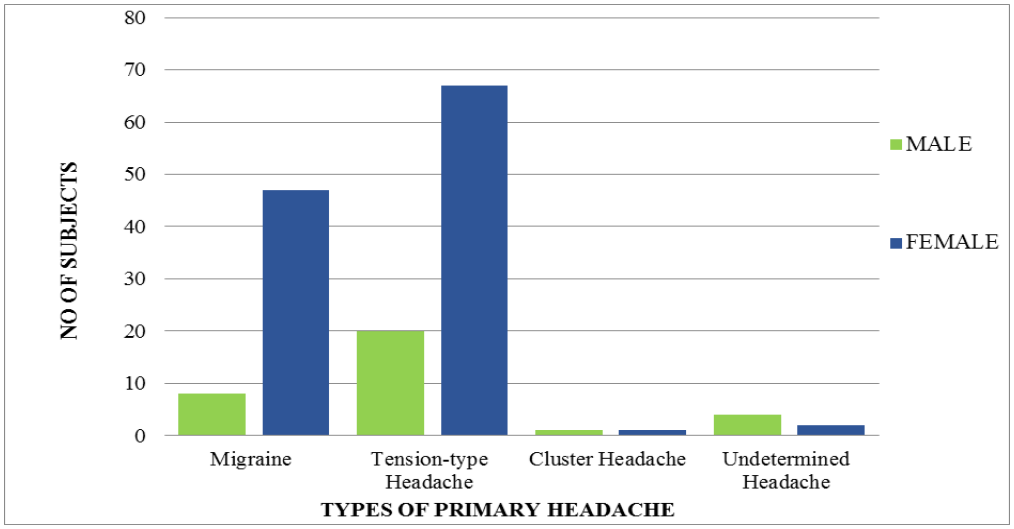

Figure 2: Gender difference in types of primary headache.

Age categorization in types of primary headache

Out of 150 individuals enrolled, subjects under the age group of 21-30 years were majority, with 45 individuals in migraine, 62 individuals in TTH, 1 individual in cluster headache and 6 individuals in undetermined headache.

Table- 4: Age categorization in types of primary headache (n=150)

Age (Years)	Migraine	Tension Type Headache	Cluster Headache	Undetermined Headache
<20	7	20	0	0
21-30	45	62	1	6
31-40	2	3	1	0
41-50	1	1	0	0
51-60	0	1	0	0

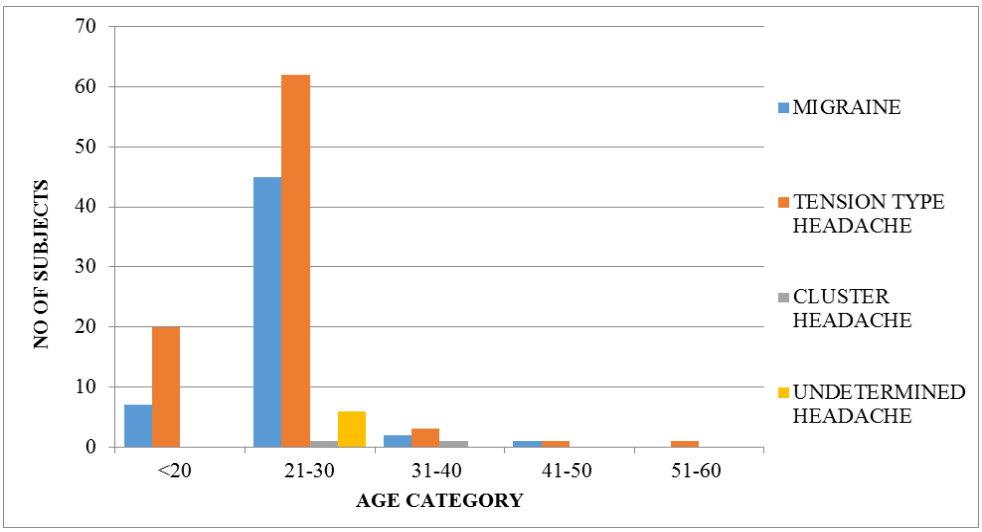

Figure 3: Age categorization in types of primary headache.

Distribution of subjects based on characteristics of headache

Among 150 individuals who were diagnosed to have primary headache, the quality of pain experienced by 87 individuals with TTH was tight or pressing type pain with bilateral location, whereas throbbing or pulsating pain with unilateral location was seen among the subjects with migraine (55) and cluster headache (2). Most commonly associated symptoms among the subjects with migraine were phonophobia (50), photophobia (44), nausea (31) and vomiting (29), whereas in tension-type headache phonophobia (55) and photophobia (52) was most commonly found. In migraineurs the headache was aggravated by physical activity (38) and the interference with daily activity were seen in both migraine (49) and TTH (69).

Table 5: Distribution of subjects based on characteristics of headache. (n=150)

Characteristics	Migraine	Tension Type Headache	Cluster Headache	Undetermined Headache
Quality				
Throbbing/ Pulsating	55	0	2	0
Tightening/ Pressing	0	87	0	6
Location				
Unilateral	55	0	2	1
Bilateral	0	87	0	5
Associated symptoms				
Nausea	31	19	1	0
Vomiting	29	12	1	0
Phonophobia	44	52	0	0
Photophobia	50	55	0	0
Aggravation by physical activity				
Yes	38	35	1	0
No	17	52	1	6
Interference with daily activity				
Yes	49	69	1	0
No	6	18	1	6

Headache disability index in types of primary headache

Our study showed that, (29) individuals with migraine experienced moderate disability whereas mild disability were commonly identified among TTH (37) and severe disability was reported by individuals with cluster headache (2).

Table 6: Headache disability index in types of primary headache.

Midas grade	Migraine	Tension headache	Cluster headache	Undetermined headache
GRADE I	11	36	0	6
GRADE II	9	37	0	0
GRADE III	29	14	0	0
GRADE IV	6	0	2	0

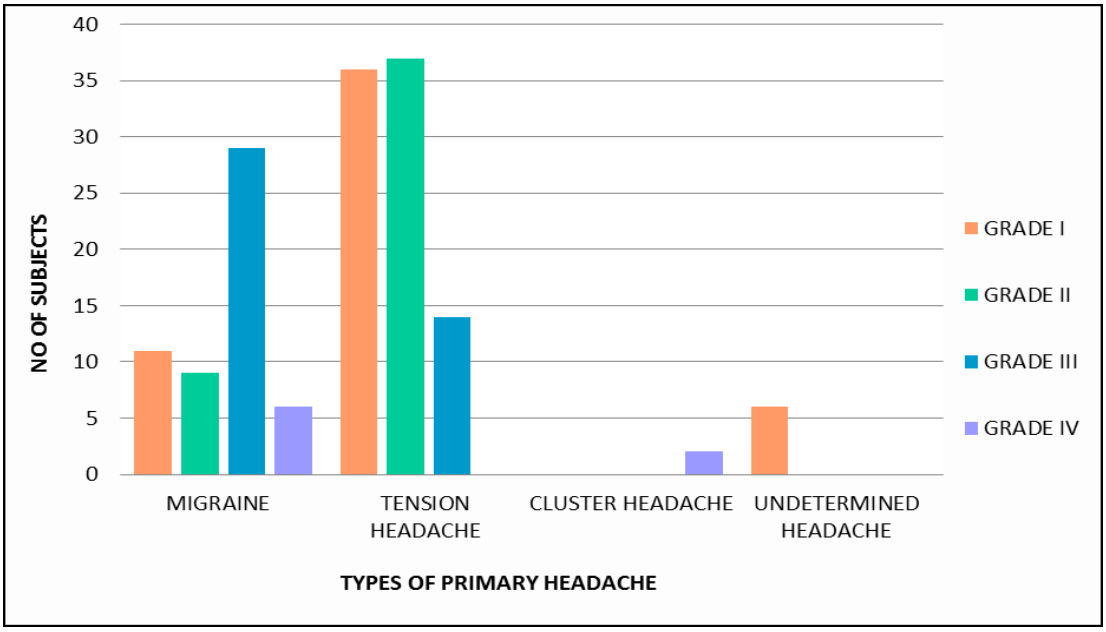

Figure 4: Headache disability index in types of primary headache.

Intensity of pain based on visual analogue scale

In our study, 55 individuals diagnosed with migraine 28 individuals experienced severe pain, while 87 individuals diagnosed with TTH, 65 of them experienced moderate pain. Individuals with cluster headache experienced severe pain. The details of VAS in types of primary headache is shown in Table 10.

Table 7: Intensity of pain based on visual analogue scale.

Pain Score	Migraine	Tension Type Headache	Cluster Headache	Undetermined Headache
0 (No pain)	0	0	0	1
1-3 (Mild pain)	2	12	0	5
4-6 (Moderate pain)	25	65	0	0
7-10 (Severe pain)	28	10	2	0

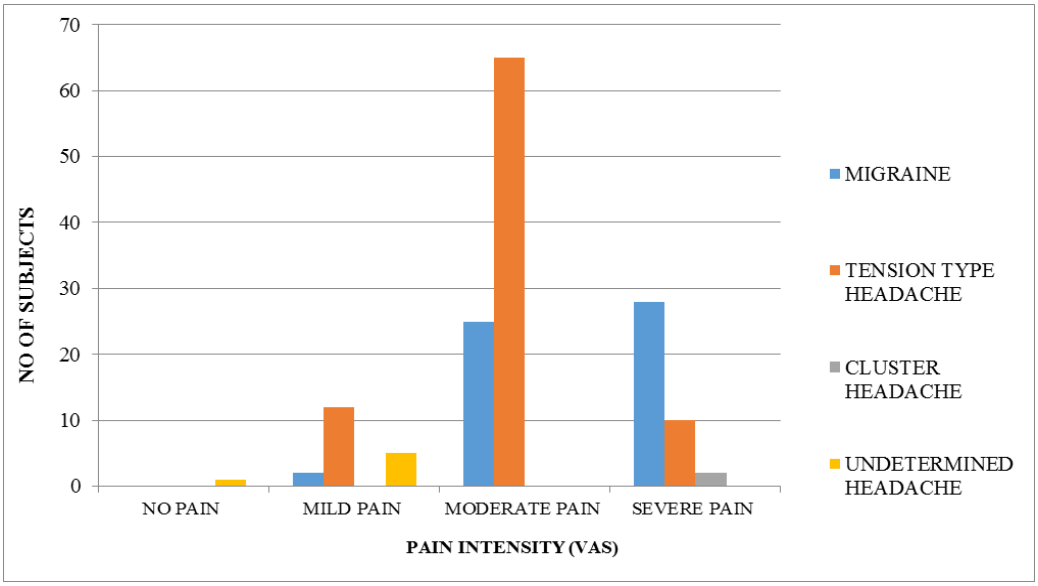

Figure 5: Intensity of pain based on visual analogue scale.

Risk factors associated with types of primary headache

Out of 55 individuals with migraine, most commonly reported risk factors were stress (40), sunlight (37), sound (34), and lack of sleep (26), skipping meals (16), menstruation (14) and climate change (10). While stress (63), lack of sleep (57), sound (44), sunlight (41) and skipping meals (23) were commonly identified risk factors among TTH. Stress (2) was most commonly identified risk factor in cluster headache. Among the stated risk factors, sunlight ($p<0.001$), travel ($p<0.001$), sound ($p=0.025$), menstruation ($p=0.013$) showed a significant relationship between incidence of headache.

Table 8: Risk factors associated with types of primary headache.

Risk Factors	Migraine	Tension Type Headache	Cluster Headache	Undertermined Headache	P Value
Stress	40	63	2	4	0.713
Fatigue	6	12	0	1	0.382
Anxiety	1	9	0	0	0.350
Lack of sleep	26	57	1	5	0.448
Climate changes	10	15	1	0	0.318
Overeating	0	1	0	0	0.101
Sunlight	37	41	0	3	<0.001
Sound	34	44	0	2	0.025
Menstruation	14	5	0	0	0.013
Skipping meals	16	23	0	2	0.272
Travel	2	13	0	1	<0.001
Odour	6	6	0	0	0.111
Alcohol	2	4	0	0	0.343
Caffeine	1	2	0	0	0.101

DISCUSSION

The present study was conducted among the students and faculties of Bapuji Pharmacy College and Bapuji Dental College for the period of 6 months. This was a questionnaire based survey. The aim of this study was to investigate the prevalence and risk factors of types of primary headache. During the study period a total 150 cases of primary headache were monitored prospectively.

In our study it was identified that the occurrence of primary headache was more common among the age group of 21-30 years (76%), this might be because most of our study population were students. The mean age was found to be 23.48±4.83years. Our results coincides with the previous studies conducted by Wang et al. (41.3%),[16] Zebenigus et al. (36.7%)[17] and Manandhar et al. (88.4%).[18]

In our study it was reported that a large percentage of individuals suffered from TTH (58%) than migraine (36.6%). Results from other studies conducted in countries such as Nepal (41.1%),[18] Georgia (37.3%)[19] and Nigeria (72.8%)[7]] matched with our findings. Cluster headache was identified only in 2(4%) individuals in our study, this might be because in general the occurrence of cluster headaches are rare and infrequent and this result was found to be similar with study conducted by Thomas et al. (1%).[20]

More women compared with men had higher prevalence rates for primary headache (78%) in this study as has been previously reported by the studies conducted by Katsarava et al. (63%),[19] Manandhar et al. (41%),[18] and Oshinaike et al. (58.2%).[7] This has been attributed to the effect of female sex hormones specifically estrogen. The well-known female predominance in subjects with migraine (85.45%) was also evident in our study. We found a significantly higher proportion of women with migraine headache, 85.45% compared to men 14.54%. The higher rates in women are thought to be due to factors such as sensitivity to estrogen hormones, genetics and difference in response to stress and pain perception. This findings was in accordance with the study conducted by Oshinaike et al. (23.4%)[7] and Mbewe et al (27.1%).[21]

Similarly the female predominance of TTH (77.01%) was found to be higher in our study. This findings was comparable with the studies of Russell et al.,[22] Oshinaike et al. (70.3%).[7] In this study among the factors affecting the intensification of headache, stress, sunlight, sound, lack of sleep and skipping meals were significant and were consistent with our studies.

We have observed in our study that several precipitating factors were identical among both migraineurs and TTH individuals. Contrary to this finding, in a population based study in Croatia Zivadinov et al.[23] showed that stress was associated with migraine (57.8%), whereas physical activity was related to TTH (36.7%). Journey, change in weather and temperature were also associated among the individual of migraine with aura in his study. The difference might account on the social and environment variation among population. Similar to Spierings ELH et al.[24] did not find any precipitating factor that was significantly reported by TTH than the migraineurs.

We have observed in our study that the disability caused by migraine headache was greater than other types of headache. Most of the subjects experienced moderate to severe disability. This higher disability among migraine population might be because subjects with TTH headache are less likely to suffer from disability symptoms such as nausea and vomiting. Factors such as exercise and physical activity also do not exacerbate symptoms among the subjects with TTH. Similar results were observed in the studies conducted by Demirkirkan et al. (41.4%)[25] and Thomas et al. (41.5%).[20]

CONCLUSION

The study highlights the data on the type and quality of headache on a group of students and faculties. The study analysed and identified the associated symptoms and risk factors of primary headaches. The most prevalent type of primary headache among the 150 subjects was TTH, followed by migraine, and cluster headache. Those who did not satisfy the criteria for TTH and migraine headache were categorized as undetermined headache. In migraine and TTH the female subjects was found to be more prevalent. The primary headache was more predominant amongst the students, as the students have to deal with up the competitive educational prospectus.

Tight or pressing type pain with bilateral location was commonly noted among subjects with TTH, while throbbing or pulsating pain with unilateral location was seen between the subjects with migraine and cluster headache. Most commonly associated symptoms among the subjects with migraine were phonophobia, photophobia, nausea and vomiting, whereas in TTH phonophobia and photophobia. It was observed that the migraine and cluster subjects experienced severe disability when compared with other types of primary headache. The pain intensity associated with the types of primary headache was found to be severe in migraine and cluster headache. Most of the risk factors was found to be similar in both

migraine and TTH, among which stress, lack of sleep, skipping meals and sunlight was most commonly identified.

Migraine causes is one of the largest percentage of the non-fatal disease associated with burden worldwide. Education on headache disorder is a substantial health problem and there is a great need for addressing this health problem as the intensity, frequency and severity of primary headache is found to be higher among the subjects. The headache can interfere with their daily activities and can cause significant disability. One of the important step is the identification and cautious monitoring of risk factors which may lessen the frequency and severity of headache. Public education about the risk of headache is greatly needed to improve the QOL of the subjects, as the headache can significantly affect an individual, family and society.

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CONFLICT OF INTEREST

There is no conflict of interest between the authors.

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