Migraine and tension-type headache among undergraduate medical, dental and pharmaceutical students of University of Aleppo: a cross-sectional study

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ABSTRACT

Introduction Headache disorders are among the most common 10 causes of disability worldwide according to the global burden of disease survey 2010. Headache is also widely common among universities students when compared with other populations. The purpose of this study is to assess headache prevalence among Aleppo University medical, dental and pharmaceutical undergraduate students.

Methods A questionnaire-based cross-sectional study was conducted among medical, dental and pharmaceutical students at Aleppo University, Syria. We determined the type of headache according to the International Classification of Headache Disorder-III. The total number of participants was 2068. A χ² test was used to evaluate the association between the categorical outcomes. P<0.05 was considered significant.

Results Out of 2068 participants, 1604 (77.6%) were medical students, 205 (9.9%) were dental students and 259 (12.5%) were pharmaceutical students. The effect on daily activities was higher in chronic tension headache (96.7%) and migraine without aura (94.6%) than migraine with aura (91.3) and episodic tension headache (85.1%). Out of 1191 who had a headache, only 188 (15.9%) had a medical consultation.

Conclusions There was no a statistically significant difference in prevalence of tension headache and migraine according to faculties. There was a statistically significant difference in patients with migraine according to academic year, living with family and smoking. The effect on daily activities was higher in chronic tension-type headache and migraine without aura. There is a significant lack of medical consultation among students and most of them took over the counter analgesics depending on personal choice.

INTRODUCTION

Headache is one of the most frequent complaints in neurology outpatient clinics. Primary headache disorders including migraine and tension-type headache (TTH) are considered important global health problems due to their high prevalence. Headache disorders are among the most common 10 causes of disability worldwide according to the global burden of disease survey 2010. Migraine is the seventh highest negative impact disorder in society. Worldwide, the prevalence of headache disorders is 46% for headache generally, 42% for TTH, 11% for migraine and 3% for chronic daily headache. Headache is also a significant common problem among universities students when compared with other populations. 88.2% of students stated that they took over the counter medicine in most countries. A study in Oman on medical students found that migraine and TTH prevalence was 12.2% with a difference between males and females. Only 23.3% of participants had a medical consultation. On the other hand, the prevalence of migraine in Egyptian medical students was 17.9% and 35.4% of the students sought medical assistance. A systematic review study on university students reported that migraine prevalence was 16.1%. 11.3% of the participants were males and 21.7% were females with statistical significance. The African, European students had the lowest migraine prevalence, respectively. Otherwise, Asian and American students had the highest migraine prevalence (21%) and (16%), respectively. In medical students, the prevalence of migraine was 15.7%. Conversely, the prevalence of migraine was 17.4% in non-medical students. Economic, familial, social and even educational problems are associated with headache disorders in children and adolescent.
pathophysiology for TTH remains uncertain. It has been proposed that muscular origin is the underlying cause for the TTH. It is strongly suggested that psychological factors (personality type) have an important role in the headache by acting as provoking agents. This study is the first in Syria that determine the prevalence of headache among health-field faculties students, and shows whether there is a difference between these faculties. We will also evaluate the impact of several variables that are not mentioned in medical literature on headaches (such as academic degree, countryside vs city, living with family, psychological factors and marital status). We studied these variables because they were affected by the war, bad economic situation and displacement during the crisis in Syria.

METHODS
Study design, setting and data collection
A questionnaire-based cross-sectional study was conducted in the period from November to December 2020. The purpose of the study is to determine the prevalence of migraine and TTH among medical, dental and pharmaceutical undergraduate students at Aleppo University, Syria. Inclusion criteria include: (1) students from the second to the final years; (2) students who complete the question 'Did you have a headache two or more times in the last three months?'. Exclusion criteria include: (1) history of head or neck trauma; (2) history of neurological disorders (history of stroke or transient ischemic attack, intracranial haemorrhage, intracranial aneurysm, brain tumour, any cranial operation, multiple sclerosis, epilepsy, encephalitis, meningitis and dementia); (3) having an allergic rhinitis and sinusitis; (4) presence of acute systemic disease; (5) pregnant students. The students were approached after class lectures and clinical rotations. The team explained the goals of the study and the participation process was voluntary and anonymous. The verbal consent was obtained after applying the exclusion criteria and students were handed a paper copy of the questionnaire for completion. The total number of the students in each faculty was as the following: Faculty of Medicine (4505), Faculty of Dentistry (1240), Faculty of Pharmacy (754). The power analysis was done by Epi Info program (a combined sample size of 363 students was sufficient with 95% CI). The total number of participants was 2129 and we excluded 61 questionnaires due to uncompleted data, so the final number of participants became 2068.

The survey
The questionnaire was based on the reviewing of pertinent literature and our feedback. The pilot study was performed on 50 students and no subsequent changes were made. The students in the pilot study were included in data analysis. The questionnaire included five sections. The first section collected demographic and general information including age, gender, department, academic year, academic degree, marital status, employment status, residence, smoking and alcohol consumption. At the end of this section, the headache was assessed by the question 'Did you have a headache two or more times in the last three months?' which is a closed yes or no question. Students who answered yes were assumed to suffer from headache by further questions and students who answered no did not complete the questionnaire. The second section including questions to determine the type of headache according to the International Classification of Headache Disorder-III (ICHD-III). All students with headache that did not match migraine and TTH criteria were considered to have unclassified headache. The third section assessed the characteristics of headache (type of pain, site of headache, duration of headache, age at which the headache began, family history, pain in the neck, the effect of headache on daily activities and trigger factors). The fourth section assesses experience of the student with the management of headache (requesting medical consultation, taking analgesics and using preventive medications). The last part was about psychological factors associated with headache. First, the questionnaire was written in English; then, we translated it into Arabic because Arabic is the local language and medical education language’s in Syria. We reported the English version of the questionnaire in online supplemental additional file 1.

Statistical analysis
Descriptive statistics were performed to calculate the number of participants and per cent. A $\chi^2$ test was used to evaluate the association between the categorical outcomes. $P<0.05$ was considered statistically significant. Statistical analysis was done using SPSS V.26.

RESULTS
Demographic characteristics of the participants
Out of 2068 participants, 1604 (77.6%) were medical students, 205 (9.9%) were dental students and 259 (12.5%) were pharmaceutical students. 997 (47.2%) and 1091 (52.2%) of the participants were males and females, respectively. Most of the participants (50.8%) had an academic degree between 80 and 90. 12.4% and 16.1% of the participants smoked cigarettes and smoked hookah, respectively. Table 1 demonstrates student’s demographics.

Prevalence and distribution of tension headache and migraine
Medical students have high prevalence of TTH (19.7%) and migraine (18.7%) compared with dental and pharmaceutical students but the difference is not statistically significant (figure 1). Among patients with migraine, there was a statistically significant difference according to academic year, living with family and smoking (p<0.05) (table 2). On the other hand, patients with TTH have not a significant difference for any subgroups (table 3).
Characteristics of headache

The mean age when the headache began is 16.9±2.9 and 17.2±2.7 for patients with migraine and TTH, respectively. The effect on daily activities was higher in chronic TTH (96.7%) and migraine without aura (94.6%) than migraine with aura (91.3%) and episodic tension headache (85.1%). Headache lasted less than 4 hours in 69% of participants and less than 8 hours in 91% of them. 48.2% of patients with migraine had family history in comparison with 33% for patients with TTH (table 4).

Trigger factors of headache

As it is mentioned in table 5, lack of sleep (70%), exam time (67%), stress (61%), noise (60%) and fasting (57%) are considered the most common potential trigger factors for headache in our study.

Psychological factors associated with headache

Most of the students who had a headache have associated psychological factors (94.6%). The most common factors include: depressed mood (60.5%), anxiety (57.9%), dissatisfaction with educational performance (52.7%) and stress (49.5%) (table 5).

Medical care and use of analgesic drugs

Out of 1191 students who had a headache, only 188 (15.9%) had a medical consultation. On the other hand, most of the students (66.4%) took over the counter analgesics. Personal choice was the main reason to take over the counter analgesics (58.3%). 81.6% of the students take analgesics between 1 and 7 days every month. Paracetamol was the most common medication (91.1%) followed by ibuprofen (22.7%) (table 6).

DISCUSSION

The prevalence of migraine in our study was 17.6% (12.5% with aura and 5% without aura), in comparison with the prevalence of migraine worldwide which was 10%. We found that migraine prevalence among medical students was high. Several studies from Ethiopia, Saudi Arabia, Kuwait and Russia support our conclusion, but the difference in prevalence among the studies is due to the difference in the methodology, because we used a self-reported questioner and we did not confirm the diagnosis by clinical examination. Moreover, we did not include all types of headache. Sampling criteria and the diagnostic parameters should be considered.
## Table 2 Prevalence and distribution of migraine

|                      | Without aura |          | With aura |          | Total |          | P value |
|----------------------|--------------|----------|-----------|----------|-------|----------|---------|
|                      | n            | n/N %    | n         | n/N %    | n     | n/N %    |         |
| Total                | 259          | 12.5     | 104       | 5.0      | 363   | 17.6     |         |
| Sex                  |              |          |           |          |       |          |         |
| Male                 | 89           | 9.1      | 40        | 4.1      | 129   | 13.2     | 0.066   |
| Female               | 170          | 15.6     | 64        | 5.9      | 234   | 21.4     |         |
| Faculty              |              |          |           |          |       |          | 0.547   |
| Medicine             | 220          | 13.7     | 80        | 5.0      | 300   | 18.7     |         |
| Dentistry            | 14           | 6.8      | 10        | 4.9      | 24    | 11.7     |         |
| Pharmacy             | 25           | 9.7      | 14        | 5.4      | 39    | 15.1     |         |
| Academic year        |              |          |           |          |       |          | 0.001   |
| Second               | 42           | 10.3     | 21        | 5.2      | 63    | 15.5     |         |
| Third                | 71           | 14.7     | 41        | 8.5      | 112   | 23.1     |         |
| Fourth               | 54           | 13.6     | 21        | 5.3      | 75    | 18.8     |         |
| Fifth                | 57           | 12.8     | 15        | 3.4      | 72    | 16.2     |         |
| Sixth                | 35           | 10.4     | 6         | 1.8      | 41    | 12.2     |         |
| Academic degree      |              |          |           |          |       |          | 0.754   |
| 60–69                | 7            | 6.1      | 3         | 2.6      | 10    | 8.8      |         |
| 70–79                | 84           | 11.7     | 45        | 6.3      | 129   | 17.9     |         |
| 80–89                | 140          | 13.3     | 47        | 4.5      | 187   | 17.8     |         |
| 90–100               | 28           | 15.1     | 9         | 4.9      | 37    | 20.0     |         |
| Marital status       |              |          |           |          |       |          | 0.622   |
| Single               | 241          | 12.5     | 100       | 5.2      | 341   | 17.8     |         |
| Engaged              | 10           | 11.0     | 2         | 2.2      | 12    | 13.2     |         |
| Married              | 8            | 14.5     | 2         | 3.6      | 10    | 18.2     |         |
| Widow                | 0            | 0.0      | 0         | 0.0      | 0     | 0.0      |         |
| Job                  |              |          |           |          |       |          | 0.795   |
| No                   | 227          | 13.0     | 92        | 5.3      | 319   | 18.2     |         |
| Yes                  | 32           | 10.1     | 12        | 3.8      | 44    | 13.8     |         |
| Residence            |              |          |           |          |       |          | 0.136   |
| Countryside          | 28           | 13.2     | 12        | 5.7      | 40    | 18.9     |         |
| City                 | 231          | 12.4     | 92        | 5.0      | 323   | 17.4     |         |
| Living with family   |              |          |           |          |       |          | 0.010   |
| No                   | 71           | 15.7     | 33        | 7.3      | 104   | 23.1     |         |
| Yes                  | 188          | 11.6     | 71        | 4.4      | 259   | 16.0     |         |
| Smoking              |              |          |           |          |       |          | 0.022   |
| No                   | 230          | 12.7     | 91        | 5.0      | 321   | 17.7     |         |
| Yes                  | 29           | 11.3     | 31        | 12.1     | 60    | 23.4     |         |
| Hookah               |              |          |           |          |       |          | 0.357   |
| No                   | 211          | 12.2     | 84        | 4.8      | 295   | 17.0     |         |
| Yes                  | 48           | 14.5     | 20        | 6.0      | 68    | 20.5     |         |
| Alcohol              |              |          |           |          |       |          | 0.218   |
| No                   | 248          | 12.5     | 99        | 5.0      | 347   | 17.5     |         |
| Yes                  | 11           | 13.8     | 5         | 6.3      | 16    | 20.0     |         |
Table 3  Prevalence and distribution of tension-type headache

|                          | Episodic |       | Chronic |       | Total |       | P value |
|--------------------------|----------|-------|---------|-------|-------|-------|---------|
|                          | n        | n/N % | n       | n/N % | n     | n/N % |         |
| Total                    | 355      | 17.2  | 30      | 1.5   | 385   | 18.6  |         |
| Sex                      |          |       |         |       |       |       |         |
| Male                     | 153      | 15.7  | 13      | 1.3   | 166   | 17.0  | 0.075   |
| Female                   | 202      | 18.5  | 17      | 1.6   | 219   | 20.1  |         |
| Faculty                  |          |       |         |       |       |       | 0.355   |
| Medicine                 | 291      | 18.1  | 25      | 1.6   | 316   | 19.7  |         |
| Dentistry                | 33       | 16.1  | 2       | 1.0   | 35    | 17.1  |         |
| Pharmacy                 | 31       | 12.0  | 3       | 1.2   | 34    | 13.1  |         |
| Academic year            |          |       |         |       |       |       | 0.092   |
| Second                   | 52       | 12.8  | 4       | 1.0   | 56    | 13.8  |         |
| Third                    | 106      | 21.9  | 9       | 1.9   | 115   | 23.8  |         |
| Fourth                   | 69       | 17.3  | 8       | 2.0   | 77    | 19.3  |         |
| Fifth                    | 71       | 16.0  | 5       | 1.1   | 76    | 17.1  |         |
| Sixth                    | 57       | 17.0  | 4       | 1.2   | 61    | 18.2  |         |
| Academic degree          |          |       |         |       |       |       | 0.951   |
| 60–69                    | 10       | 8.8   | 0       | 0.0   | 10    | 8.8   |         |
| 70–79                    | 131      | 18.2  | 10      | 1.4   | 141   | 19.6  |         |
| 80–89                    | 178      | 17.0  | 18      | 1.7   | 196   | 18.7  |         |
| 90–100                   | 36       | 19.5  | 2       | 1.1   | 38    | 20.5  |         |
| Marital status           |          |       |         |       |       |       | 0.492   |
| Single                   | 334      | 17.4  | 29      | 1.5   | 363   | 18.9  |         |
| Engaged                  | 14       | 15.4  | 1       | 1.1   | 15    | 16.5  |         |
| Married                  | 6        | 10.9  | 0       | 0.0   | 6     | 10.9  |         |
| Widow                    | 0        | 0.0   | 0       | 0.0   | -     | 0.0   |         |
| Job                      |          |       |         |       |       |       | 0.737   |
| No                       | 313      | 17.9  | 25      | 1.4   | 338   | 19.3  |         |
| Yes                      | 42       | 13.2  | 5       | 1.6   | 47    | 14.8  |         |
| Residence                |          |       |         |       |       |       | 0.487   |
| Countryside              | 27       | 12.7  | 2       | 0.9   | 29    | 13.7  |         |
| City                     | 327      | 17.6  | 28      | 1.5   | 355   | 19.1  |         |
| Living with family       |          |       |         |       |       |       | 0.580   |
| No                       | 83       | 18.4  | 5       | 1.1   | 88    | 19.5  |         |
| Yes                      | 272      | 16.8  | 25      | 1.5   | 297   | 18.4  |         |
| Smoking                  |          |       |         |       |       |       | 0.146   |
| No                       | 332      | 18.3  | 26      | 1.4   | 358   | 19.8  |         |
| Yes                      | 23       | 9.0   | 4       | 1.6   | 27    | 10.5  |         |
| Hookah                   |          |       |         |       |       |       | 0.387   |
| No                       | 298      | 17.2  | 26      | 1.5   | 324   | 18.7  |         |
| Yes                      | 57       | 17.2  | 4       | 1.2   | 61    | 18.4  |         |
| Alcohol                  |          |       |         |       |       |       | 0.763   |
| No                       | 342      | 17.2  | 29      | 1.5   | 371   | 18.7  |         |
| Yes                      | 13       | 16.3  | 1       | 1.3   | 14    | 17.5  |         |
stress, poor sleeping and eating habits are all influencing medical students more than other people. Females have higher rate for migraine prevalence (21.4%) in comparison with males (13.2%), which is similar to the worldwide migraine prevalence and female medical students’ prevalence. TTH prevalence was 18.6% (17.2% episodic TTH and 1.5% chronic TTH), which is lower than TTH prevalence worldwide 38% ; we suspect that methodological differences could explain the difference result. Our results are close to the results of a Turkish study 20.3% (18.84% episodic TTH and 1.88% chronic TTH), probably because of geographical and cultural similarities between Turkey and Syria. Moreover, the methodology in the Turkish study was similar to our study.

Medical students have higher rate of headache 61% in comparison with pharmaceutical students 45.4% and dental students 46.3%; this could be due to stressful life of medical students and lack of free time. The medical system in Syria sorts students into clinical specialties according to their desires (based on their academic grades). Because of this system, there is high competition among students to get seats in clinical specialties, which

| Table 4  | Characteristics of headache                                      |
|----------|------------------------------------------------------------------|
|          | Migraine                                                        |
|          | Without aura n (%) | With aura n (%) | Total n (%) | TTH                                      |
|          | With aura n (%) | Total n (%) |
|          | Episodic n (%) | Chronic n (%) | Total n (%) | Total n (%) |
| Total    | 259 (100) | 104 (100) | 363 (100) | 355 (100) | 30 (100) | 385 (100) | 1191 (100) |
| The effect on daily activities | 16.9±2.9 | 16.7±2.9 | 16.9±2.9 | 17.2±2.7 | 16.8±2.4 | 17.2±2.7 | 17.2±2.8 |
| Pain type | Throbbing | 169 (65.3) | 65 (62.5) | 234 (64.5) | 101 (28.5) | 7 (23.3) | 108 (28.1) | 512 (43.0) |
|          | Tightening | 46 (17.8) | 16 (15.4) | 62 (17.1) | 144 (40.6) | 12 (40.0) | 156 (40.5) | 343 (28.8) |
|          | Sharp | 7 (2.7) | 3 (2.9) | 10 (2.8) | 8 (2.3) | 1 (3.3) | 9 (2.3) | 30 (2.5) |
| Pain site | Generalised | 60 (23.2) | 21 (20.2) | 81 (22.3) | 129 (36.3) | 13 (43.3) | 142 (36.9) | 391 (32.8) |
|          | Vertex | 43 (16.6) | 21 (20.2) | 64 (17.6) | 65 (18.3) | 5 (16.7) | 70 (18.2) | 227 (19.1) |
|          | Unilateral | 51 (19.7) | 20 (19.2) | 71 (19.6) | 17 (4.8) | 3 (10.0) | 20 (5.2) | 114 (8.6) |
|          | Temporal | 66 (25.5) | 27 (26.0) | 93 (25.6) | 80 (22.5) | 3 (10.0) | 83 (21.6) | 265 (22.3) |
|          | Occipital | 20 (7.7) | 7 (6.7) | 27 (7.4) | 36 (10.1) | 3 (10.0) | 39 (10.1) | 93 (7.8) |
|          | Others | 19 (7.3) | 8 (7.7) | 27 (7.4) | 28 (7.9) | 3 (10.0) | 31 (8.1) | 101 (8.5) |
| Pain duration | Less than 4 hours | 127 (49.0) | 58 (55.8) | 185 (51.0) | 252 (71.0) | 16 (53.3) | 268 (69.6) | 827 (69.4) |
|          | 4–8 hours | 95 (36.7) | 25 (24.0) | 120 (33.1) | 81 (22.8) | 9 (30.3) | 90 (23.4) | 260 (21.8) |
|          | 9–24 hours | 27 (10.4) | 13 (12.5) | 40 (11.0) | 12 (3.4) | 0 (0.0) | 12 (3.1) | 66 (5.5) |
|          | More than 24 hours | 10 (3.9) | 8 (7.7) | 18 (5.0) | 10 (2.8) | 5 (16.7) | 15 (3.9) | 38 (3.2) |
| Neck pain | No | 174 (67.2) | 66 (63.5) | 240 (66.1) | 262 (73.8) | 23 (76.7) | 285 (74.0) | 861 (72.3) |
|          | Yes | 85 (32.8) | 38 (36.5) | 123 (33.9) | 93 (26.2) | 7 (23.3) | 100 (26.0) | 330 (27.7) |
| Triggering factors | No | 31 (12.0) | 8 (7.7) | 39 (10.7) | 72 (20.3) | 7 (23.3) | 79 (20.5) | 205 (17.2) |
|          | Yes | 228 (88.0) | 96 (92.3) | 324 (89.3) | 283 (79.7) | 23 (67.7) | 306 (79.5) | 986 (82.8) |

TTH, tension-type headache.
make medical students in a permanent stress situation to study more and get higher marks. This competition does not exist in the faculties of pharmacy and dentistry.

The prevalence of headache according to students’ academic year is not compatible with the results of other studies16–18; this result is may be due to the differences among educational systems at other universities.

Employed students have lower rate of headache 44% in comparison with unemployed students 60.1%. This may be due to difficult economic situation in Syria. Employed students have better financial state and the poor economic state increase both migraine and TTH.15

Rural areas were associated with a lower prevalence of TTH (13.7%) in comparison with urban areas (19.1%), which reflects the effect of stressful life in the cities.

Smoker students are less likely to have TTH (10.5%) in comparison with non-smoker students (19.8%); smokers assume that smoking relieves stress.21

In migraine, 48.2% of the participants report a family history of headache and 33% of participants with

| Triggering factors                                      | Migraine (n=324) | TTH (n=306) | Total (n=986) |
|---------------------------------------------------------|------------------|-------------|---------------|
| Lack of sleep                                           | 232 (71.60)      | 210 (68.60) | 692 (70)      |
| Exam                                                    | 223 (68.80)      | 210 (68.60) | 657 (67)      |
| Stress                                                  | 215 (66.40)      | 185 (60.50) | 605 (61)      |
| Noise                                                   | 237 (73.10)      | 139 (45.40) | 587 (60)      |
| Fasting                                                 | 202 (62.30)      | 168 (54.90) | 558 (57)      |
| Mobile use                                              | 166 (51.20)      | 143 (46.70) | 472 (48)      |
| Expose to the sun                                       | 187 (57.70)      | 129 (42.00) | 458 (46)      |
| Sleeping too much                                       | 96 (29.60)       | 86 (28.10)  | 282 (29)      |
| Deprivation from coffee drinking                        | 104 (32.10)      | 88 (28.80)  | 292 (29)      |
| Emotional distress                                      | 103 (31.80)      | 86 (28.10)  | 275 (28)      |
| Menstruation                                            | 86 (26.50)       | 61 (19.90)  | 214 (22)      |
| Weather changes                                         | 91 (28.10)       | 48 (15.70)  | 145 (15)      |
| Using the computer                                      | 60 (18.50)       | 55 (18.00)  | 115 (12)      |
| Reading                                                 | 49 (15.10)       | 49 (16.00)  | 148 (15)      |
| Watching TV                                             | 56 (17.30)       | 39 (12.70)  | 145 (15)      |
| Strong odours                                           | 71 (21.90)       | 26 (8.50)   | 197 (20)      |
| Smoking                                                 | 33 (10.20)       | 27 (8.80)   | 60 (6)        |
| Bath                                                    | 16 (4.90)        | 11 (3.60)   | 27 (3)        |
| Eat a specific meal                                     | 17 (5.20)        | 6 (2.00)    | 23 (3)        |
| **Psychological factors**                               |                  |             |               |
| Absent                                                  | 17 (4.7)         | 19 (4.9)    | 64 (5)        |
| Present                                                 | 346 (95.3)       | 366 (95.1)  | 1112 (94.6)   |
| Depressed mood                                          | 232 (63.90)      | 243 (63.10) | 731 (60.50)   |
| Anxiety                                                 | 231 (63.60)      | 216 (56.10) | 697 (57.90)   |
| Dissatisfaction with educational performance             | 207 (57.00)      | 206 (53.50) | 625 (52.70)   |
| Stress                                                  | 191 (52.60)      | 199 (51.70) | 598 (49.50)   |
| Insomnia                                                | 158 (43.50)      | 146 (37.90) | 404 (32.80)   |
| Overwork                                                | 115 (31.70)      | 117 (30.40) | 352 (30.00)   |
| Dissatisfaction with personal achievement                | 112 (30.90)      | 91 (23.60)  | 299 (24.10)   |
| Tendency towards conflicts                              | 94 (25.90)       | 87 (22.60)  | 281 (23.20)   |
| Dissatisfaction with life                               | 93 (25.60)       | 85 (22.10)  | 278 (22.90)   |
| Poor financial condition                                | 55 (15.20)       | 58 (15.10)  | 117 (14.90)   |
| Irritability                                            | 52 (14.30)       | 38 (9.90)   | 190 (12.00)   |
| Not to be married                                       | 29 (8.00)        | 25 (6.50)   | 84 (6.00)     |
TTH have a family history. Several studies have close results.8 14 16 20  
93.7% and 86% of participants with migraine and TTH, respectively, report that headache interfered with their daily life activities. In a Saudi study, migraine affected on 85.1% of the participants, but TTH affected only 4.5% of participants.16 However, a Turkish study revealed that TTH affected on the educational performance of 12.4% of participants.20

Table 6  Using analgesics and medical consultation

| Medical consultation | Migraine (n=363) | TTH (=385) | Total (n=1191) |
|----------------------|------------------|-----------|---------------|
|                      | n    | n/N % | n    | n/N % | n    | n/N % |
| No                   | 275  | 75.8  | 332  | 86.2  | 998  | 84.1  |
| Yes                  | 87   | 24.0  | 53   | 13.8  | 188  | 15.9  |
| Using analgesics     |      |       |      |       |      |       |
| No                   | 84   | 23.1  | 146  | 37.9  | 399  | 33.6  |
| Yes                  | 279  | 76.9  | 239  | 62.1  | 789  | 66.4  |
| Who advise you to take analgesics? |  |       |      |       |      |       |
| Physician            | 74   | 20.4  | 27   | 11.3  | 136  | 17.3  |
| Pharmacist           | 23   | 6.3   | 16   | 6.7   | 56   | 7.1   |
| Your family          | 46   | 12.7  | 32   | 13.4  | 117  | 14.9  |
| Personal choice      | 127  | 35.0  | 160  | 67.2  | 458  | 58.3  |
| Other                | 9    | 2.5   | 3    | 1.3   | 19   | 2.4   |

| Analgesics frequency |  |       |  |       |  |       |
|----------------------|---|-------|---|-------|---|-------|
|                      | 1–7 days | 84.8 | 37 | 9.6 | 13     |
|                      | 76.7     | 195  | 84.8 | 626  | 81.6  |
|                      | 8–14 days | 9.6 | 22 | 13.5 | 76 | 9.9 |
|                      | 73.3 | 187 | 18.0 | 179 | 22.7 |
|                      | 15–28 days | 4.3 | 10 | 6.9 | 52 | 6.8 |
|                      | Daily | 1.7 | 3 | 2.9 | 13 | 1.7 |
| Did you have to increase the dose? |  |       |  |       |  |       |
| No                   | 174  | 62.4 | 187 | 78.2 | 578  | 73.3 |
| Yes                  | 105  | 37.6 | 52  | 21.8 | 211  | 26.7 |
| What is the analgesic which you used? |  |       |  |       |  |       |
| Paracetamol          | 247  | 88.5 | 224 | 93.7 | 719  | 91.1 |
| Ibuprofen           | 71   | 25.4 | 43  | 18.0 | 179  | 22.7 |
| Aspirin             | 12   | 4.3  | 5   | 2.1  | 20   | 2.5  |
| Codeine             | 23   | 8.2  | 13  | 5.4  | 46   | 5.8  |
| Diclofenac          | 24   | 8.6  | 17  | 7.1  | 57   | 7.2  |
| Triptans            | 7    | 2.5  | –   | 0.0  | 11   | 1.4  |
| Others              | 19   | 6.8  | 4   | 1.7  | 30   | 3.8  |

| Do you use preventive medicine? |  |       |  |       |  |       |
| No                   | 262  | 93.9 | 237 | 99.2 | 764  | 96.8 |
| Yes                  | 17   | 6.1  | 2   | 0.8  | 25   | 3.2  |

| Preventive medicine |  |       |  |       |  |       |
| Beta blockers       | 7    | 41.2 | –   | 0.0  | 9    | 36.0 |
| Calcium blockers    | –    | 0.0  | –   | 0.0  | 1    | 4.0  |
| Antidepressants     | 5    | 29.4 | –   | 0.0  | 7    | 28.0 |
| Others              | 6    | 35.3 | 2   | 100.0 | 10 | 40.0 |
exams were the most common trigger factors for headache; these two factors are more common in medical students.

94.6% of the participants have accompanying psychological symptoms. The main psychological symptoms associated with both migraine and TTH are: depressed mood, anxiety, dissatisfaction with educational performance and stress. Kurt elucidates the relationship between headache and depression.21

15.9% of the participants seek for medical consultation (24% of participants with migraine and 13.8% of participants with TTH). We found a similarly low rate of medical consultations in other studies: 3.1% in Pakistan,22 (11.9% in patients with migraine and 12.4% in patients with TTH) in Saudi Arabia16 and 23.3% in Oman; therefore, a large number of students are unaware of their condition. This result may be due to the students’ confidence in their medical information, which prompted them to try treat themselves without seeking medical consultation, in addition to easy access to over-the-counter medicines.

66.4% of the participants took over the counter analgesics for their headache, personal choice was the main reason (58.3%) to take them. Only 19.3% of participants took a medication after they seek for physician’s advice. About 80.5%, 47.6% and 41% of participants took a medication for the headache in Oman, 8 Turkey,20 and Pakistan,22 respectively. Anyway, more studies should be conducted to confirm the success of the treatment. Financial state might be the reason for avoiding medical consultation due to the high poverty rate because of crisis in Syria. Also, the health system in Syria has been affected by crisis which makes it difficult to access medical services.

81.6% of participants took the analgesic less than 7 days a month and only 26.7% of the participants raised the dose to control the headache which explains the low rate of medical consultations. Desouky et al found that the frequency of using analgesics was less than daily to weekly in 93.8% of patients with migraine compared with 38.9% in patients with TTH.16

Paracetamol was the most used analgesic (91.1%); other studies found similar result.14 16 18 A very low number of participants (3.2%) use a preventive medication. This was due to low rate of medical consultations. Most of our results are not statically significant, but that might be due to the difference in participants numbers in the three faculties.

Limitations and strengths
We relied on diagnostic criteria of ICHD-III to ensure the diagnosis of all patients with headache in the most optimal way. Furthermore, our study is considered the first Syrian study assessed headache among medical, dental and pharmaceutical undergraduate students. On the other hand, using self-reported questionnaire may lead to recall bias. We recommend to perform more longitudinal studies because our study is a cross sectional which means that there is no cause–effect relation among variables. Also, we depended on participants’ self-reports to determine psychological disorders such as: depression and anxiety without using strict criteria. There was no clinical examination to confirm the diagnosis of the headache. Another limitation was the heterogeneity of the participants among faculties, where the number of students was the largest in faculty of medicine, so we recommend to perform more studies with higher number of students from the other faculties.

CONCLUSIONS
There was no a statistically significant difference in prevalence of tension headache and migraine according to faculties. There is a statistically significant difference in patients with migraine according to academic year, living with family and smoking. The effect on daily activities was higher in chronic TTH and migraine without aura. Lack of sleep, exam time, stress, noise and fasting are considered the most common potential trigger factors. There is a significant lack of medical consultation among students and most of them took over the counter analgesics depending on personal choice. The most common psychological factors associated with headache include: depressed mood, anxiety, dissatisfaction with educational performance and stress.

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REFERENCES
1. Vos T, Barber RM, Bell B, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the global burden of disease study 2013. The Lancet 2015;386:743–800.
2. Vos T, Flaxman AD, Naghavi M, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the global burden of disease study 2010. The Lancet 2012;380:2163–96.
3. Steiner TJ, Birbeck GL, Jensen RH, et al. Headache disorders are third cause of disability worldwide. J Headache Pain 2015;16:58.
4. Murray CJL, Vos T, Flaxman AD, Naghavi M, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the global burden of disease study 2010. The Lancet 2012;380:2163–96.
5. Steiner TJ, Birbeck GL, Jensen RH, et al. Headache disorders are third cause of disability worldwide. J Headache Pain 2015;16:58.
6. Vos T, Barber RM, Bell B, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the global burden of disease study 2013. The Lancet 2015;386:743–800.
7. Stovner L, Hagen K, Jensen R, et al. The global burden of headache: a documentation of headache prevalence and disability worldwide. Cephalalgia 2007;27:193–210.
8. Falavigna A, Teles AR, Velho MC, et al. Prevalence and impact of headache in undergraduate students in southern Brazil. Arq Neuropsiquiatr 2010;68:873–7.
9. Akyol A, Kiyioglu N, Aydin I, et al. Epidemiology and clinical characteristics of migraine among school children in the menderes region. Cephalalgia 2007;27:791–7.
10. Deleu D, Khan MA, Humaidan H, et al. Prevalence and clinical characteristics of headache in medical students in Oman. Headache 2001;41:798–804.
11. Wang X, Zhou HB, Sun JM, et al. The prevalence of migraine in university students: a systematic review and meta-analysis. Eur J Neurol 2016;23:464–75.