Prevalence, Characteristics and Risk Factors of Migraine Headache Among Students in Horus University-Egypt: A Cross- Sectional Study

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KEYWORDS	ABSTRACT
Disability, Migraine, Quality of life, University Students.	Background: Migraine is a common neurological impairment with a significant disease burden. A number of different factors can trigger migraine attacks as anxiety, stress, skipped meals and irregular sleep pattern. Objectives: This study was done to estimate the prevalence of migraine and to determine its characteristics in students of Horus University, Egypt. Methods: A cross-sectional study was done utilizing a self-administered questionnaire. The study included 1339 students. Migraine-related quality of life and disability were evaluated utilizing Migraine Specific Quality of life Questionnaire (MSQ) as well as Migraine Disability Assessment Scale (MIDAS) respectively. Results: Migraine headaches affected 24% of the population. The most frequent migraine triggers were mental stress, exertion, sleep disturbance and prolonged mobile use (74%, 72.7%, 68% and 55.8% respectively). Being a female, in the middle academic years and having low academic degrees were significant predictors of migraine among university students. Regarding migraine students, disability was significantly higher among females and students who don't live with their families. Besides, their quality of life was significantly low among males, nonmedical students, students with low academic degrees and those with irregular physical exercise. Conclusion: The high prevalence of migraines among college students has a detrimental effect on their quality of life and causes a major disability.

1. Introduction

Migraine is a neurological and vascular disorder that causes throbbing headaches that usually impact one side of the head and are often accompanied by nausea and blurred vision[1]. Stress, loud noises, exhaustion, fasting, sleep disorders, alcohol consumption, etc. are among the many known triggers of migraine attacks[2,3].

The Global Burden of Disease (GBD) study has shown that among young individuals (aged 15–49), headache disorders are the most common cause of years lost to disability (YLDs). Among young males, migraine ranks 2nd in YLDs, while among young females, it ranks 1st[4]. Using data from 56 different studies, researchers have calculated that 16% of college students suffer from migraines[5]. Migraine attacks often begin throughout puberty and are three times more likely in females than males. Hormonal changes during puberty cause the frequency of migraines to rise[6-8.]

Migraine triggers notably educational stress and irregular sleep are common in university students[5]. Furthermore, a correlation has been observed between migraine as well as mental health conditions[9]. Among the many mental health issues that students face, depression ranks third among YLDs in this age group[10,11]. In

addition, students' quality of life as well as academic performance are both negatively impacted by migraine[12,13]. Therefore, universities offer a cohort that could possibly yield rich data on migraines.

College students are a country's most valuable resource because of all the good they can do for the country in the future. A thorough profile of migraine among college students is necessary due to the increased prevalence of migraine among younger individuals. This study aimed to collect data from Horus University students in Egypt to draw conclusions on the prevalence of migraines, the characteristics of migraines, and the impairment and quality of life problems that are linked to migraines.

2. Methods

This is a descriptive questionnaire-based cross-sectional study was done at Horus University in New Damietta, Egypt. The study was conducted during the academic year 2023-2024. The study population involved a sample of Horus University students (including medical and non-medical ones). Inclusion criteria was active registration as a student in Horus University. Students with history of head or neck trauma in last 6 months, neurological disorders (e.g. stroke, transient ischemic attack, intracranial hemorrhage, intracranial aneurysm, brain tumor, epilepsy) or any cranial operation were excluded from the study. Also, students having allergic rhinitis or sinusitis, acute systemic disease and pregnant students were not included in the study.

Sample size calculation was done according to the prevalence of headache from a previous study. The calculated sample size was at least 1067 students, utilizing the following formula [14].

$$n = \frac{Z^2 \, P(1 - P)}{d^2}$$

Where: Z = 1.96 for 95% confidence interval.

P = expected prevalence of headache (50%) [15]

d = precision (margin of error) (0.03)

To make up for missing data and failed protocols, the sample size was raised by approximately 20%. After utilizing the cluster sampling technique, a total of 1339 students were selected for the study.

Data was collected utilizing a validated Arabic version of a structured self-administered questionnaire that was previously used and validated in similar studies to determine prevalence of migraine in undergraduate students. The questionnaire was composed of four sections. Student demographics and socioeconomic status are presented in the first section. In the second section of the questionnaires, we asked about migraine triggers and the respondents' headache management experiences. The third and fourth parts of the questionnaire were about the QOL and migraine-associated disability of migraine patients.

A migraine diagnosis was made according to the 2018 International Headache Society (IHS) criteria for migraines[16]. A migraine was diagnosed when a participant reported five or more headache episodes that lasted four to seventy-two Horus each. The headaches had to be unilateral in site, pulsing in quality, moderately or severely painful, and worsened by regular physical activity. Additionally, to that, but you must also have photophobia along with one of these symptoms: vomiting, nausea, or phonophobia.

The Migraine Specific Quality of Life Questionnaire (MSQ) was used to evaluate the quality of life (QOL) of individuals who suffer from migraines. It assesses how the patient's life has been impacted by headaches over the last four weeks. The 14-item questionnaire measures the emotional impact of migraines and their impact on everyday social and occupational functioning. Every item has six options, with the usual six points listed on a category scale, and the frequency of each choice ranging from never to always. The scale was from 0 to 100, with higher scores indicating better performance[17]. After undergoing testing for validity and reliability, the questionnaire was determined to be suitable[18,19].

The Migraine Disability Assessment Scale (MIDAS) was used to measure impairments caused by migraines. The five-item questionnaire measures the number of days missed from work or school, the amount of productivity wasted at work, and the number of days missed from social, leisure, or family activities because of headaches in the past three months. When the results of the five questions were added together, the MIDAS score was produced[20]. After undergoing validity and reliability tests, the Arabic version of MIDAS was

determined to be suitable[21].

Statistical analysis:

We used the Statistical Package for the Social Sciences (SPSS) for Windows (version 26) (Chicago, IL, USA) to code, process, as well as analyze the data that we collected. Continuous variables are expressed as mean and standard deviation (SD). For categorical data, proportions were presented with frequencies. For categorical variables, we utilized a chi-square test, whilst for continuous variables, we employed an unpaired t test and an Analysis of Variance (ANOVA) test. Utilizing the Forward Wald statistical technique, we were able to anticipate the most significant variables and control for probable interactions and confounding effects by entering significant factors from univariate analysis into a logistic regression model. The adjusted odds ratios (AOR) and the 95% CI around them were determined. The p-value was considered significant if it was less than or equal to 0.05. When the p-value is less, it means that the results are more significant.

3. Results:

The study involved 1339 students with a mean age of 20.6 years old (standard deviation $\square$ 2.4 years). The majority of studied students are females (61.2%), medical students (96%), in the fifth academic year (42%) and have academic degree of B or above (64.1%). Besides, most of studied students are single (92.7%), urban residents (67.8%), living with their family (86%), non-smokers (96.3%) and perform irregular physical exercise (49.2%) (Table 1).
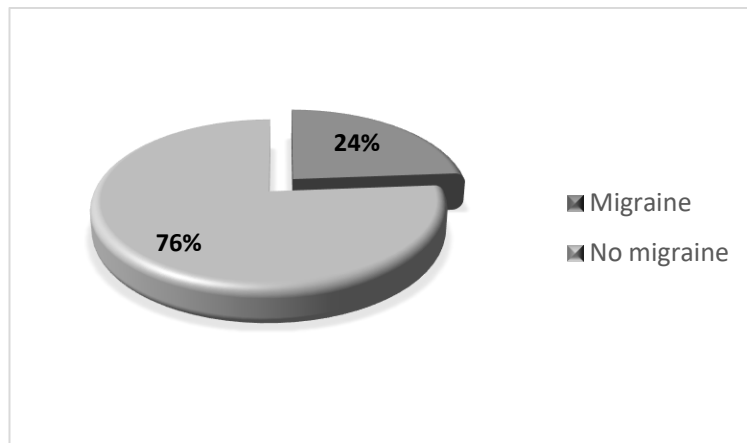

Figure (1): Prevalence of students with migraine headache among studied Horus University students (n=1339)

Table (1): Characteristics of studied students from Horus university (n=1339)

Students' characteristics	Total (n=1339)
Age (years) Mean ± SD Min-Max	20.6±2.4 16.0-26
Sex Male Female	520 (38.8%) 819 (61.2%)
Faculty Physical therapy Medicine Dentistry Pharmacy Engineering Business	591 (44.1%) 474 (35.4%) 114 (8.5%) 107 (8.0%) 41 (3.1%) 12 (0.9%)
Academic year First Second Third Fourth Fifth	370 (27.6%) 189 (14.1%) 144 (10.8%) 74 (5.5%) 562 (42.0%)
Academic degree A	417 (31.2%)

B	441 (32.9%)
C	111 (8.3%)
Not available	370 (27.6%)
Marital Status	
Single	1241 (92.7%)
Engaged	78 (5.8%)
Married	20 (1.5%)
Residence	
Urban	908 (67.8%)
Rural	431 (32.2%)
Living with family	
Yes	1152 (86.0%)
No	187 (14.0%)
Smoking habit	
Smoker	50 (3.7%)
Non smoker	1289 (96.3%)
Physical exercise	
Regular	197 (14.7%)
Irregular	659 (49.2%)
No	483 (36.1%)

Migraine attacks are reported by 319 (24%) of studied students (Figure 1). Nearly half of them (53.3%) reported onset of migraine at the age of 15-20 years old. During the last 30 days, about two thirds of migraine students (69%) reported more than 3 attacks. Regarding migraine characteristics, nearly half of students with migraine defined their migraine headache as a sudden onset and in both sides (51.4% and 50.2% respectively). About one third of migraine students had migraine pain radiated to back of the head (36.1%) and reported always insomnia because of the migraine (31.3%). Moreover, absenteeism from college due to migraine was reported by about 38.2% of migraine students (Table 2).

Table (2): Characteristics of migraine among studied migraine students (n=319)

Characteristics of migraine	Migraine group (n=319)
Start of migraine	
< 15 y	137 (42.9%)
15-20 Y	170 (53.3%)
>20 y	12 (3.8%)
Number of attacks in the last 30 days	
1-3	99(31.0%)
More than 3	220 (69.0%)
The onset of the attack	
Gradual	155(48.6%)
Sudden	164(51.4%)
Side of migraine	
Both sides	160(50.2%)
More to the left	86(27.0%)
More to the right	73(22.9%)
Pain of migraine radiated to	
Nose	40(12.5%)
Back of the head	115(36.1%)
Behind the left eyebrow	35(11.0%)
Behind the right eyebrow	22(6.9%)
Behind the left eye	61(19.1%)
Behind the right eye	46(14.4%)
Insomnia because of the migraine	
Always	100(31.3%)
Sometimes	203(63.6%)
Not related	16(5.0%)
Absenteeism from college due to migraine	
Yes	122(38.2%)
No	197 (61.8%)
Symptoms before start of attack*	
Mood changes	251(78.7%)
Change in appetite	136(42.6%)
Neck pain	160(50.2%)
Fatigue	245(76.8%)
Vomiting	70(21.9%)

Eye lacrimation	106(33.2%)
Drowsiness	173(54.2%)
Blurring of vision	144(45.1%)
Warning symptoms before attack*	
Flashes of lights	85(26.6%)
Zig-zag lines	32(10.0%)
blurry vision / blindness	61(19.1%)
Numbness / tingling	88(27.6%)
Dizziness or vertigo	214(67.1%)
Upset stomach / nausea	132(41.4%)
The precipitating/ triggers of the attack*	
Foods	20 (6.3%)
Too much caffeine	36 (11.3%)
Not getting enough caffeine	77 (24.1%)
Hunger / Skipping meals	131 (41.1%)
Sleep disturbance	217 (68.0%)
Weather/Climate	104 (32.6%)
Head movements	105 (32.9%)
Mental stress	236 (74.0%)
Exertion	232 (72.7%)
Prolonged computer use	73 (22.9%)
Prolonged mobile use	178 (55.8%)
Menstrual periods	99 (31.0%)
Certain Odors	79 (24.8%)
Bright lights/sun	151 (47.3%)
Loud sounds	175 (54.9%)
Symptoms during attack*	
Nausea / upset stomach	126 (39.6%)
Vomiting	60 (18.9%)
Bright lights/sun	237 (74.5%)
Loud sounds	261 (82.1%)
Strong smells/odors	136 (42.8%)
Dizziness / vertigo	172 (54.3%)
Numbness or tingling	80 (25.2%)
Increased sensitivity of Scalp / Hair / Ears	101 (32.0%)
Eye tears	98 (30.8%)
Runny nose	71 (22.4%)
Difficulty concentrating	272 (85.8%)
Mood changes	240 (75.7%)
Relieving factors during the attack	
Muscle relaxation	5 (1.6%)
Analgesics	119 (37.3%)
Muscle exercise	3 (0.9%)
Lying down	17 (5.3%)
Sleeping	74 (23.2%)
Being in a dark quiet room	44 (13.8%)
Massage your head	33 (10.3%)
Cold pack on your head/neck	4 (1.3%)
Hot pack on your head/neck	2 (0.6 %)
Coffee, caffeine	18 (5.6%)

*: More than one answer allowed

Before migraine attack, the most frequent symptoms reported were mood changes, fatigue, drowsiness and neck pain (78.7%, 76.8%, 54.2% and 50.2% respectively). The most frequent warning symptoms before attack were dizziness or vertigo (67.1%), upset stomach or nausea (41.4%), numbness / tingling (27.6%) and flashes of lights (26.6%). The most frequent migraine triggering factors were mental stress, exertion, sleep disturbance and prolonged mobile use (74%, 72.7%, 68% and 55.8% respectively). Migraine attack were associated with difficult concentration, hypersensitivity to loud sounds, mood changes and hypersensitivity to bright lights in most of migraine students (85.8%, 82.1%, 75.7% and 74.5% respectively). The most frequent easing factors reported by students were analgesics (37.3%) and sleeping (23.2%) (Table 2).

Table (3): Health care seeking practice of migraine students (n=319)

Health care seeking practices	Migraine group (n=319)
Seek medical advice about migraine	
Yes	149(46.7%)
No	170 (53.3%)
Take self- medication to control migraine	
Yes	194(60.8%)
No	125 (39.2%)
Investigation done concerning migraine	
No	174(54.5%)
C.T brain	13(4.1%)
MRI brain	17(5.3%)
X-ray of the neck	3(0.9%)
Blood tests	28(8.8%)
Eye test	84(26.3%)

Concerning the health care-seeking behavior of the students with migraine, more than half of them didn't seek medical advice about migraine (53.3%) and didn't perform any investigations for their migraine (54.5%). Self-medication for migraine was practiced by about 61% of the migraines (Table 3).

The prevalence of migraine was significantly greater among female students in comparison with male students (P≤0.001). Besides, pharmacy students had significant greater prevalence of migraine than their counterparts from other colleges (P=0.017). Furthermore, the prevalence of migraine was significantly greater in students of the 2nd, 3rd and 4th academic years compared to others in the first or last academic years (P<0.001). Students with lower academic degree (B or C) reported significant greater prevalence of migraine than students with greater academic degrees (A) (P=0.006). Also, students with no or irregular physical exercise had significant higher prevalence of migraine compared to students reported regular physical exercise (P= 0.015) (Table 4). Multivariate analysis further confirmed that students' gender, academic year and academic degree were significant predictors of migraine among university students (Table 5)

On assessment of migraine disability among migraine students, female students reported significant higher migraine disability score compared to male students (P=0.003). Moreover, migraine disability was significantly higher among migraine students who don't live with their families compared to those living with their families (P=0.007) (Table 6).

Regarding migraine specific QOL, male students showed significant lower QOL score compared to female students (P= 0.003). Besides, migraine specific QOL score was significantly lower among nonmedical students compared to medical students (P=0.013). Also, QOL was significantly associated with academic performance of migraine students. Students with academic degree (C) reported lower QOL score than students with (A) and (B) degrees (P=0.012). Moreover, migraine student with irregular physical exercise showed statistically significant lower QOL score than others with no or regular physical exercise (P<0.001) (Table 7)

Table (4): Association between Students' characteristics and Migraine status among studied university students (n=1339)

Students' characteristics	Migraine group (n=319)	No migraine group (n=1020)	P value
Age (years)			
Mean ± SD	20.6±2.3	20.5±2.4	0.460
Sex			≤0.001
Male	79 (15.2%)	441 (84.8%)	
Female	240 (29.3%)	579 (70.7%)	
Faculty			0.017
Physical therapy	128(21.7%)	463(78.3%)	
Medicine	121 (25.5%)	353(74.5%)	
Dentistry	20(17.5%)	94(82.5%)	
Pharmacy	37(34.6%)	70(65.4%)	
Engineering	12(29.3%)	29(70.7%)	
Business	1 (8.3%)	11 (91.7%)	
Academic year			≤0.001
First	78(21.1%)	292(78.9%)	
Second	54(28.6%)	135(71.4%)	
Third	44(30.6%)	100(69.4%)	
Fourth	30(40.5%)	44(59.5%)	

Fifth	113(20.1%)	449(79.9%)	
Academic degree (n=969) A B C	89(21.3%) 112(25.4%) 40(36.0%)	328(78.7%) 329(74.6%) 71(64.0%)	0.006
Marital Status Single Engaged Married	292(23.5%) 20(25.6%) 7(35.0%)	949(76.5%) 58(74.4%) 13(65.0%)	0.454
Residence Urban Rural	220(24.2%) 99(23.0%)	688(75.8%) 332(77.0%)	0.613
Living with family Yes No	272(23.6%) 47(25.3%)	881(76.4%) 139(74.7%)	0.618
Smoking habit Smoker Non smoker	12(24.0%) 307(23.8%)	38(76.0%) 982(76.2%)	0.976
Physical exercise Regular Irregular No	31(15.7%) 164(24.9%) 124(25.7%)	166(84.3%) 495(75.1%) 359(74.3%)	0.015

Table (5): Multivariate logistic regression analysis for independent predictors of migraine

	β	SE	P value	OR (95%) CI
Sex Male (r) Female	1.131	0.185	≤0.001	3.09 (2.15-4.5)
Academic year First (r) Second Third Fourth Fifth	- 0.363 0.516 0.899 -0.243	- 0.209 0.226 0.275 0.170	- 0.083 0.022 0.001 0.152	1 1.43 (0.9-2.2) 1.67 (1.1-2.6) 2.45 (1.4-4.2) 0.78 (0.56-1.1)
Academic degree A (r) B C	0.415 1.005	0.170 0.246	0.015 ≤0.001	1.51 (1.1-2.1) 2.73 (1.6-4.4)
Predicted %	75.9%			
Model Chi	72.82			
P value	≤0.001			

4. Discussion:

This study was a cross-sectional study carried out in Horus University students including both medical and nonmedical ones during the academic year 2023-2024. This study was done to estimate the prevalence of migraine, determine its characteristics and assess migraine associated disability and QOL score among students of Horus University, Egypt.

The prevalence of migraine in our study (according to the IHS criteria) was 24% of all studied students. Similar prevalence was reported in Kuwit (27.9%), Palestine (22%) and Bangladesh (21.4%)[12,22,23]. Although other research found a lower prevalence of migraines among Egyptian (17%), Iranian (16.3%), and Chinese (7.9%) college students[24-26]. On the other hand, studies in Pakistan and Ethiopia reported higher prevalence of migraine among university students (38.3% and 34% respectively)[27,28].

Actually, the prevalence of migraine among university students is widely variable all over the world with many factors affecting it. Gender composition of study participants affect migraine prevalence with higher migraine prevalence in studies with higher proportion of females. Besides, this variance could be as a result of different stressors in different universities and the method used to diagnose migraine headaches. Additionally, it is more likely to identify a higher prevalence of migraines when contacting students during stressful periods, such as midterms or end of clinical rounds tests. Moreover, migraine prevalence is affected by differences in methodology and the duration of the study. In the study by Birkie and colleagues in Ethiopia, in their study, they examined the migraine prevalence throughout a lifetime, whereas we examined at the prevalence during the past

month. Various racial, environmental, climatic, or dietary variables may also contribute to the difference.

Table (6): Association between Students' characteristics and Migraine disability assessment score (n= 319)

Students' characteristics	Migraine Disability assessment score (n=319)	Test of significance	P value
Sex Male Female	 13.86±2.27 14.86±2.65	 t=3.02 	0.003
Faculty Physical therapy Medicine Dentistry Pharmacy Engineering Business	 14.44±2.48 14.75±2.69 13.40±2.68 15. 09±2.55 15.08±2.93 15.80±1.48	F=1.630	0.152
Academic year First Second Third Fourth Fifth	 14.48±2.80 14.64±2.56 15.02±2.96 14.56±2.41 14.54±2.38	F=0.338	0.853
Academic degree A B C	 14.52±2.21 14.76±2.52 14.65±3.19	F=0.221	0.802
Marital Status Single Engaged Married	 14.59±2.58 14.85±2.75 14.71±3.09	F=0.091	0.913
Residence Urban Rural	 14.50±2.57 14.86±2.66	 t=0.740	0.459
Living with family Yes No	 14.45±2.49 15.55±2.98	 t=2.69	0.007
Smoking habit Smoker Non smoker	 13.75±1.48 14.65±2.63	 t=1.179	0.239
Physical exercise Regular Irregular No	 14.41±2.43 14.39±2.56 14.95±2.67	 F=1.764 	0.173

t: independent t teat, F: ANOVA test

Migraine sufferers often experience trigger factors. Mental stress, physical activity, disturbed sleep, and extended mobile use were identified as the most common migraine triggers in the present study. Sleep disturbance and mental stress have been identified as migraine factors in previous study conducted in Egypt[29,30]. Similar result was revealed by several studies[12,13, 22,26,31.] However, prolonged use of mobile phones was not as prominent as in our study. The majority of studied students were medical ones who were more likely to be poor sleepers and prone to suffer from insufficient sleep. The shortened sleeping times of medical students may be due to the heavy academic workload and clinical placement of the medical curriculum. All these factors are also conductive to academic stress.

Table (7): Association between Students' characteristics and Migraine specific QOL score (n=319)

Students' characteristics	Migraine specific QOL score (n=319)	Test of significance	P value
Sex Male Female	 43.37±12.63 47.49±9.72	 t=3.02	0.003
Faculty Physical therapy Medicine	 46.46±9.59 47.98±10.43	F=2.95	0.013

Dentistry	44.20±11.50		
Pharmacy	47.73±11.61		
Engineering	38.16±12.03		
Business	31.40±7.86		
Academic year		F=1.256	0.287
First	47.70±10.05		
Second	45.51±11.14		
Third	48.70±9.70		
Fourth	44.46±12.80		
Fifth	45.74±10.48		
Academic degree		F=4.547	0.012
A	44.92±10.01a		
B	48.16±10.42 b		
C	42.80±12.59 ab		
Marital Status		F=2.911	0.056
Single	46.43±10.52		
Engaged	49.75±10.79		
Married	38.57±12.64		
Residence		t=0.201	0.841
Urban	46.54±10.21		
Rural	46.31±11.60		
Living with family			0.644
Yes	46.58±10.36	t=0.463	
No	45.80±12.27		
Smoking habit		t=0.672	0.502
Smoker	48.50±10.50		
Non smoker	46.39±10.66		
Physical exercise		F=6.72	≤0.001
Regular	51.28±5.67a		
Irregular	44.61±10.83 ab		
No	47.73±10.85 b		

t: independent t teat, F: ANOVA test, similar letters indicate significant difference between groups y post hoc LSD test

The present study showed that difficult concentration, hypersensitivity to loud sounds, mood changes and hypersensitivity to bright lights were the commonest symptoms associated with migraine. These finding are comparable to other studies which revealed that mood changes, photophobia and phonophobia were the commonest migraine-associated symptoms[13,24,30]. The present research revealed that the back of the neck is the most frequent site of migraine pain radiation. Similarly, Alharbi and colleges reported comparable results in their study in Saudi Arabia[32].

Regarding migraine relieving strategies, the current study showed that self-medication with analgesics and sleeping were the most frequently used relieving strategies. Similar findings were reported by Anaya and colleges in Palestine[22]. Another study in China reported that sleeping is the most common pain coping strategy while self-medication was adopted by only 14% of students[26].

Seeking medical consultation for headache management was unsatisfactory. The present study showed that more than half of studied migraine students didn't seek medical advice about migraine, didn't perform any investigations for their migraine and practiced self-medication for their migraine headache. Similar results were reported in some Egyptian studies[24,33]. These finding can be explained by the fact that over-the-counter analgesics are easily accessible in Egypt.

The result of this study showed that most of migraine students stated insomnia due to their migraine. This finding goes hand in hand with that concluded in other studies where more than half of migraine students reported poor sleeping pattern[23,33]. Actually, disturbed sleep pattern is a definite trigger of migraine attack that could result in a vicious circle.

However, the current study found that about two thirds of migraine students attended their college despite their migraine. This result is in agreement with other studies which revealed that more than half of migraine students attended their college while having migraine headache[34,35]. These studies included mostly medical students who usually feel that they are forced to attend their educational sessions to improve their academic performance.

Regarding their sociodemographic characteristics, the present study revealed that migraine was more prevalent

among female students than males. This is in accordance with other several studies[23,24,26]. A woman's migraine vulnerability is significantly impacted by her reproductive hormones. Migraine headaches without aura can be triggered by a decrease in plasma estrogen levels, while raised estrogen levels appear to have a preventive effect[7].

The prevalence of migraine was significantly higher among students in the middle academic years (3rd and 4th years) compared to others in the first or last academic years. First graders typically have less complicated course schedules than middle schoolers, while seniors typically have mastered the university learning style and are better able to handle the intense academic pressure and anxious final exams, In contrast, other studies showed that students in the first and last academic years have higher prevalence of migraine than others in the middle years[33,36]. On the other hand, Rafi and colleges reported that the prevalence of migraine decreased in parallel with advancing academic years at the university[23]. Another study found that the migraine prevalence increased in parallel with advancing academic years at the university[2]. One possible explanation for the difference is that different academic organizations place different emphasis on their students.

This study showed that migraine headache is linked with lower academic grades. In contrast, another study reported no association between student grades and headaches[37]. This discrepancy can be clarified by differences in study population, where the majority of students in the current study were medical students (keen to get high grades as this affect their future career) while the later study included Social Communication students.

Regarding their physical activity, migraine was significantly higher among students with no or irregular physical exercise compared with others with regular exercise. This result goes hand in hand with another study where migraine headache was significantly associated with infrequent physical exercise[23]. Regular exercise may reduce the frequency of migraines, even though it can induce migraine attacks. This is probably because those who exercise frequently have a different threshold for when migraines start[38].

The current research revealed that being a female, in the middle academic years and having low academic degrees were significant predictors of migraine among university students. Several studies also revealed gender and family history of migraine as an important predictor of migraine headache[23,24,26,33]. However, family history of migraine was not included in the current study.

Regarding migraine-related disability, the current study revealed that migraine disability is significantly higher among females compared to males. Similarly, other studies reported higher migraine disability among females[39,40]. On the contrary, another study reported no differences among males and females regarding their migraine related disability score[30,41].

The present study also found that migraine associated disability was significantly higher among students who don't live with their families. Social support in general and family support in particular can help students to relive stress and adequately manage their headache resulting in lower disability.

Our findings reported no association between migraine disability and academic degrees of students. In contrast, Ragab and colleges revealed that low academic performance is significantly associated with higher migraine disability[30]. The later study included only medical students while the current study included medical and nonmedical students which can mask the association between disability and academic degree.

Considering migraine specific QOL, the current study found that migraine specific QOL is better among females than males. Similar finding was reported by Al Ghadeer and colleges in Saudi Arabia[39]. However, other studies revealed that migraine specific QOL didn't vary significantly between males and females[19,42]. The present study also revealed that nonmedical students showed significant lower QOL score than medical students. Similar findings were reported in another study where the better life style habits were significantly higher among medical than nonmedical students[43].

The current study showed that migraine students with lower academic degrees reported significant lower QOL. Similar results were reported by Hatem and colleges who concluded that migraine students with low academic satisfaction had lower QOL score (especially mental component)[44].

However, this study still has some limitations. First, the study did not establish a cause-and-effect relationship because it was cross-sectional. Additionally, students' recall bias was partially exposed by the cross-sectional study design. Secondly, there was a limitation in the study's representation because it only evaluated the prevalence of migraine amongst university students at a single private college. Third, there is a risk of

subjectivity in answering some of the questions in the self-administered questionnaire.

5. Conclusion:

According to these findings, headaches are highly prevalent among students at Horus University. The most common causes of migraines were mental stress, exertion, disturbed sleep, and extended use of mobile devices. Students' quality of life is negatively affected by migraines, which cause severe disability. Reducing the negative impact of migraines and improving QOL can be achieved through avoiding triggers through the use of appropriate therapies and preventative medicines. It is recommended that university students be educated about migraines and that there be well-designed interventions to avoid migraine attacks. To make sure patients are getting the right treatment and to figure out whether further measures are necessary, clinical assessments of migraine headache should be thorough and include disability associated with migraines as well as quality of life.

Abbreviations

GBD: Global Burden of Disease; YLDs: years lost to disability; IHS: International Headache Society; MIDAS: Migraine Disability Assessment ScALe; QOL: Quality of life; MSQ: Migraine Specific Quality of life Questionnaire; SD: Standard deviation; SPSS: Statistical Package for Social Sciences; ANOVA: Analysis of Variance; AOR: Adjusted odds ratios; CI: Confidence Interval.

Declarations

Ethics approval and consent to participate

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no conflicting interests to disclose.

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Author contributions

HZ, NE, HA, LS, DA: conceptualization and methodology. SM, SK, AS, AA, AE, ZE, SW: resources and data curation. DA, NE: data analyses and interpretation and writing original draft. HZ, HA, LS: critically reviewed the manuscript. HZ: supervision. All authors have read and approved the final version of the manuscript.

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