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# Migraine Prevalence among Al-Azhar University Students in Zagazig

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## ABSTRACT

**Background:** As a neurological disorder, migraine is a major public health issue.

**Objective**: To determine the prevalence of migraine headache among all grades of Al-Azhar University students in Zagazig.

**Patients and Methods**: The study was observational descriptive questionnaire-based cross sectional design that was conducted on the population of students of the Faculty of Islamic Studies and Arabic Language for Girls and Faculty of Fundamentals of Religion for Boys, Al-Azhar University in Zagazig. The targeted students were from 1st to 4th year for the age group (18-22) from both genders.

**Results:** There was a significant difference between students suffering from headache and other group without headache regarding age, residence, smoking and family history of headache or other neuropsychiatric illness. Regarding characters of headache, 47.02 % of our students had frequency of 2-4 attack of headache per month. 38.2% of them had long duration of headache that last for > 12 hours. Nausea and vomiting was a common symptom in 41.1 % of students. 68.9 of them reported a pulsating headache with moderate severity in 56.8 %, bilateral in 65.3% with visual disturbance in 26.7%, always worse by effort in 45.6 and always sensitive to light in 34.6% and noise in 30.4%.

**Conclusion**: Headache was uncommon complaint among students of the Faculty of Islamic Studies and Arabic Language for Girls and Faculty of Fundamentals of Religion for Boys, Al-Azhar University in Zagazig, Sharkia Governorate similar to what had been obtained elsewhere. Also, migraine forms a major health problem among our students, which might impose an enormous burden on individual sufferers.

**Keywords**: Migraine, Prevalence, Students.

## INTRODUCTION

Migraine is a neurological disorder that affects 12–18% of the world's population, making it a major public health issue. Physical activity usually makes the pain worse. Nearly one billion people, or 14% of the world's population, suffer from migraines. It affects women (19%) more frequently than men (11%). 6 percent of men and 18 percent of women suffer from migraines each year in the United States, with a lifetime risk of 18 percent and 43 percent, respectively [(1)].

It the study of **Al-Hashel *et al.*** [(2)] in Kuwait, the prevalence of migraine was surveyed and its economic impact was assessed. As a result, they came to the conclusion that migraines are common in Kuwait and have a significant economic impact, particularly when they are chronic.

Many university students suffer from migraines, which can have a negative impact on their academic performance and their ability to carry out daily tasks. Students who suffer from migraine-type headaches were more likely to miss school than their peers. University students who perform poorly in school may have a negative impact on their ability to succeed in the workforce in the future. [(3)].

In the study of **Al-Hashel *et al.*** [(4)] medical students at Kuwait University were surveyed to determine the prevalence of migraine. This study found that a high percentage of medical students were suffering from migraines. The prevalence, frequency, and severity of migraines rose significantly in the final two years of college, according to new research.

The aim of the present study was to determine the prevalence of migraine headache among all grades of Al-Azher University students in Zagazig.

## PATIENTS AND METHODS

This study was observational descriptive questionnaire-based cross sectional design that was conducted on the population of students of the Faculty of Islamic Studies and Arabic Language for Girls and Faculty of Fundamentals of Religion for Boys, Al-Azhar University in Zagazig.

The study was conducted during an academic year from October 2018 to June 2019. The targeted students were from 1st to 4th grade for the age group (18-22) from both genders. Assuming that the target population is 10.000 and prevalence of migraine is 18%; according to the number of students in each grade level, the number of participants required to be enrolled is 222 in each grade (a total of 888 participants) using OPENEPI at a 95 percent confidence level.

**Exclusion criteria:**

- Student with known history of neurologic diseases i.e. (Cerebrovascular stroke, epilepsy, brain tumors, multiple sclerosis).
- Concomitant medical conditions, including hypertension, diabetes and renal or hepatic insufficiency, autoimmune disease, and thyroid diseases, among others.



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- Student with previous head trauma followed by disturbance conscious level, fits or cerebral hemorrhage.
- Female who were pregnant or on contraceptive method.

**Data collection:**

Data were collected at two steps: the first step used self-administered Arabic questionnaire. The questionnaire included demographic data, such as age, gender, marital status, residence, academic grade, and smoking, frequency of headache during the last six months plus family history of headache or other neuropsychiatric disease.

A total of 10 minutes was allotted for each student to complete a questionnaire in the classroom by hand.

**In the second step: all students complaining of headache more than four times in the last 6 six months were subjected to the following:**

Patients filled out a neurology form that asked 10 questions and offered four possible answers: "always", "sometimes," "rarely," and "never" to gauge their level of familiarity and comfort with the topic of headaches. Using 14 (yes/no) questions to determine what causes headaches. How students coped with headaches, whether they sought medical help or self-medicated, was the focus of the final section of the questionnaire.

**The patient was considered to have migraine according to criteria of the International Classification of Headache Disorders (ICHD) [(4)]:**

1. At least 5 attacks fulfilling criteria (2 - 4).
2. Headache attacks lasting 4 - 72 hours (untreated or unsuccessfully treated).
3. Headache has at least two of the following 4 characteristics: (a) Unilateral location. (b) Pulsating quality. (c) Moderate or severe pain intensity. (d) Aggravation of pain by routine physical activity.
4. During headache at least one of the following symptoms is present: (a) Nausea and/or vomiting. (b) Photophobia and phonophobia.
5. Not better accounted for by another ICHD-3 diagnosis.

- Full general examination.
- Neurological examination.
- Ear, nose and throat examination.
- Ophthalmological evaluation.
- Routine laboratory investigation: Complete Blood Count (CBC), Liver function tests, Kidney function tests, Lipid profile and Random blood glucose level.

**Radiological investigations:**

Patients were subjected to CT and /or MRI to exclude secondary causes of headache. CT scan was done using Philips (Tomoscan 350, China) with 4.8 scanning time and 512×512 matrix size. A CT scan of the head was usually completed within 10 minutes.

The MRI of the brain was performed using 1.5 Tesla Philips Achiva with a standard head coil with the following sequences: sagittal, axial and coronal T1-weighted images (500-600\12) time of repetition TR/time of echo TE at 2 mm slice thickness. T2 weighted images in coronal and axial plan with 2800TR/80TE and T2W FLAIR images with 3500 TR/20TE.

**Ethical consent:**

**An approval of the study was obtained from Zagazig University Academic and Ethical Committee. Every student signed an informed written consent for acceptance of participation in the study. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.**

***Statistical analysis***

The collected data were coded, processed and analyzed using the SPSS (Statistical Package for the Social Sciences) version 22 for Windows® (IBM SPSS Inc, Chicago, IL, USA). Qualitative data were represented as frequencies and relative percentages and were compared by Chi square test ($\chi^2$). P value < 0.05 was considered significant.

**RESULTS**

The total participants were 888 students, 497 (55.97%) of them were males, and 391 (44.03%) were females. Most of the students (41.6%) were 19 to 22 year old. The unmarried students constituted 97.3 %, smokers represented (6.1 %) of all students and 42.2% of students had family history of neuropsychiatric disease. 64.2% of our student had headache of more than 4 times in the last 6 months.

There was a significant difference between students suffering from headache and other group without headache regarding age, residence, smoking and family history of headache or other neuropsychiatric illness **(Tables 1, 2).**

**Table (1): Demographic and clinical characters distribution among studied group (N=888)**

| | | **Male N=497 (100%)** | **Female N=391 (100%)** | Total N (%) |
|---|---|---|---|---|
| **Age** | **≤ 18**<br>**19-21**<br>**≥22** | 192 (38.6%)<br>208 (41.8%)<br>97 (19.5) | 138 (35.3%)<br>92 (23.5%)<br>161 (41.2%) | 189 (21.3%)<br>369 (41.6%)<br>330 (37.2%) |
| **Family history of headache** | **Yes** | 97 (19.5%) | 127 (32.5%) | 224 (25.2%) |
| | **No** | 400 (80.5%) | 264 (67.5%) | 664 (74.8%) |
| **Marital state** | **Married** | 5 (1.01%) | 19 (4.86%) | 24 (2.7%) |
| | Single | 492 (98.99%) | 372 (95.1%) | 864 (97.3%) |
| **Academic year** | First<br>Second<br>Third<br>Fourth | 125 (25.2%)<br>124 (24.9%)<br>121 (24.3%)<br>127 (25.6%) | 97 (24.8%)<br>98 (25.1%)<br>101 (25.8%)<br>95 (24.3%) | 222 (25%)<br>222 (25%)<br>222 (25%)<br>222 (25%) |
| **Residence** | **Urban** | 171 (34.4%) | 204 (52.2%) | 375 (42.2%) |
| | **Rural** | 326 (65.6%) | 187 (47.8%) | 513 (57.8%) |
| **Family history of neuropsychiatric disease** | **Yes** | 210 (42.3%) | 170 (43.5%) | 380 (42.8%) |
| | **No** | 287 (57.7%) | 221 (56.5%) | 508 (57.2%) |
| **Smoking** | **Yes** | 45 (9.1%) | 0 | 45 (6.1%) |
| | **No** | 452 (90.9%) | 391 (100%) | 843 (94.9%) |
| **Frequency of headache in last 6 months** | **≤ 4**<br>**>4** | 165 (33.2%)<br>332 (66.8%) | 153 (39.1%)<br>238 (60.9%) | 318 (35.8%)<br>570 (64.2%) |

**Table (2): Association between demographic characters and headache**

| | | **headache 570 (64.2%)** | **No headache 318 (35.8%)** | **Total 888** | **$X^2$** | **P** |
|---|---|---|---|---|---|---|
| **Age** | **≤20 Y** | 257 (45.1%) | 181 (56.9%) | 438 (49.3%) | 11.4 | **<0.001 **** |
| | **>20 Y** | 313 (54.9%) | 137 (43.1%) | 450 (50.7%) | | |
| **Sex** | **Female** | 238 (41.8%) | 153 (48.1%) | 391 (44.03%) | 3.2 | 0.07 |
| | **Male** | 332 (58.2%) | 165 (51.9%) | 497 (55.97%) | | |
| **Family history of headache** | **Yes** | 215 (37.7%) | 9 (2.8%) | 224 (25.2%) | 131.7 | **<0.001**** |
| | **No** | 355 (62.3%) | 309 (97.2%) | 664 (74.8%) | | |
| **Marital state** | **Single** | 557 (97.7%) | 307 (96.5%) | 864 (97.3%) | 1.11 | 0.3 |
| | **Married** | 13 (2.3%) | 11 (3.5%) | 24 (2.7%) | | |
| **Residence** | **Urban** | 313 (54.9%) | 62 (19.5%) | 375 (42.2%) | 104.7 | **<0.001**** |
| | **Rural** | 257 (45.1%) | 256 (80.5%) | 513 (57.8%) | | |
| **Family history of neuropsychiatric illness** | **Yes** | 260 (45.6%) | 120 (37.7%) | 380 (42.8%) | 5.2 | **0.02*** |
| | **No** | 310 (54.4%) | 198 (62.2%) | 508 (57.2%) | | |
| **Smoking** | **Yes** | 38 (6.7%) | 7 (2.2%) | 45 (5.1%) | 8.5 | **0.004**** |
| | **No** | 532 (93.3) | 311 (97.8%) | 843 (94.9%) | | |

*: Significant, **: Highly significant

There was a significant difference between students and those with non-migraine headache regarding age, gender, residence, family history of headache or other neuropsychiatric illness **(Table 3).**

**Table (3): Association between demographic characters and type of headache**

| | | Headache (N= 570) | | Total | $X^2$ | P |
|---|---|---|---|---|---|---|
| | | Non-migraine 362 (63.5%) | Migraine 208 (36.5%) | | | |
| **Age** | **≤20 y** | 143 (39.5%) | 114 (54.8%) | 257 (45.1%) | 12.5 | **<0.001**** |
| | **>20 Y** | 219 (60.5%) | 94 (45.2%) | 313 954.9%) | | |
| **Sex** | **Female** | 84 (23.2 %) | 154 (74.03%) | 238 (41.8%) | 140.1 | **<0.001**** |
| | **Male** | 278 (76.8 %) | 54 (25.96%) | 332 (58.2%) | | |
| **Family history of headache** | **Yes** | 70 (19.3%) | 145 (69.7%) | 215 (37.7%) | 142.6 | **<0.001**** |
| | **No** | 292 (80.7%) | 63 (30.3%) | 355 (62.3%) | | |
| **Marital state** | **Single** | 357 (98.6 %) | 200 (96.2 %) | 557 (97.7%) | 3.42 | 0.06 |
| | **Married** | 5 (1.3 %) | 8 (3.8%) | 13 (2.3%) | | |
| **Residence** | **Urban** | 135 (37.3%) | 178 (85.6%) | 313 (54.9%) | 124.3 | **<0.001**** |
| | **Rural** | 227 (62.7%) | 30 (14.4%) | 257 (45.1%) | | |
| **Family history of neuropsychiatric illness** | **Yes** | 151 (41.7%) | 109 (52.4%) | 260 (45.6%) | 6.1 | **0.01*** |
| | **No** | 211 (58.3%) | 99 (47.6%) | 310 (54.4%) | | |
| **Smoking** | **Yes** | 26 (7.2%) | 12 (5.8%) | 38 (6.7%) | 0.41 | 0.5 |
| | **No** | 336 (92.8%) | 196 (94.2) | 532 (93.3%) | | |

*: Significant, **: Highly significant

The prevalence of headache increased by advancing in the studying years (third year 32.9 %, fourth year 25.4%). In the first three academic grades there were a significant differences between student with headache and those without headache **(Table 4).**

**Table (4): Distribution of headache in the four academic years**

| | Headache 570 (64.2%) | No headache 318 (35.8%) | $X^2$ | P |
|---|---|---|---|---|
| **Grade 1** | 130 (22.8%) | 92 (28.9%) | 4.04 | 0.04* |
| **Grade 2** | 107 (18.8%) | 115 (36.2%) | 32.9 | <0.001** |
| **Grade 3** | 188 (32.9%) | 34 (10.7%) | 53.7 | <0.001** |
| **Grade 4** | 145 (25.4%) | 77 (24.2) | 0.34 | 0.6 |

*: Significant, **: Highly significant

Regarding characters of headache, 47.02 % of our students had frequency of 2-4 attack of headache per month. 38.2 % of them had long duration of headache that lasted for > 12 hours. Nausea and vomiting was a common symptom in 41.1 % of students. 68.9 of them reported a pulsating headache with moderate severity in 56.8 %, bilateral in 65.3% with visual disturbance in 26.7%, always worse by effort in 45.6 and always sensitive to light in 34.6% and noise in 30.4% **(Tables 5, 6).**

**Table (5): Migraine characters**

| | | N=208 | % |
|---|---|---|---|
| **Frequency** | **>1/week** | 58 | 27.9 % |
| | **2-4/month** | 98 | 47.1 % |
| | **>2/ 3 month** | 52 | 25 % |
| **Duration** | **1-4 hours** | 74 | 35.6% |
| | **4-12 hours** | 54 | 26% |
| | **>12-hours** | 80 | 38.2% |
| **Worsening by effort** | **Never** | 15 | 7.2% |
| | **Rare** | 30 | 14.4% |
| | **Sometimes** | 68 | 32.7% |
| | **Always** | 95 | 45.7% |
| **Nausea and /or vomiting** | **Never** | 41 | 19.7% |
| | **Rare** | 76 | 36.5% |
| | **Sometimes** | 86 | 41.3% |
| | **Always** | 5 | 2.5% |
| **Sensitivity to light** | **Never** | 30 | 14.4% |
| | **Rare** | 40 | 19.2% |
| | **Sometimes** | 66 | 31.7% |
| | **Always** | 72 | 34.7% |
| **Sensitivity to noise** | **Never** | 54 | 26% |
| | **Rare** | 40 | 19.2% |
| | **Sometimes** | 50 | 24% |
| | **Always** | 64 | 30.8% |
| **Pain limit daily activity** | **Never** | 90 | 43.3% |
| | **Rare** | 52 | 25% |
| | **Sometimes** | 23 | 11.1% |
| | **Always** | 43 | 20.6% |
| **Visual disturbance(flashes)** | **Never** | 47 | 22.6% |
| | **Rare** | 55 | 26.5% |
| | **Sometimes** | 50 | 24% |
| | **Always** | 56 | 26.9% |
| **Headache characters** | **Pulsating** | 142 | 68.3% |
| | **Burning** | 29 | 13.9% |
| | **Pressure** | 37 | 17.8% |
| **Location of headache** | **Unilateral** | 72 | 34.6% |
| | **Bilateral** | 136 | 65.4 % |
| **Severity** | **Mild** | 32 | 15.4% |
| | **Moderate** | 116 | 56.3% |
| | **Severe** | 60 | 28.9% |
| | **Total** | 208 | 100.0 |

**Table (6): Headache triggering factors distribution between patients with migraine and other form of headache**

| | Headache (N =570) | | |
|---|---|---|---|
| | **Non-migraine 362 (63.5%)** | **Migraine 208 (36.5%)** | **Total** |
| **Light/ Noise** | 309 (85.4%) | 179 (86.1%) | 488 (85.6%) |
| **Weather changes** | 153 (42.2%) | 72 (34.6%) | 255 (39.9%) |
| **Allergy or sinus pain** | 188 (51.9 %) | 64 (30.8%) | 252 (44.2%) |
| **Stress or tension** | 253 (69.9%) | 148 (71.2%) | 401 (70.4%) |
| **Sleep deprivation** | 336 (92.8%) | 192 (92.3%) | 528 (92.6%) |
| **Over sleep** | 200 (55.2%0 | 96 (46.2%) | 296 (51.9%) |
| **Hunger skipping meals** | 240 (66.3%) | 120 (57.7%) | 360 (63.2%) |
| **Lack of caffeine** | 174 (48.1%) | 96 (46.2%) | 270 (47.4%) |
| **Excess caffeine** | 33 (39.8%) | 15 (28.8%) | 48 (8.4%) |
| **Certain odors** | 178 (49.2%) | 80 (38.5%) | 258 (45.3%) |
| **Stop Smoking** | 32 (8.6%) | 6 (2.9%) | 38 (6.7%) |
| **Change of Mood** | 222 (61.3%) | 104 (50.0%) | 326 (57.2%) |
| **Certain type of Food** | 113 (31.2%) | 36 (17.3%) | 149 (26.1%) |
| **Watching TV for many hours** | 161 (44.5%) | 98 (47.1%) | 259 (45.4%) |
| **Working on Computer for many hours** | 187 (51.7%) | 123 (59.1%) | 310 (54.4%) |
| **Menstrual cycle** | 36 (9.9%) | 63 (30.28%) | 99 (17.4%) |

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## DISCUSSION

As a neurological disorder, migraine is a major global health problem because of its frequency and severe disability. 12-18 percent of the population suffers from migraine, which has been found to be age and gender specific worldwide [(5)]. **Voss *et al.*** [(6)] found that migraine is the third most common disease in the world, after dental caries and tension-type headaches, with a global prevalence of 15% (TTH).

Many university students suffer from migraines, which can have a negative impact on their academic performance and their ability to carry out daily tasks. It has detrimental effects on university students, who must maintain a high level of concentration and performance at all times. Those with migraine-like headaches were more likely to miss school than their peers. University students who perform poorly in school may have a negative impact on their ability to succeed in the workforce in the future [(3)]. Globally, anywhere from 11 to 40% of medical students report having migraines on a regular basis. University students are an important population to study because migraine is the most common type of headache among young adults and its frequency increases during their educational years [(7)].

Overall, 64.2 percent of Al-Azhar University in Zagazig's students were found to suffer from headaches. The prevalence of headache is particularly high among college students, according to several studies[(8-10)]. Migraine had a prevalence rate of 23.4 %. The results were in line with the findings of **Johnson *et al.*** [(11)] who reported prevalence of 24% in United States medical student.

The one-year prevalence of migraine in a previous literature, which selected university students as the target population demonstrated much discrepancy. Part of this variation caused by methodological differences or different sources of information or used other diagnostic criteria in addition to racial difference in genetic vulnerability to headache types[(12)].

**Oztora *et al.*** [(13)] reported 7.2% among Turkish students. Higher prevalence's ranged between 85.5% in **Tahir *et al.*** [(14)] to 96.8% as recorded by **João *et al.*** [(15)]**.** The reported 1-year prevalence of headache among medical students was 46% among Nigerian medical students[(8)].

**Al-Hashel *et al.*** [(4)] determined the prevalence of migraine among 621 medical students in Kuwait University. A total of 184 (29.6%) were males and 437 (70.4%) were females. The prevalence of migraine among medical students was 27.9%. Thirty-seven were males (20.1%) and 136 were females (31.1%). Migraine was significantly more prevalent among females compared to males. **Ojini *et al.*** [(8)] revealed that migraine prevalence rate in male and female was 5.9% and 6.4% respectively, which is nearly similar or slightly higher than ours with higher prevalence among females. Despite the several reasons that have been given for the higher rates of headache among women, well-established factors include increase in estradiol level during menstruation, difference in response to stress and pain as well as genetic predisposition[(16)].

On contrary to our result, **Tahir *et al.*** [(14)] recorded that 58% of their medical students had a positive family history of headache. Information about family history of headache may not be completely reliable when given by a person who is obviously not qualified to make a correct diagnosis[(17)].

According to our results, the prevalence of headache increased by advancing in the studying years. It was 32.9 %in the third academic year and 25.4% in the fourth academic year. Also, in the study of **Al-Hashel *et al.*** [(4)] the prevalence, frequency, and severity of migraines were found to increase in the final two years of schooling. According to our study, migraines in the last two grades are most likely caused by the high frequency of exams that are associated with increasing

stress and irregular sleep patterns as well as many reading hours and fasting.

**Tahir *et al.* [14]** stated that bilateral headaches were present in 26.9% of migraineur students while unilateral headaches was reported in 15.8% of them.

As regards therapeutic aspects of migraine among our students, majority had normal examination and treat headache directly from pharmacy or home treatment. Only 13.9 % of our student had visited the specialist. **João *et al.* [15]** noticed that, 47.6% of their students were self-medicated, while only 14.3% sought medical assistance. Sleep was effective in 21.4% of respondents while only 9% of students reported that they did not do anything to obtain relief. This relatively high rate of self-medication reported by university students is probably related to the students' level of education, knowledge of pharmacology and ease of access to painkillers. Also cultural differences or decrease level of awareness of migraine could be the cause. The prolonged use of analgesia for frequent headaches has been variously reported to predispose to the development of analgesic-induced headache, which will further worsen headache severity and frequency[18].

According to relieving factors of migraine, our study pinpointed that lying down-sleeping (56.5%) and staying in a dark, quiet room (32.1%) had the higher percentage. Sleep has been described by many authors as a relieving factor for migraine attacks. However, excess sleep or sleep deprivation are thought to initiate migraine attacks[19,20].

## CONCLUSION

From this study, we can conclude that headache is a frequent complaint among students of the Faculty of Islamic Studies and Arabic Language for Girls and Faculty of Fundamentals of Religion for Boys, Al-Azhar University in Zagazig, Sharkia Governorate similar to what had been obtained elsewhere. Also, migraine forms a major health problem among our students, which might impose an enormous burden on individual sufferers. Light, noise, sleep deprivation and stress were the most common triggering factors.

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**Author contribution:** Authors contributed equally in the study.

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