

The Frequency, Classification and Characteristics of Headache Among Medical Students of Karachi, Pakistan

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ABSTRACT

BACKGROUND: The aim of this study was to determine the frequency of headache disorders in undergraduate medical students of Karachi, Pakistan and determination of various associating factors.

METHODS: This was a descriptive cross-sectional study including 402 participants. All were medical students from first year to final year enrolled at two medical colleges of Karachi, Pakistan. The ethical approval of study was obtained from Dow University of Health Sciences. The students were inquired about the occurrence of headaches during the past one year and various triggering and risk factors.

RESULTS: Headaches were experienced by 87.8% students (N=353; females= 249). Of

these, 17.8% were found to have migraine, 75.3% had tension-type headache (TTH), 4.0% had both migraine and TTH and 2.3% suffered from cluster headaches. A quarter of students suffering from headache were found to have a positive family history, while stress, fatigue, sleep disturbance and nasal congestion were the most commonly reported trigger factors. More than half (60%) students stated that they did not take any medications for headaches.

CONCLUSION: This study found a very high frequency of headache among medical students of Karachi, Pakistan. A number of trigger factors were identified which if curtailed may reduce the occurrence of headache.

Keywords: Headache; Medical Students; Migraine; Tension-type Headache; Trigger Factors

INTRODUCTION

Headache is a frequent neurological complaint with profound bearing on one's personal, working and social life [1]. The global prevalence of headache in adult population in 2007 was 46% and the World Health Organization (WHO) included headaches among the ten most disabling conditions around the world [2].

Medical education is generally regarded as stressful and demanding and may lead to depression [3]. Prevalence of headache among medical university students varies between 41% and 98%, perhaps due to differences in socio-demographic, environment and hereditary characteristics [1, 4-8]. Instead of undergoing specific treatment, students resort to regular usage of painkillers which often results in

analgesic abuse headache, further adding to the impairment of their quality of life (QOL) [9]. Despite its high prevalence among medical students, very few studies have examined epidemiological aspects, clinical characteristics and risk factors for headaches among Pakistani medical students [10].

The aim of this study was to determine the frequency, classification and characteristics of headache among medical students of Karachi, Pakistan and to examine risk factors associated with headaches in medical students.

METHODS

This was a cross-sectional study. Participants were undergraduate medical students from first year to final year enrolled at two medical

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colleges of Karachi, one each from public and private sectors; Dow University of Health Sciences and Aga Khan University. The study period was from 1st and 30th January 2012. A total of 402 students were interviewed at their respective medical colleges using convenience sampling. Participants were eligible to participate if they were registered medical students belonging to the 5 year program of medical school. Students with comorbid conditions such as dental disease, history of sinusitis or fever with headache were excluded. The study was approved by the Institutional Review Board of Dow University of Health Sciences, Karachi.

Data Collection: A questionnaire designed for this study was used for data collection after obtaining written consent. We inquired students about the occurrence of headaches during the past one year and various possible trigger and risk factors. We inquired students about the monthly incomes of their families. We classified students having incomes of more than \$1500, between \$500- \$1500 and less than \$500 per month, as belonging to upper, middle and low socio-economic status respectively.

Headache was defined as occurrence of more than a single episode of headache of more than 2 hours duration in the last one year. Those students who had had less than a single episode of headache were categorized with those who did not suffer any headaches during last one year. We categorized headaches using the ICHD-II classification [11]. Those with characteristically bilateral pain occurring for minutes to days, pressing or tightening in nature and of mild to moderate intensity, not aggravated with routine exertion; associated with either photophobia or phonophobia but no nausea, were considered as having tension type headache (TTH). Migraine headaches were defined as those lasting 4-72 hours, usually unilateral, having pulsating nature, moderate or severe in intensity, worsening with routine exertion and associated with nausea and/or photophobia and phonophobia. Migraine was further classified as with-aura or without-aura. Cluster headaches included episodes of severe, strictly unilateral pain which is orbital, supraorbital, and temporal or in any combination of these sites, occurring for 15-180 minutes and occurring from once every alternate day to 8 times a day. Cluster headaches are commonly associated with ipsilateral conjunctival injection, lacrimation, nasal congestion or rhinorrhoea.

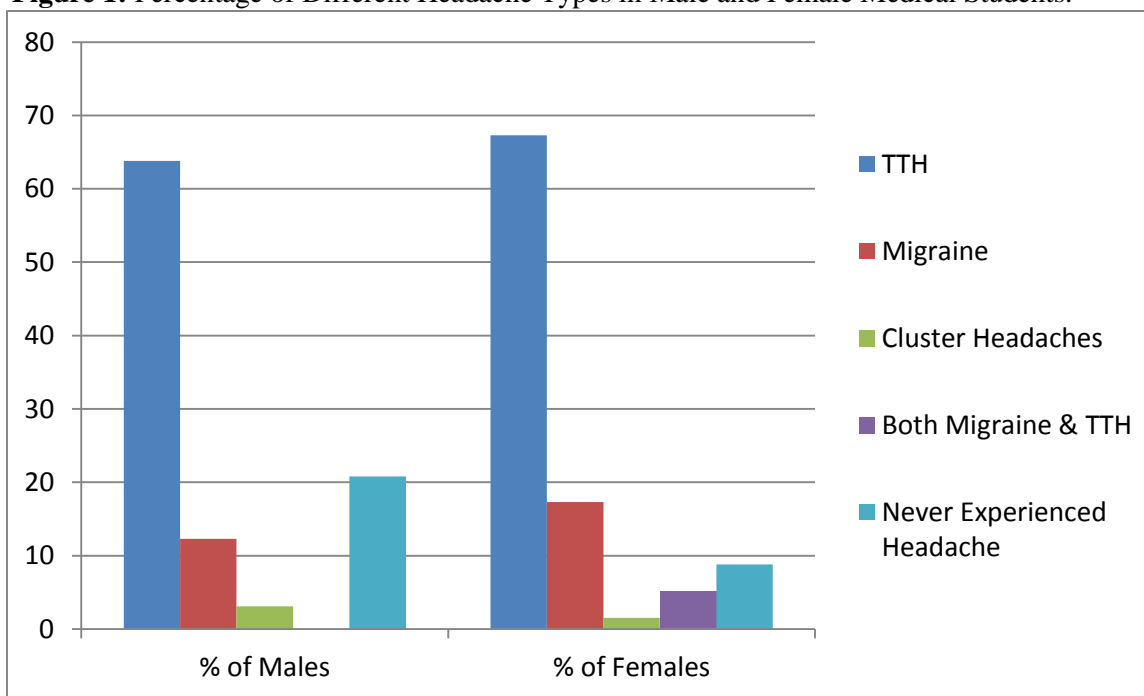
Data Analysis: Categorical variables were pre-

-nted as counts and percentages while continuous variables were presented as the mean and standard deviation. Categorical data were analyzed using Chi square test and Fisher's exact test. P-value of < 0.05 was taken as significant. Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) Version 16.00.

RESULTS

Demographics: Of the 402 participants of this study, 272 (68%) were females. The mean age of the participants was 21±2 years, 46 (11.4%) participants belonged to the upper socio-economic class, and 352 (87.6%) were from middle socio-economic class. Headaches were experienced by 87.8% students (N=353; females =249) during the previous year. When asked about the frequency of their headache episodes, 50 (12.4%) had experienced more than one episode of headache per week, 67 (16.7%) had experienced one episode of headache per week, 41 (10.2%) had experienced headaches once in a fortnight and 136 (33.8%) experienced one episode of headache per month. 59 (14.7%) had infrequent episodes of headache occurring once in several months but more than one episode per year. In total, 158 (39.3%) participants reported experiencing frequent headaches (≥2 episodes per month). 113 (28.1%) students said that their headache lasted for less than an hour, 163 (40.5%) said that it lasted for between 1-4 hours, 58 (14.4%) said that it lasted for up to a day and 18 (4.5%) said that it lasted for days. Positive family history was present in 128 (33.86%) students with headache in either a parent or a sibling or both suffering from headaches.

Characteristics of Headache: Of the 353 students suffering from headaches, 17.84% were found to have migraine; 9.34% having migraine without aura and 8.5% having migraine with aura. 75.35% had TTH, 3.97% had characteristics of both migraine and TTH and 2.27% had cluster headaches as per the ICHD-II (Figure 1). 177 (44%) participants reported that headache stopped them from performing their daily routine. 52 (12.9%) students said that they had missed college, classes or clinical rotations because of headache. Regarding the time of headache, 181 (51.3%) students reported to have headaches in the afternoon, 98 (27.8%) said they suffered it at night and 43 (12.2%) had it in the morning. Rest of the students (8.8%) had headaches at variable times throughout the day.

Figure 1: Percentage of Different Headache Types in Male and Female Medical Students.

When inquired about the accompanying signs and symptoms, 120 (34%) students said they had mood changes, 63 (17.8%) had photophobia and phonophobia, 55 (15.6%) had nausea, 20 (5.7%) had confusion, 18 (5.1%) had weakness in the arms or legs, 14 (4%) had vomiting, 9 (2.5%) had changes in balance and co-ordination and 5 (1.4%) had double vision. Sixty two (17.6%) students reported an increase in the intensity or frequency of headaches during past one year. 29 (7.2%) students said that headaches disturbed them in their sleep. All students who had reported to have headaches were asked about the trigger factors. Most common trigger factors included mental stress, anxiety, fatigue, too little or too much sleep, loud noise and hunger. Less common triggers included dehydration, bright lights, menstrual cycles, physical exertion and weather changes. Table 1 shows the trigger factors and their significance.

Medications Used for Headache Management:

When participants were inquired about what treatment they used for headache episodes, 60% reported that they did not take any medications and their headache was relieved by rest or sleep. Only 3% students underwent specific migraine treatment. Acetaminophen was used by 29% of the students while NSAIDs and mefenamic acid was used by 5% and 0.9% respectively. Medical students were also inquired about various risk factors of stress commonly faced by them to

determine association with headache occurrence. Common risk factors associated with headache among medical students included stressful study schedule with 272 (67.66%) students reporting their co-occurrence. Other causes included peer pressure, low exam grades, financial issues, moving to a new house, parental pressure regarding money, friends and relationships, excessive day-time sleepiness, long college to home distance, lack of time management, suffering from a chronic illness, death of a close family member, separation of parents and any family member suffering from a chronic illness. Table 2 shows the risk factors and their significance.

DISCUSSION

Despite being one of the most prevalent disorders, there is scarcity of published data on headache prevalence from developing countries. To the best of our knowledge, this study is the first effort to classify major headache disorders in medical students from two medical colleges of Pakistan based on the classification and ICHD-2 diagnostic criteria and to determine their possible associations. Headache prevalence of 87.8% in medical students as reported by our study is considerably higher than the global prevalence (46%) [2]. Our results were comparable to a study carried out in Pakistani school children aged 12 – 20 years in Karachi which reported a

Table 1: Triggering Factors of Headaches in Medical Students

Triggers	Migraine n=63(%)	Tension type headache n= 267(%)	Cluster n=9(%)	Both migraine and tension type n=14(%)	P value
Anxiety & Mental Stress	50(79.3)	180(67.4)	6(66.7)	11(79)	<0.001*
Fatigue	38(60.3)	166(62.2)	4(44.4)	10(71.4)	<0.001*
Too Little Sleep	42(66.7)	157(59)	4(44.4)	10(71.4)	<0.001*
Loud Noise	36(57.1)	122(46)	3(33.3)	11(79)	<0.001*
Too Much Sleep	24(38)	92(34.5)	2(22.2)	9(64.2)	<0.001*
Warm Weather	31(49.2)	86(32.2)	3(33.3)	5(36)	<0.001*
Hunger	27(43)	86(32.2)	3(33.3)	7(50)	<0.001*
Strong Odors	27(42.9)	71(27)	0	6(43)	<0.001**
Family Problems	14(22.2)	58(22)	1(11.1)	6(43)	0.004*
Bright Lights	22(34.9)	50(19)	0	2(14.3)	<0.001**
Sunshine	18(28.6)	41(15.4)	1(11.1)	6(43)	<0.001**
Menstrual Cycles	11(17.5)	26(10)	1(11.1)	4(29)	0.007*
Physical Exertion	12(19)	25(9.5)	1(11.1)	1(7.1)	0.02*
Cold Weather	8(12.7)	24(9.1)	2(22.2)	3(21.4)	0.03*
Chocolates	13(20.6)	10(4)	1(11.1)	1(7.1)	<0.001*
High Blood Pressure	10(16)	9(3.4)	0	1 (7.1)	0.002**
Ice cream	7(11.1)	11(4.1)	0	1(7.1)	0.06**
Pizza	6(9.5)	4(1.5)	0	1(7.1)	0.007**
Milk	1(1.6)	6(2.2)	0	1(7.1)	0.411**
Peanut Butter	0	3(1.1)	0	0	1.0**
Eggs	0	2(0.7)	0	1(7.1)	0.338**

*chi square test was applied.

**Fisher's exact test was applied.

Table 2: Risk Factors of Headaches in Medical Students

Triggers	Migraine n=63(%)	Tension type headache n= 267(%)	Cluster n=9(%)	Both migraine and tension type n=14(%)	P value
Peer pressure	15	67	1	6	0.5*
Stressful study schedule	51	205	5	11	0.01*
Financial issues	8	36	1	1	0.93*
Moving to a new house	12	39	0	1	0.472**
Parental pressure	11	37	1	3	0.85*
Long college to home distance	28	97	3	6	0.77*
Lack of time management	37	132	5	6	0.7*
Suffering from chronic illness	9	19	2	1	0.3*
Noise pollution	26	77	1	6	0.06*
Death of a family member	7	48	0	2	0.319**
Separation of a parent	1	4	0	0	0.753**
Family member suffering from chronic illness	7	26	0	1	0.363**

*chi square test was applied.

**Fisher's exact test was applied.

prevalence of headache as 85.7% [12]. Prevalence statistics of headache in medical students from other countries are variable; India (68%) [1], Turkey (41.0%) [4], Palestine (95.2%) [5], Brazil (98%) [6], Oman (males: 98.3%, females: 96.8%) [7] and Nigeria (88.3%) [8]. Our study showed that 39.3% students had frequent headaches, which is less than that reported in studies from Palestine (60.6%) [5] and the United States (51%) [13]. In our study 33.9% medical students with headache reported at least one immediate family member suffering from it. This is consistent with responses cited by other studies including one from Saudi Arabia reporting 40% positive family history in headache sufferers [14] and one from Oman reporting 58% positive family history [7]. Winter et al. in a study, revealed an association between low socio-economic status and occurrence of all types of headaches [15], however, no statistical significance was found between headaches and socio-economic status in our study. More than half of the medical students had TTH, less than a quarter suffered from migraine and only 2.3% had experienced cluster headache. Both TTH and migraine were more common in female medical students than male medical students with male: female ratio of (1:1.1) and (1:1.4) respectively. A small number of (5%) female students gave a history of suffering from symptoms occurring in both migraine and TTH while no male students reported co-occurrence of these two major types. Cluster headaches were more common in males with male: female ratio of (2:1). Other studies have reported diverse figures with prevalence of TTH varying between 12% and 59% and that of migraine ranging from 12% to 28% [1, 4-8]. Almost all studies reported TTH to be more common in males and migraine to have a female preponderance.

Headaches are mostly triggered by different conditions in different individuals. Awareness and understanding of these triggers can help the person avoid them. Our study found anxiety and stress to be the most common trigger factor of headaches in medical students followed by fatigue, less sleep, nasal allergies. Preceding studies have stated stress, fatigue and sleep deprivation as the most frequent trigger factors of headache [5, 16]. Surprisingly, too much sleep was also reported to be a trigger factor by 33% students. Hunger was cited as a trigger factor in 32.5% which is consistent with results of previous studies [19, 21]. Earlier studies have reported menstruation as important trigger factor [21, 22]. However, menstrual cycles were not

found to be a significant trigger in medical students in our study. Responses showed that hot weather was a significant trigger factor of headaches, however, cold weather was not found to be a significant trigger factor. A previous study conducted in India noted weather changes as a trigger factor of migraine headaches [21]. Strong odors such as perfumes and smoke were reported as a trigger agent by a sizeable number of students (27.5%). This has been reported by different studies previously as well [1, 18-20]. Chocolates, ice cream, pizza, milk, peanut butter and egg are commonly reported dietary triggers of headache, however, our study did not find them having any significant association. Past studies conducted in India had also cited these dietary factors as non-significant triggers [1, 17]. This might be attributed to different dietary habits in Pakistan as compared to the West. Our study found that sensitivity to bright lights and sunshine was a significant trigger for headache. Similar findings have been reported in a previous study conducted on general population [23]. A number of large scale population based studies have been conducted to determine possible association between physical activity and headache prevalence, with mostly inconsistent results [24]. We found that physical exertion was not a significant trigger of headaches in medical students. Our data reported that majority of students with headache had not consulted any medical professional for diagnosis and management of their signs and symptoms. Acetaminophen, which is readily available over the counter in Pakistan, was the most popular drug used by students to self-treat headache episodes. Only 3% students with headaches had sought medical opinion for their migraine headaches and were receiving specific treatment including triptans and anti-seizure drugs. Previous studies have reported that very few people consult the doctor for getting their headaches relieved [25]. There were few limitations in our study such as we did not sub-classify migraine headaches, nor did we discuss secondary headaches. However, this was a self-reported study with a large sample size which increases the generalizability of findings of our study.

CONCLUSION

This study reports a very high frequency of headache among Pakistani medical students. We specified a number of important trigger factors. Whether medical curriculum has any role needs

to be assessed. Reducing headache occurrence will likely improve working performance of medical students and reduce the number of college days they miss because of headache.

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