

## Research Article

# Prevalence and Characteristics of Primary Headache as well as Coping Strategies among Medical Students of Taibah University

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**Background:** Primary headaches are more prevalent than secondary headache, accounted for about 90% of cases. Prevalence of headache among university students was high. Moreover, medical students have higher prevalence of all headache types than other university students.

Aims of our study were to investigate the prevalence and character of primary headache as well as coping strategies among medical students.

**Subjects and Methods:** A cross sectional observational study was conducted among a sample of medical students (from 2<sup>nd</sup> to 6<sup>th</sup> academic years) at Taibah University in Al-Madinah, Kingdom of Saudi Arabia (KSA). A self-administrated valid English questionnaire was applied, which contains demographics of students, 23 questions about the primary headache character and coping strategies used with headache.

**Results:** The study included 488 medical students. Their age ranged between 18 to 26 years with a mean ( $\pm$ ) SD of 21.78 $\pm$ 1.41. Females represented 58% of them. The prevalence of primary headache among the participants was 94.9%. Regarding the usual site of the primary headache, frontal ranked first (41.5%), followed by generalized (34.8%), temporal (32.8%) and orbital (22.7%). The commonest reported quality of primary headache was pressing/tightening (60.9%). The commonest reported therapy/medication was paracetamol (69.8%), followed by sleeping (54%), and caffeine (26.1%). Academic level was not affected by 54.5% of male students compared to 42.8% of females. This difference was statistically significant,  $p=0.041$ .

**Conclusion:** Primary headache is very prevalent among medical students at Taibah University, with no difference between them according to age, gender and academic level. It impacts the academic performance of a considerable proportion of the students, particularly males.

**Keywords:** Primary headache; Medical students; Prevalence; Characters; Coping strategies

## Introduction

Headache is the most common complaints of the nervous system. Approximately, almost half of the adult population has had a headache at least once within the last year [1]. The World Health Organization ranked headache as the third leading cause of disability worldwide. In addition, it is the number one cause of disability in individuals under the age of fifty [2]. Headache has been under-recognized, underestimated, and under-treated worldwide [1].

Primary headaches are more prevalent than secondary headache. Primary headache accounted for about 90% of cases, whereas secondary headache is accounted for about 10% [3].

The pathophysiology of the primary headache remains unknown. In tension type headache, there is over activity of cervical or pericranial muscle which could be due to improper position, anxiety and trauma to neck. While in migraine and cluster headache, the researcher believes that there is underlying brain dysfunction [3].

Tension-type headache (TTH) is a band like headache, described as pressure or tightness ache, it should have at least two of the following characteristics: occurs on both sides of head, mild to moderate intensity, not worsened by routine activity and not associated with nausea or vomiting [4]. On the other hand, migraine is characterized by unilateral headache, throbbing or pulsating in nature, moderate to severe intensity, recurrent attack which lasts between 4 to 72 hours, associated with nausea and/or vomiting, photophobia and phonophobia may be accompanied [4]. Emotional stressor, alcohol abuse, skipped meals, sleep patterns changes, over medication use, tension, and depression are all considered the most common triggering factors of tension type headache and migraine headache [2].

The International Headache Society has provided a system of classification and diagnostic criteria of headache disorders for the purpose of clinical application, education, and research [5].

According to last version of International Headache Classification ICHD-3, 3<sup>rd</sup> edition, headache classified into primary, (Migraine, Tension-type headache, Trigeminal autonomic cephalgia, other primary headache disorders), secondary (vascular disorder, Infection, substance abuse or psychiatric disorder), third part (neuropathies, facial pain and other headache) [6].

Internationally, according of The American Academy of Neurology, the prevalence of migraine headache is estimated to be 18% in female and 6% in male [3].

Based on previous studies, prevalence of headache among university students was high [7]. Moreover, medical students have higher prevalence of all headache types than other university students [8,9]. In fact, they are exposed to excessive physical and psychological stressors more than the other students. As a consequence, their academic achievement, performance and quality of life would be affected [3]. Because headache ranked as a third leading cause of disability in the world and can impair the individual's quality of life and affect the academic performance of students, the researcher has interest to conduct this study among medical students at Taibah University in Al-Madinah.

## Methodology

This was a cross sectional observational study. The study was conducted at Taibah University in Al-Madinah, Kingdom of Saudi Arabia (KSA). Taibah University is located at Janadah Bin Umayyah Road, Al-Madinah, KSA. It is established in 2003, it has 28 colleges.

In 2003, there were 7,761 enrolled students. Today, there are 20,815 students enrolled. Total number of students in college of Medicine is 686; 363 female students and 323 male students. All Medical students from 2<sup>nd</sup> to 6<sup>th</sup> years in college of medicine at Taibah University. Both genders male and female. First year students who considered as a preparatory year student. Interns were excluded from this study. College of medicine administrative staff. The study targeted the medical students at Taibah University both male and female gender (from 2<sup>nd</sup> to 6<sup>th</sup> academic years). Total number of all medical students in college of medicine at Taibah University: 686 (Male: 323, Female: 363). By using Epi info application, the following was calculated: Population size: 686, Expected frequency: 50%, Confidence interval: 95%, Worst acceptable: 55%, Margin of error: 5%. The calculated sample size: 246, after adding 15% of non-response, the final sample were 283.

Multistage sampling technique was used as it is the most reliable for this study:

**Stage 1:** Stratify medical college into 5 educational levels from 2<sup>nd</sup> to 6<sup>th</sup> year.

**Stage 2:** Systematic random sampling by selecting every second from each level.

A self-administrated questionnaire was used which was obtained from the study "Primary Headache Characters and Coping Strategies Among Medical Students of Umm Al-Qura University in western Region of Saudi Arabia", which was published in October 2018 [10]. First part of questionnaire consisted of demographics (Age, Gender), Second part of questionnaire composed of 23 questions

about the primary headache character and coping strategies used with headache. Regarding the diagnosing questions were constructed based on ICHD-3 tool, this tool was approved by the Headache classification committee of the international headache society (HIS).

The instrument tool classifies primary headaches into migraine (migraine with aura, migraine without aura, chronic migraine), Tension Type Headache TTH (infrequent episodic TTH, frequent episodic TTH, chronic TTH, probable TTH), Trigeminal Autonomic Cephalalgies (cluster headache). Copy of questionnaire provided in the appendices.

Data were coded and analyzed IBM (Statistical Package for Social Science), version 26. Categorical data were described in the form of frequency and percentage while numerical data were described in the form of mean, range and standard deviation (SD). Association between categorical data was analyzed by using chi-square test and Fischer exact test (in case of small frequencies). Numerical data were analyzed by using Student` t-test. Results were considered statistically significant if P value <0.05.

## Results

The study included 488 medical students. Table 1 describes their age and gender distribution. Their age ranged between 18 to 26 years with mean ( $\pm$ ) SD of 21.78 $\pm$ 1.41. Most of them (45.5%) were in the 21-22 age group. Females represented 58% of them. It is shown that students of third and fourth academic years represented 28.1% and 24.8% of the participants, respectively whereas the lowest share was observed among students of second academic year (10.7%).

As illustrated from Figure 1, the prevalence of primary headache among the participants was 94.9%. Prevalence of primary headache was not significantly associated with student's age, gender and academic year as shown in Table 2.

Almost two-thirds of the students (62%) reported an approximate headache frequency of 15 days or less during the past year. Frequency

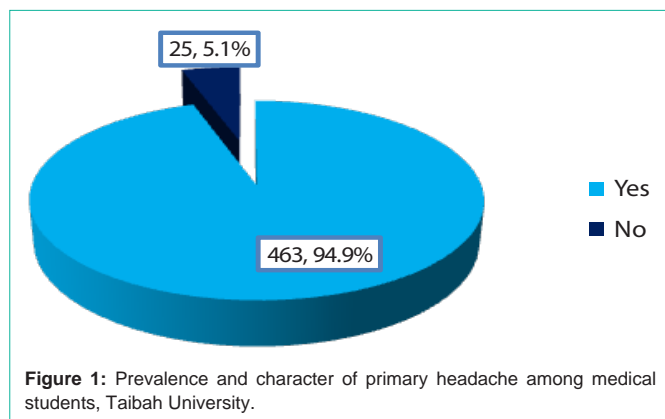
**Table 1:** Age and gender distribution of medical students, Taibah University (n=488).

	Frequency	Percent
<b>Age (years)</b>		
≤20	97	19.9
21-22	222	45.5
≥23	169	34.6
Range	18-26	
Mean $\pm$ SD	21.78 $\pm$ 1.41	
<b>Gender</b>		
Male	205	42.0
Female	283	58.0
<b>Academic year</b>	<b>Frequency</b>	<b>Percent</b>
Second	52	10.7
Third	77	15.8
Forth	137	28.1
Fifth	121	24.8
Sixth	101	20.7

**Table 2:** Factors associated with the prevalence of primary headache among the participants.

	Primary Headache		P-value
	No N=25 N (%)	Yes N=463 N (%)	
<b>Gender</b>			
Male (n=205)	11 (5.4)	194 (94.6)	
Female (n=283)	14 (4.9)	269 (95.1)	0.836*
<b>Age</b>			
Mean±SD	21.6±1.3	21.8±1.4	0.430**
<b>Academic Year</b>			
Second (n=52)	1 (1.9)	51 (98.1)	
Third (n=77)	8 (10.4)	69 (89.6)	
Forth (n=137)	6 (4.4)	131 (95.6)	
Fifth (n=121)	7 (5.8)	114 (94.2)	
Sixth (n=101)	3 (3.0)	98 (97.0)	0.152*

\*Chi-square test; \*\*Student's t-test.

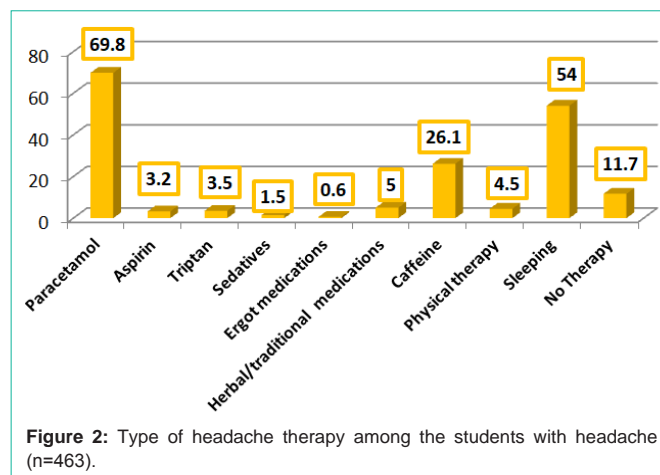


**Figure 1:** Prevalence and character of primary headache among medical students, Taibah University.

of episodes was one or less per day among most of the students (74.7%). Also, most of the students (74.1%) reported hours as an average duration of each episode of headache. Regarding the usual site of the primary headache, frontal ranked first (41.5%), followed by generalized (34.8%), temporal (32.8%) and orbital (22.7%). The commonest reported quality of primary headache was pressing/tightening (60.9%), followed by throbbing/pulsating (46.2%). Throbbing/pulsating was more significantly reported among female than male students (50.2% vs. 40.7%),  $p=0.044$ .

As demonstrated in Table 3, almost half of the students (48.4%) reported that their headache is aggravated with routine physical activity. However, 38% mentioned that headache caused avoidance of routine physical activity. Intensity of headache ranged between 0 and 10 on a scale with a mean±SD of  $5.55\pm1.92$ . Headache was accompanied with vomiting and nausea among 9.3% and 25.3% of the students, respectively while it was accompanied with photophobia and phonophobia among 36.1% and 34.1% of them, respectively.

Seeking medical attention for headache was reported by only 12.3% of the students as displayed in Figure 2. The commonest reported therapy/medication was paracetamol (69.8%), followed by sleeping (54%), and caffeine (26.1%). Male students were more likely



**Figure 2:** Type of headache therapy among the students with headache (n=463).

to seek medical attention for headache compared to female students (18.6% vs. 7.8%),  $p=0.001$ . Triptan was used by 16 males (8.2%) compared to none of females,  $p<0.001$  and similarly physical therapy was more reported by male than female students (7.2% vs. 2.6%),  $p=0.019$ .

Academic level was not affected by 54.5% of male students compared to 42.8% of females while it was very much affected by 2.1 and 2.6 of male and female students, respectively. This difference was statistically significant,  $p=0.041$ .

## Discussion

In accordance with numerous studies carried out in Saudi Arabia or outside it, the 12-months prevalence of primary headache among medical students in the present survey was very high (94.9%), with no difference in students according to age, gender and academic level. In Makkah (Saudi Arabia), the 12-months prevalence of headache was 89.6%; with prevalence of migraine without aura being more reported among females (10.5%) than males (3.5%) [6]. In Oman, the prevalence of primary headache among medical students was very high and even more than out figure (98.3%) [11]. In Nigeria, the prevalence of headache in general was 88.3% [12]. In Pakistan, 79% of the medical students had tension headache type and 21% had migraine headache and headache in general was greatly more prevalent in females than males with ratio of 6.5:1 [8] the high prevalence of primary headache reported among medical students in the present study as well as others could be attributed to a combination of one or more of the following factors: the psychosocial impact on medical students [3]. The required physical efforts [14] as well as the high ambient temperature in the Kingdom of Saudi Arabia [15].

In Iran [7], students with lower socio-economic status and those in 3<sup>rd</sup> and 5<sup>th</sup> years were more likely to have headache. However, in the current study, headache was not associated the students' year of study, age and gender of students

Concerning location, in most of students (69.8%) in the present study, headache was bilateral. In a similar Saudi study carried out in Riyadh, bilateral headache was observed among 42.1% of medical students [3] while in Makkah, bilateral headache was reported among 76% of students with headache [10]. Regarding the usual site of the primary headache, the present study revealed that frontal ranked

**Table 3:** Comparison between male and female medical students regarding the associated of primary headache.

	Males N=194 N (%)	Females N=269 N (%)	P-value
Aggravation of headache with routine physical activity	105 (54.1)	119 (44.2)	0.036*
Headache causing avoidance of routine physical activity	79 (40.7)	97 (36.1)	0.308*
Average intensity of headache	5.73±1.85	5.42±1.96	0.088
<b>Mean±SD</b>			
Usually headache episode accompanied or proceeded by vomiting?	22 (11.3)	21 (7.8)	0.196*
Usually headache episode accompanied or proceed by nausea?	55 (28.4)	62 (23.0)	0.195*
Headache is usually associated with photophobia?	66 (34.0)	101 (37.5)	0.436*
Headache usually associated with photophobia?	57 (29.4)	101 (37.5)	0.068*
Family history of headache	88 (45.4)	113 (42.0)	0.473*

\*Chi-square test; \*\*Student's t-test.

first, followed by generalized, temporal and orbital. Similarly, frontal headache ranked first among medical students in Riyadh [3] and Makkah [10]. Frontal and orbital headaches were more significantly reported in females than male students while vertical headache was more reported in male than female students. Explanation of this finding is not clear and requires further investigation.

In the current study, the commonest reported quality of primary headache was pressing/tightening (60.9%), followed by throbbing/pulsating (46.2%) and sharp/stabbing (12.5%). Moreover, throbbing/pulsating was more significantly reported among female than male students. In another similar Saudi study, also tension type (pressing/tightening) was the commonest among both genders (41.7%) [3]. In Makkah, pressing/tightening headache ranked first (70.4%), followed by throbbing/pulsating (46.2%) and sharp/stabbing (8.6%) [10].

In the current study, 12.3% of affected students claimed seeking medical attention for headache. This figure is higher than those reported by others; for example in Pakistan, only 4% of the students sought medical advice [8]. Similarly, in Nigeria, only 4.6% of medical students sought medical assistance. The relatively higher rate reported in this study compared to others could be attributed to the availability of free medical services for university students in Saudi Arabia. However, in-depth investigation of this finding is warranted in further studies.

In the present study, the commonest reported therapy/medication was paracetamol (69.8%), followed by sleeping (54%), and caffeine (26.1%). In Makkah (KSA), self-medications was reported among 76.4%-80% of students, sleeping and caffeine intake among 54.3%-80% and 28.3%-60% of them, respectively [6]. In Oman, 80.3% of medical students took self-medications while 24.6% took prescribed medication [12]. In Pakistan, majority of students (96%) received self-medications [8] while in Nigeria, 68.2% received non-prescription medications [10].

In this study, more than half of the students (52.4%) reported affection of their academic level by headache. However, only 2.4% reported affection very much. Furthermore, affection on academic performance was more observed among male than female students. In another Saudi study carried out among medical students and interns in Jeddah, impact of headache on academic performance was observed among 83.9% of them [16].

## Conclusion

Primary headache is very prevalent among medical students at Taibah University, Al-Madinah city, with no difference between them according to age, gender and academic level. Regarding its site, frontal site ranked first, followed by generalized, temporal and orbital. Frontal and orbital headaches were more reported in females than male students while vertical headache was more reported in male than female students. Headache was bilateral in most of the students. The commonest reported quality of primary headache was pressing/tightening, followed by throbbing/pulsating and sharp/stabbing. Throbbing/pulsating type was more reported among female than male students. Seeking medical attention for primary headache was mentioned by minority of the students. The commonest reported therapy/medication was paracetamol, followed by sleeping and caffeine. A considerable proportion of the students reported affection of their academic level by headache and this affection was more observed among male than female students.

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