

Migraine Knowledge, Lifestyle Habits, and Disability Level among Medical and Non-Medical Students

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Abstract

Migraine is the world's seventh most significant cause of disability-adjusted-life in people aged between 18 and 55 years. **The aim** of this study was to assess migraine knowledge, lifestyle habits, and disability level among medical and non-medical students. **Research design:** A descriptive, cross sectional design was used. **Setting:** The research was conducted in the selected faculties at Zagazig University, Egypt. **Subjects:** The study included 965 students; 510 medical and 455 non-medical students. **Tools:** Students filled in a questionnaire focusing on demographics, medical history, the diagnosis of migraine was made according to the International Headache Society criteria, manifestations of migraine, knowledge about migraine, knowledge about factors increasing, relieving and preventing the pain, Migraine Disability Assessment Test, and Lifestyle variables were enquired. **Results:** The results showed that 82.5% of medical students suffered from migraine compared to 91.2% of non-medical ones. Moreover, 84.3 % of the medical group and 56.7% of the non-medical group had satisfactory knowledge about migraine. Additionally, 71.7% of the medical group and 66.5% of the non-medical group had mild disability, while only, 5% and 3.1% respectively had no disability. As well, 46.1% of the medical group and 40.9% of the non-medical group had high life style habits, which was moderate for 38.2% and 37.6% of both groups respectively. **Conclusion:** The study revealed a high prevalence of migraine in the studied students' university. Moreover, the majority of the medical group and more than half of the non-medical group had satisfactory knowledge about migraine. Furthermore, less than three quarters of the medical group compared to two thirds of the non-medical group had mild disability. As well, about three quarters of the medical group and two thirds of the non-medical group had mild disability. While, less than half of medical students compared to almost two fifths of non-medical ones had high lifestyle habits and there is a positive correlation between total knowledge and total disability and total lifestyle among medical and non-medical students. **Recommendations:** Early screening and diagnosis of migraine and adequate management can be beneficial for students to reduce the burden of migraine and consequently enhance their academic performance.

Keywords: Medical and Non-medical Students, Migraine, Knowledge, Lifestyle Habits, Disability level.

Introduction:

Migraine is a neurological disorder that is the seventh health problem that leads to years of life lost due to disability (D'Amico, 2016). It has a prevalence of about 5-8% in men and 11-16% in women in worldwide and is more prevalent between the ages of 25-55 years (Rafi et al., 2021). In the same line, migraine is generally characterized by debilitating head pain, nausea, vomiting, photophobia, phonophobia and in some cases, visual or sensory disturbances. Migraine is associated with high costs, mostly indirectly including unproductivity and wastage of work time (Alharbi et al., 2018). Migraine was frequent, severe, and throbbing headache, and recurrent episodic attacks, which have the prospect to

headaches with moderate to severe pain, often having a unilateral location and pulsating quality (Razeghi et al., 2019). Additionally, the frequency and severity of headaches over months or years can progress to chronic migraine, which attacks tend to occur for at least 15 days in a month (Menon & Kinnera, 2021). It has been estimated that headaches, especially migraine, have caused the loss of 112 million days of work or university every year for the US population and 25 million days for the UK population (Alharbi et al., 2018).

The concept that migraine might be a response to low brain energy level or uncompensated oxidative stress has brought the ketogenic diet back into attention. This diet acts in a similar way to fasting, where ketone

bodies are elevated and can be used as an alternative source of energy to correct abnormalities in glucose metabolism reported in migraine (**Gross et al., 2019**).

These attacks are correlated with significant functional impairments, which may compromise both physical and psychological effects and their impact on academic, occupational, social, and family lives. These impairments can occur during or between migraine attacks. In generally, migraines report poorer subjective well-being and decreased quality of life during pain-free periods compared to age (**Gazerani, 2021**).

Migraine medications play a vital role in decreasing their severity and frequency, but they are limited in their effectiveness while carrying side effects that may contain cardiovascular risks and headaches due to medication overuse (**Rafi et al., 2021**). This approach of treatment leads to an indirect cost, and lower productivity of patients with significant migraine and exceeds those without the disease. A wide range of preventative medications are now available to treat migraine, with lifestyle modifications leading to a significant improvement in the frequency and severity of migraine (**Zarandi et al., 2016**).

Migraine is a major disability inducing disease ranked by WHO amongst top 20 disabling disorders. In addition to pain, associated symptoms were common. Eye pain (47.3%), weakness (30.7%), dizziness (26.3%) and neck pain (24.6%) were the most common accompanying symptoms. Other symptoms experienced were photophobia, phonophobia, nausea and vomiting. These accompanying symptoms increase the disability of the client and are usually more problem some for the client. These associated symptoms, known as migraine variant, when more prominent than the headache, it makes the diagnosis difficult and delay the management (**Ahmed et al., 2017**).

Lifestyle is the controlled behavior and activities of a person and many activities, habits, and practices involve risk factors. Lifestyles play a role in disease prevention, which in turn reduces health-care expenditures. Lifestyle factors include diet, and fasting,

exercise, and physical activities, stress level and sleep and rest habits, smoking and medications and drugs. These factors influence the frequency, duration, and severity of migraine. Changing these factors lifestyle reduces the frequency and severity of the migraine (**Razeghi et al., 2019**).

Diet and eating habits play an important role in decreasing recurrence of migraine. It was essential for those who suffer from to recognize what they include what has missed meals and fasting, yellow cheese, chocolate, caffeine, asparagus and sucralose which is an artificial sweetener, sausages or other cured meats and fish, some people get migraine within minutes to hours when they eat (**Gazerani, 2021**).

Nurses can play a basic role in decreasing migraine disability by determining migraine sufferers and providing support, empathy and advice. Nurses provide them with information about migraine in the form of verbal advice, leaflets; communicate with them to ensure their adhere to the care management program (**Veenstra, 2016**). Nurses also have key roles in follow-up by managing migraine sufferers' appointments, and encouraging them to attend follow-up appointments. The nurse should monitor disease progress and treatment outcome, by reviewing headache diaries and impact questionnaires, prior to the medical examination (**Menon & Kinnera, 2021**).

Significance of the Study

The prevalence of migraine among medical students ranges from 11 to 40% worldwide. Migraine was found to be associated with pulsatile pain (85%), light sensitivity (80%), sound sensitivity (76%), Nausea (73%), blurred vision (44%) and vomiting (29%). Certain triggers for migraine were reported by the sufferers. Stress was the major trigger in most cases (79.7%) followed by missing meals (57.3%) and weather (53.2%). Both clinical and population based surveys have supported migraine as a cause of absenteeism from work and low productivity in a substantial proportion of population. It warrants special consideration among university going students as they need constant attention and good performance. Epidemiological data revealed that academic

performance declined by 62.7% in university students suffering from migraine (**Ahmed et al., 2017**). As well, Migraine headache causes severe impairment or bed rest in 57% of affected people, markedly impairs quality of life both during and between attacks, increases absenteeism and reduces productivity at university, and is associated with increased healthcare costs (**Zarandi et al., 2016**). Additionally, university students represent an important focus for the study of migraine prevalence. Since university students are subjected to psychological and physical stress, migraines are more common among them (**Alharbi et al., 2018**).

Aim of the Study:

The aim of this study was to assess migraine knowledge, lifestyle habits, and disability level among medical and non-medical students in Zagazig University, through the following objectives:

1. Determining the prevalence and characteristics of migraine in medical and non-medical students of Zagazig University.
2. Identifying the knowledge level about migraine among medical and non-medical students of Zagazig University.
3. Assessing the degree of disability of migraine among medical and non-medical students of Zagazig University
4. Evaluating the lifestyle habits among medical and non-medical students of Zagazig University

Research questions:

1. What are the prevalence and characteristics of migraine in medical and non-medical students of Zagazig University?
2. What is knowledge level about migraine among medical and non-medical students of Zagazig University?
3. What is the degree of disability of migraine among medical and non-medical students of Zagazig University?
4. What are lifestyle habits among medical and non-medical students of Zagazig University?

Subjects and Methods

1.

Technical Design

A. Study design

This was a descriptive cross sectional study.

B. Setting

The study was conducted in the selected faculties at Zagazig University, Egypt. The research was conducted on two groups:

- **Group 1.** On medical students, the study was conducted in Faculty of Pharmacy (first, second, third, fourth & fifth years), and Faculty of Nursing (first, second, third, fourth years and internship students at Zagazig University Hospital).
- **Group 2.** On nonmedical students, the study was conducted in Faculty of Education, Faculty of Engineering (first, second, third, fourth & fifth years).

C. Sample size calculation and technique

The estimated sample size was at least 419 students, at confidence level 90% and precision rate at 0.05 by using **Steven equation (2012)**. Since the total number was 21940 students.

While;

$$n = \frac{N \times p(1-p)}{\left[(N-1) \times (d^2 \div z^2) \right] + p(1-p)}$$

Where

P= 0.5

N= **Total population**

Z= **Z value "1.96"**

D= **Standard Error**

N= **Sample size**

Researchers explored the prevalence of migraine among students from four colleges in Zagazig University (randomly chosen through sealed envelope method). Additionally, Systematic random sample was used for the selection of students from four colleges in Zagazig University. The College of Pharmacy (the number of students were 4350), the Nursing College (the number of students were 4297), the College of Education (number of students was 2793), and the College of Engineering (number of students was 10500). Based on these numbers, the sample size was distributed among the colleges as follows: 258 consecutive students from College of Pharmacy, 252 consecutive students from

College of Nursing, 150 consecutive students from College of Engineering, and 305 consecutive students from College of Education.

D. Tools for data collection

Three tools were used to collect the necessary data for reaching the research objectives, and answering different questions.

Tool I: Self-administered questionnaire, this tool developed by the researchers after thorough examination of current literature as Science Direct, Scopus, Pub Med and guided by **Al-kotb and Ibrahim (2016)**, and **Alharbi et al. (2018)**, it consisted of the following parts:

- **Part 1:** This involved a collection of six questions concerning the student's demographic characteristics as; age, gender, residence, monthly income, smoking habits and number of cigarettes per/day.
- **Part 2: Medical history:** This section includes history of migraine as; head injury, suffering from chronic diseases, family suffered from migraines. Use any medication and medication with physician prescribed.
- **Part 3:** The diagnosis of migraine was made according to the International Headache Society criteria and must at least 2 of the following characteristics: unilateral location, pulsating quality, moderate or severe pain intensity, and aggravation by or causing avoidance of routine physical activity (e.g., walking and climbing stairs).
- **Part 4:** This part assessed the manifestations of migraine which included headache when wake up, period headache lasts, age at the first attack, diagnose migraine by physician, pulse type, at one side, times of experienced a headache, and pain of migraine radiated to nose, back of the head, behind the left eyebrow, behind the right eyebrow, behind the left eye, and behind the right eye).
- **Part 5:** It is composed of eight questions about factors increasing, relieving and preventing the pain such as; headache symptoms develop, symptoms before the attack (prodromal), symptoms during, post a

migraine attack, the symptoms appeared, causes of migraine, preventive measures to guard against attacks, and types of food items provoking migraine.

- **Part6:** Self-administered questionnaire student's knowledge about migraine. It is composed of five questions such as. Definition, causes, symptoms associated, factors increasing symptoms, and factors relieving symptoms of migraine

Scoring system:

The whole knowledge score was measured and ranged from zero to twenty-one. The total score categorized as unsatisfactory (<60% of the total score) or satisfactory (≥60% of the total score).

- **Tool II: Migraine Disability Assessment questionnaire:** it evaluated the effect of headaches on the life, and to determine the level of pain and disability caused by the headaches, adopted by **Stewart (2001)**, composed of two parts:

- 1) **First part**, to measure migraine disability score through past three months, which included five questions such as; how many days in the last 3 months did you miss faculty because of your headaches? 2) How many days in the last 3 months was your productivity at faculty reduced by half or more because of your headaches? 3) How many days in the last 3 months you did not do household work (such as housework, home repairs and maintenance, shopping, caring for children and relatives) because of your headaches? 4) How many days in the last 3 months was your productivity in household work reduced by half of more because of your headaches, and 5) How many days in the last 3 months did you miss family, social or leisure activities because of your headaches?
- **Second part**, to measure frequency of migraine headaches and included two questions about, 1) How many days in the last 3 months did you have a headache, and 2) A scale of 0 – 10. On average how painful were these headaches? (where 0=no pain at all, and 10=pain as bad as it can be.)

Scoring system:

Migraine disability test included 5 questions on Likert scale ranging from (1) to (10). MIDAS total score categorized into little or no disability (0-5), mild disability (6-10), moderate disability (11-20) and severe disability more than 21.

▪ **Tool III. Life Style assessment questionnaire:** This tool adapted by **Torres-Ferrus et al. (2020)**, it composed of six parts:

1. **Physical activity:** It composed of five questions as: In the last year how often you had participated in physical activity? Had any physical activities worked for you? Did you have any negative feeling, or had any bad experience with exercise? For example heart beating too fast, shortness of breath, accident or fall, are there any barriers would like to overcome to do more exercise? and what do you enjoy doing in leisure time?
2. **Stress:** It is composed of four questions as: Did you feel stressed? And does anything in particular make you feel stressed? Are you feeling tense? And Situations make you feel nervous?
3. **Diet:** It consisted of four questions as: Did you think you follow a healthy diet? Would you like diet advice? Did you know what your calorie intake is per day, and Did you think you are following a healthy diet?
4. **Weight:** It composed of four questions as: Did you know your approximate current weight and height? Were you happy with your current weight? Had you had difficulties gaining or losing weight? And would anything in particular increase your motivation to change your weight.
5. **Fitness:** It included six questions as: Rate yourself on a scale of 1 to 5 what was your overall level of fitness? How well could you exercise without feeling out of breath, how strong did you feel you are, how flexible did you think you were? How much time were you able to spend exercising? And What types of exercise would interest you.

6. **Goals:** It composed of one question as; Mention 3 important reasons for exercising.

Scoring system:

Total score of lifestyle habits was classified as follows; high score for 65% or more (healthy habits), moderate 55% to less than 65%, and low for less than 55%(unhealthy habits).

II. Operational design:

It included the preparatory phase content, tools validity, and reliability, pilot study, field work and ethical considerations.

- **Preparatory phase:** A review of the available past and current related literature and theoretical knowledge of various aspects of the study was done using available books, periodicals, articles, magazines, and internet, to be acquainted with the research problem and develop the study tools.
- **Content validity:** The validity of the tools was done by a panel of three expert's professors from Community Health Nursing, Medical Surgical Nursing from the Faculty of Nursing and Faculty of Medicine at Zagazig University, who reviewed the tools and ascertained clarity, relevance, comprehensiveness, and applicability.
- **Content reliability:** Reliability of tools was Test-retest reliability and measuring their internal consistency. Test-retest reliability was assessed through estimating by the researchers through administrating the same tools to the same subjects under similar conditions on two or more occasions. The reliability of proposed tools was performed by Cronbach's Alpha test statistics, which recorded 0.89, 0.91 and 0.79 for the tools (I), (II) and (III) respectively.

Pilot study

A pilot study was carried out on 10% of the study subjects (100 students).The purpose of the pilot study was to test the questions for any ambiguity, and to assess the practicability and feasibility of the tools. It also helped the researchers to estimate the time needed for filling in the forms. Those who shared in the pilot study were excluded from the main study sample due to modification of questionnaire.

Field work

Once permission was granted to proceed with the study, the researchers started to prepare a schedule for collecting the data. The researchers started the collection of data through face to face interview with each student individually; thereafter the aim and approach of this research were explained to the students in order to get their informed consent. Assessment of demographic characteristics, knowledge, symptoms and manifestation of migraine, also, migraine disability test and Lifestyle Scale a habit as self-reported by migraine sufferers. The time to complete the self-administered questionnaires ranged from 35-40 minutes, and emphasizing the purpose of the study and reassuring that all data collected and results treated confidentially for the benefiting scientific research only. Work continued for four days per week: Saturdays, Sundays, Mondays, and Wednesdays from 10.00 a.m. to 2.00 noons. Data were collected through 3 months, starting from the beginning of October 2021 to the end of December 2021.

Ethical Considerations:

An approval for conducting the study was obtained from the Research Ethics Committees at the Faculty of Nursing, Zagazig University. The approval of participation was taken verbally after full explanation of the purpose of the study. Participants were notified that they could withdraw at any time without giving any reason.

III. Administrative Design:-

Official letters containing the aim of the study were issued from Faculty of Nursing, Zagazig University to the directors of the four detected colleges.

IV. Statistical Analysis

Data collected from the studied sample were revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analyses were fulfilled using the Statistical Package for Social Sciences (SPSS), version 22. Data were presented using descriptive statistics in the form of frequencies, percentages and Mean SD. The Chi square is commonly used for testing relationships between categorical variables. The Mann-Whitney U test is used to compare differences

between two independent groups when the dependent variable is either ordinal or continuous. Correlation coefficients are used to measure how strong a relationship is between two variables. A t test compares the means of two groups.

Results:

Table (1) demonstrates that there are significant differences regarding subjects' gender and smoking habits between medical and non-medical groups (p value <0.01 & p value <0.05). It was noticed that the mean age of the studied medical group was 21.69 ± 1.98 years, while it was 20.98 ± 1.33 for the non-medical group. As for gender, 74.5% of the medical group was female, while only 58.0% of the non-medical group was female. Regarding smoking habits, 98.0% of the medical group was not smokers and 95.6% of the non-medical group also was not smokers.

Table (2) shows that there are significant differences regarding subjects' history of head injury, suffering from chronic diseases and family suffered from migraines between medical and non-medical groups (p value <0.05). As well, it was noticed that 81.6% of the studied medical group had not head injury; compared to 76.7% of the non-medical group. Moreover, 62.9% of the studied medical group suffered from Anemia versus 46.3% of the non-medical group. The same table reveals that 64.9% of the studied medical group their family did not suffer from migraines compared to 55.4% of the non-medical group also was.

Table (3) reveals that there are a significant difference regarding the types of medications used by subjects for migraine between medical and non-medical groups (p value <0.05). Additionally, 20.4% of the medical group used medications for migraine and 21.5% of non-medical group also did it. Furthermore, 61.5% of the medical group used Panadol for migraine and 12.5% of them used Ibuprofen while 95.9% of the non-medical group used Panadol. As well, 58.2% of the medical group demonstrated using medication prescribed by physician and 56.1% of the non-medical group also did it.

Figure (1) illustrates that, 82.5% of medical students suffered from migraine, while

91.2% of non-medical students suffered from it.

Table (4) reveals that there is a highly significant difference regarding presence of headache when wake up between medical and non-medical groups (p value <0.01). As well, there are significant differences regarding subjects' headache period, first attack age, diagnosed migraine by physician, pulse type, headache at one side, experienced times of headache and pain of migraine radiated to between medical and non-medical groups (p value <0.05). It was also noticed that 47.0 % of the medical group and 48.4% of the non-medical group had headache for less than one hour, and 53.2% of the medical group and 46.6% of the studied non-medical group had first attack of headache at 15 to 18 years old. Moreover, 70.3% of the medical group and 81.3% of the non-medical group were diagnosed migraine by physician.

The same table showed that 48.3% of the medical group had migraine at one side, while 53.2% of the non-medical group had migraine at both sides. 48.9% of the medical group and 56.7% of the non-medical group experienced headache 1-4 times in a month. Furthermore, 34.2% of the medical group and 46.8% of the non-medical group experienced headache at back of the head.

Table (5) demonstrates that there are significant differences regarding subjects' knowledge about all items of migraine between medical and non-medical groups (p value <0.05). As well, 89.4 % of the medical group and 77.4% of the non-medical group defined migraine correct and 88.0 % of the medical group and 59.6% of the non-medical group mentioned correct symptoms associated with a migraine.

As well, the same table reveals that 53.5 % of the medical group had correct answer about migraine is a hereditary disease, while 47.9% of the non-medical group reported correct answers ones. Moreover, 90.6 % of the medical group had correct answer about factors increasing symptoms of migraine, while 45.7% of the non-medical group gave correct ones. Regarding factors relieving symptoms of migraine, 85.9% of the medical group had

correct answers while 40.7% of the non-medical group demonstrated correct.

Figure (2) illustrates that 84.3 % of the medical group and 56.7% of the non-medical group had satisfactory knowledge about migraine.

Table (6) reveals that there are highly significant difference regarding development of headache symptoms between medical and non-medical groups (p value <0.01). As well, there are significant differences regarding subjects symptoms before the migraine attack, during the attack and post attack between medical and non-medical groups (p value <0.05).

As well, the same table reveals that 87.5 % of the medical group and 87.3% of the non-medical group had gradual headache symptoms. In addition, 64.3% of the medical group and 58.2% of the non-medical group had visual disturbances during migraine attack while, 44.5% of the medical group and 47.7% of the non-medical group had dizziness post migraine attack.

Table (7) reveals that there are significant differences regarding preventive measures to guard against attacks and types of food and drinks provoking migraine between medical and non-medical groups (p value <0.05). Additionally, 77.5% of the medical group and 71.2% of non-medical group demonstrated that the symptoms appear in conjunction with headache, which 58.3% of the medical group and 47.9% of non-medical group demonstrated prolonged use of a computer or mobile phone is a cause of migraine.

Furthermore, 77.3% of the medical group and 50.1% of the non-medical group used muscle relaxation, analgesics and exercises as preventive measures to guard against attacks. As well, for 32.0% of the medical group and 34.1% of non-medical group drinking tea and coffee provokes migraine.

Table (8) demonstrates that there are significant differences regarding subjects miss work or school due to headaches, productivity at work or school reduced by half or more, do not do household work at last 3 months and frequency of days which headache lasted between medical and non-medical groups (p value <0.05). As well, there are highly

significance difference regarding subjects' productivity in household work reduced by half or more, miss family, social or leisure activities, and average score how painful were these headaches between medical and non-medical groups (p value <0.01).

The same table also shows that, 73.9% of the studied medical group and 78.0% of non-medical group demonstrated missed work or school because due to headaches for 1 to 5 days while 55.9% of the medical group and 60.0% of non-medical group denoted reduced productivity at work or school by half or more for at least 5 days. 52.9% the medical group and 63.7% of non-medical group revealed not doing household work at last 3 months for 1 to 5 days.

Additionally, 57.1% of the medical group and 60.2% of non-medical group revealed reduced productivity in household work by half or more for 1 to 5 days while 56.7% of the medical group and 57.4% of non-medical group mentioned missed family, social or leisure activities for 1-5 days.

Considering frequency of days which headache lasted, 47.3% of the medical group and 49.7% of the non-medical group demonstrated 1 to 5 days frequency which headache lasted. Also, 50.0% of the medical group and 37.8% of non-medical group had 4 to 7 average score how painful were these headaches.

Figure (3) illustrates that 4.5% of the medical group and 3.1% of the non-medical group had no disability and 71.7% of the medical group and 66.5% of the non-medical group had mild disability. The figure also shows that only 17.8% of the medical group and 21.7% of the non-medical group had moderate disability and only 6.0% of the medical group and 8.7% of the non-medical group had severe disability.

Table (9) shows that there are significant differences regarding subjects physical activity, stress, diet, weight, sleep and fitness life style habits between medical and non-medical

groups (p value <0.05). Also, there is a highly significant difference regarding subjects' goals habits between medical and non-medical groups (p value <0.01).

The table also reveals that 43.9% of the medical group and 46.6% of non-medical group had moderate physical activity level. As for stress, 37.8% the medical group and 43.4% of non-medical group had moderate stress level. Considering diet, 38.0% the non-medical group had moderate diet habits while 40.2 % of medical group had moderate diet habits and another 40.2% as well had high diet habits

As for weight, 57.3% the medical group and 47.3% of non-medical group had high weight habits and for sleep level 43.7% of the medical group had moderate sleep habits, while 46.2% of non-medical had high sleep level.

Considering fitness habits, 52.0% of the medical group and 52.7% of the non-medical group had moderate fitness habits. Also, 54.7% of the medical group and 44.0% of non-medical group had moderate goal habits.

Figure (4) illustrates that 46.1% of the medical group and 40.9% of the non-medical group had high life style habits, while 38.2% of the medical group and 37.6% of the non-medical group had moderate life style habits and 15.7% of the medical group and 21.5% of the non-medical group had low life style habits with highly statically significant difference (p<0.01).

Table (10) describes positive correlations between studied variables among studied medical students. As for medical students there is a positive correlation between total knowledge and total disability and total lifestyle (p <0.05), and between total disability and total lifestyle (p<0.01). Additionally, there is positive correlation between variables among studied non-medical students where there is a positive correlation between total knowledge and total disability & total lifestyle (p <0.05), and between total disability and total lifestyle (p<0.01).

Table (1): Frequency and Percentage Distribution of Studied Subjects in relation to their Demographic Data

Items	Medical n=510		Non-medical n=455		Chi-square P- value
	No	%	No	%	
Age:					
18 - <20	248	48.6	234	51.4	T test
20 - <22	210	41.2	71	15.6	1.465
≥ 22	52	10.2	150	33.0	>0.05
Mean SD	21.69±1.98		20.98±1.33		
Gender:					
Male	130	25.5	191	42.0	7.807
Female	380	74.5	264	58.0	<0.01*
Residence:					
Rural	388	76.1	284	62.4	2.085
Urban	122	23.9	171	37.6	>0.05
Income:					
Sufficient	417	81.8	386	84.8	2.300
Insufficient	93	18.2	69	15.2	>0.05
Smoking habits:					
Yes	10	2.0	20	4.4	3.128
No	500	98.0	435	95.6	<0.05*
Number of cigarettes per /day	(n=10)		(n=20)		
<10	3	30.0	7	35.0	1.004
≥ 10	7	70.0	13	65.0	>0.05

Table (2): Frequency and Percentage Distribution of Studied Subjects in Relation to their Medical History of Migraines

Items	Medical n=510		Non-medical n=455		Chi-square P value
	No	%	No	%	
Head injury:					
Yes	94	18.4	106	23.3	3.986
No	416	81.6	349	76.7	<0.05*
Suffering from chronic diseases					
Yes	62	12.2	121	26.6	4.890
No	448	87.8	334	73.4	<0.05*
If yes, what chronic diseases did you suffer from	(n=62)		(n=121)		
Kidney diseases	0	0	2	1.7	3.705
Diabetes	3	4.8	1	0.8	<0.05*
Hypertension	5	8.2	6	5.0	
Heart diseases	3	4.8	3	2.5	
Abdominal distension	0	0	5	4.1	
Anemia	39	62.9	56	46.3	
Hypotension	2	3.2	2	1.7	
Eye disease	0	0	1	0.8	
Ear diseases	0	0	1	0.8	
Lung disease	4	6.5	43	35.5	
Skin disease	2	3.2	1	0.8	
Herniated disc	1	1.6	0	0	
Thyroid disease	2	3.2	0	0	
Gallstones	1	1.6	0	0	
Family suffered from migraines					
Yes	179	35.1	203	44.6	7.231
No	331	64.9	252	55.4	<0.05*

Table (3): Frequency and Percentage Distribution of Studied Subjects in Relation to their Medical History of Migraines “cont.”

Items	Medical n=510		Non-medical n=455		Chi-square P value
	No	%	No	%	
Use any medication					1.860 >0.05
Yes	104	20.4	98	21.5	
No	406	79.6	357	78.5	
If yes, what medications do you use	(n=104)		(n=98)		6.078 <0.05*
Panadol	64	61.5	94	95.9	
Spasmofen	0	0	1	1.0	
Ketofan	0	0	2	2.1	
Cataflam	2	1.9	1	1.0	
Aspirin	1	1.0	0	0	
Megafen	2	1.9	0	0	
Telfast	2	1.9	0	0	
Ibuprofen	13	12.5	0	0	
Milga	1	1.0	0	0	
Inderal	1	1.0	0	0	
Calcitron	2	1.9	0	0	
Imigran	4	3.8	0	0	
Feroglobin	4	3.8	0	0	
Paracetamol	2	1.9	0	0	
Concor	2	1.9	0	0	
folic acid	4	3.8	0	0	
Medication prescribed physician					2.087 >0.05
Yes	297	58.2	55	56.1	
No	213	41.8	43	43.9	

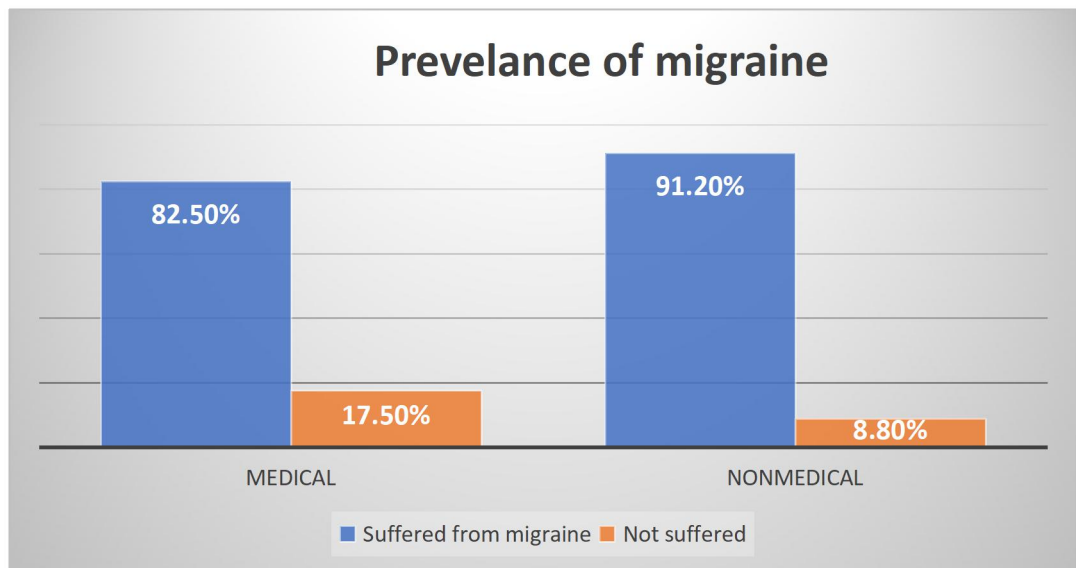


Figure (1): Percentage Distribution of Studied Subjects in relation to prevalence of Migraine

Table (4): Frequency and Percentage Distribution of the Studied Subjects in Relation to their Manifestations of Migraine

Items	Medical n=510		Non-medical n=455		Chi-square P value
	n	%	N	%	
Headache when you wake up:					8.032
Yes	219	43.0	145	31.9	<0.01**
No	291	57.0	310	68.1	
Period headache lasted if it occurred:					5.103 <0.05*
Less than an hour	240	47.0	220	48.4	
From an hour to 4 hours	145	28.3	134	29.5	
From 4 hours to 24 hours	34	6.7	53	11.5	
More than 24 hours	3	0.6	8	1.8	
None	89	17.4	40	8.8	
Age at the first attack (in years):					4.766 <0.05*
6-10	14	2.7	29	6.4	
11-14	84	16.3	56	12.3	
15-18	272	53.2	212	46.6	
19-22	52	10.2	118	25.9	
None	89	17.4	40	8.8	
Diagnosed migraine by physician:					4.013 <0.05*
Yes	63	12.3	45	9.9	
No	359	70.3	370	81.3	
None	89	17.4	40	8.8	
Pulse type:					5.012 <0.05*
Yes	282	55.2	234	51.4	
No	140	27.4	181	39.8	
None	89	17.4	40	8.8	
Side of attack					6.003 <0.05*
One side	247	48.3	173	38.0	
Both side	175	34.3	242	53.2	
None	89	17.4	40	8.8	
Times of experienced headache (in month):					3.980 <0.05*
1-4 times	250	48.9	258	56.7	
5-9 times	78	15.3	70	15.4	
10-14 times	37	7.2	27	5.9	
15-19 times	25	4.9	27	5.9	
≥20 times	32	6.3	33	7.3	
None	89	17.4	40	8.8	
Pain of migraine radiated to:					4.001 <0.05*
Nose	39	7.6	27	5.9	
Back of the head	175	34.2	213	46.8	
Behind the left eyebrow	53	10.4	50	11.0	
Behind the right eyebrow	47	9.2	34	7.5	
Behind the left eye	13	2.5	11	2.4	
Behind the right eye	95	18.6	80	17.6	
None	89	17.4	40	8.8	

Table (5): Frequency and Percentage Distribution of Studied Subjects in Relation to their Knowledge about Migraine

Items	Medical n=510		Non-medical n=455		Chi-square P value
	No	%	No	%	
Definition of Migraine	456	89.4	352	77.4	6.043 <0.05*
Causes	273	53.5	218	47.9	3.880 <0.05*
Symptoms associated with a migraine	449	88.0	271	59.6	5.029 <0.05*
Factors increasing symptoms of migraine	462	90.6	208	45.7	4.111 <0.05*
Factors relieving symptoms of migraine	438	85.9	185	40.7	7.013 <0.05*

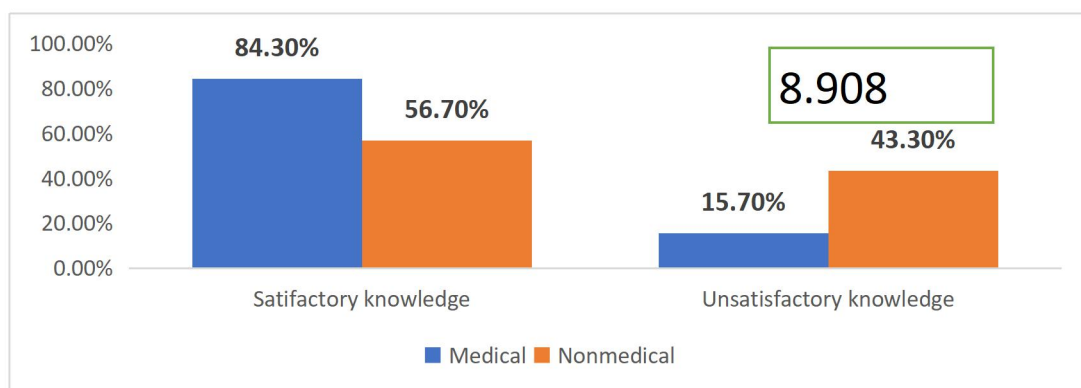


Figure (2): Percentage Distribution of Studied Subjects in Relation to their Total Knowledge about Migraine

Table (6): Frequency and Percentage Distribution of Studied Subjects in Relation to Their Development of Headache Symptoms Before, during, and Post A migraine Attack

Items	Medical n=510		Non-medical n=455		Chi-square P value
	No	%	No	%	
Headache symptoms develop:					7.089 <0.01**
Immediately	64	12.5	58	12.7	
Gradually	446	87.5	397	87.3	
Symptoms before the migraine attack:					5.122 <0.05*
Neck stiffness	60	11.8	49	10.7	
Nausea and vomiting	40	7.8	23	5.1	
Eye lacrimation	52	10.2	64	14.1	
Drowsiness	73	14.3	99	21.7	
Blurring of vision	56	11.0	220	48.4	
None	325	44.9	0	0	
Symptoms during the migraine attack					4.888 <0.05*
Nausea and vomiting	41	8.0	42	9.2	
Visual disturbances	328	64.3	265	58.2	
Hearing noises	30	5.9	57	12.5	
Numbness on one side of the head	73	14.3	71	15.6	
Weakness on one side of the head	38	7.5	20	4.5	
Symptoms post a migraine attack					5.301 <0.05*
Confusion	10	2.0	29	6.4	
Moodiness	89	17.5	99	21.8	
Dizziness	227	44.5	217	47.7	
Weakness	80	15.7	69	15.1	
Sensitivity to light and sound	104	20.3	41	9.0	

Table (7): Frequency and Percentage Distribution of Studied Subjects in Relation to their Factors Causing, Relieving and Preventing Provoking the Migraine Pain.

Items	Medical n=510		Non-medical n=455		Chi-square P value
	N	%	N	%	
The symptoms appeared:					
Less than 1 hour before the headache	53	10.4	55	12.1	2.098 >0.05
In conjunction with headache	395	77.5	324	71.2	
After a headache	62	12.1	76	16.7	
Precipitating factors causes of migraine:					
Loss Of Sun Exposure	32	6.3	52	11.4	3.007 >0.05
Sedentary Life And Irregular Exercise	116	22.7	75	16.5	
Long Hours Of Sleep	65	12.7	77	16.9	
Prolonged Use Of A Computer Or Mobile Phone	297	58.3	218	47.9	
Smoking	0	0	22	4.8	
Obesity	0	0	11	2.4	
Reliving & preventing measures to guard against attacks:					
Muscle relaxation	99	19.4	147	32.3	4.990 <0.05*
Muscle relaxation, analgesics and exercise	394	77.3	228	50.1	
Muscle exercises only	17	3.3	80	17.6	
Types of foods & drinks items provoking migraine:					
Cold food as ice cream	134	26.3	119	26.2	6.001 <0.05*
Tea and coffee	163	32.0	155	34.1	
Chocolate	56	11.0	74	16.3	
Salty food	78	15.3	53	11.6	
Take away meals	79	15.4	54	11.8	

Table (8): Frequency and Percentage Distribution of Studied Subjects in Relation to their Migraine Disability Assessment at Last 3 Months.

Items	Medical n=510		Non-medical n=455		T test P value
	No	%	No	%	
Collage misses due to headaches (in days):					
1-5	377	73.9	355	78.0	4.267 <0.05*
6-10	30	5.9	46	10.1	
11-20	8	1.6	5	1.1	
21+	6	1.2	9	2.0	
None	89	17.4	40	8.8	
Productivity at collage reduced by half or more (in days):					
1-5	285	55.9	273	60.0	4.907 <0.05*
6-10	69	13.5	82	18.0	
11-20	28	5.5	39	8.6	
21+	39	7.7	21	4.6	
None	89	17.4	40	8.8	
Did not do household collage at last 3 months:					
1-5	270	52.9	290	63.7	6.003 <0.05*
6-10	82	16.2	69	15.2	
11-20	25	4.9	25	5.5	
21+	44	8.6	31	6.8	
None	89	17.4	40	8.8	
Productivity in household work reduced by half or more:					
1-5	291	57.1	274	60.2	8.134 <0.01**
6-10	75	14.7	64	14.1	
11-20	20	3.9	45	11.9	
21+	35	6.9	32	7.0	
None	89	17.4	40	8.8	
Family, social or leisure activities missed:					
1-5	298	56.7	261	57.4	6.890 <0.01**
6-10	75	14.7	59	13.0	
11-20	21	4.1	34	7.5	
21+	36	7.1	61	13.3	
None	89	17.4	40	8.8	

Items	Medical n=510		Non-medical n=455		T test P value
	No	%	No	%	
Frequency of days which headache lasted:					5.879 <0.05*
1-5	241	47.3	226	49.7	
6-10	87	17.1	85	18.6	
11-20	43	8.4	39	8.6	
21+	50	9.8	65	14.3	
None	89	17.4	40	8.8	
Average score on how painful were these headaches					7.045 <0.01**
≤ 3	83	16.3	151	33.2	
4 – 7	255	50.0	172	37.8	
>7	83	16.3	132	29.0	
None	89	17.4	0	0	

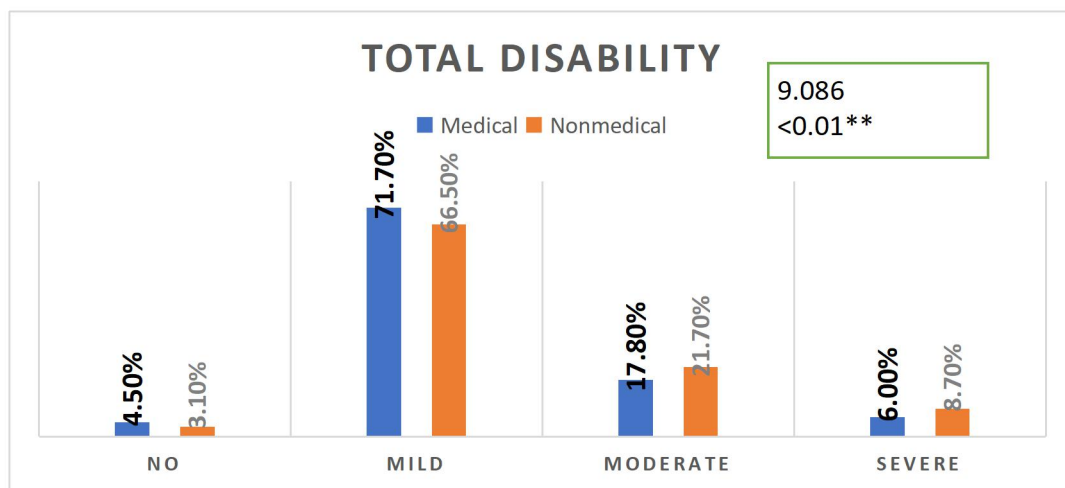


Figure (3): Percentage Distribution of the Studied Subjects in Relation to their Total Disability

Table (9): Distribution of Studied Subjects in Relation to their Lifestyle Habits

Lifestyle habits	Medical n=510						Non-medical n=455						Mann-Whitney test
	High		Moderate		Low		High		Moderate		Low		
	No	%	No	%	No	%	No	%	No	%	No	%	
Physical activity	200	39.2	224	43.9	86	16.9	178	39.1	212	46.6	65	14.3	4.013 <0.05*
Stress	177	34.7	193	37.8	140	27.5	160	35.2	197	43.3	98	21.5	4.807 <0.05*
Diet	205	40.2	205	40.2	100	19.6	169	37.2	173	38	113	24.8	3.777 <0.05*
Weight	292	57.3	187	36.7	31	6	215	47.3	180	39.6	55	12.1	3.994 <0.05*
Sleep	195	38.2	223	43.7	92	18.1	210	46.2	205	45.1	40	8.7	5.017 <0.05*
Fitness	171	33.5	265	52	74	14.5	123	27	240	52.7	92	20.3	6.002 <0.05*
Goals	202	39.6	279	54.7	29	5.7	149	32.7	200	44	106	23.3	8.096 <0.01**

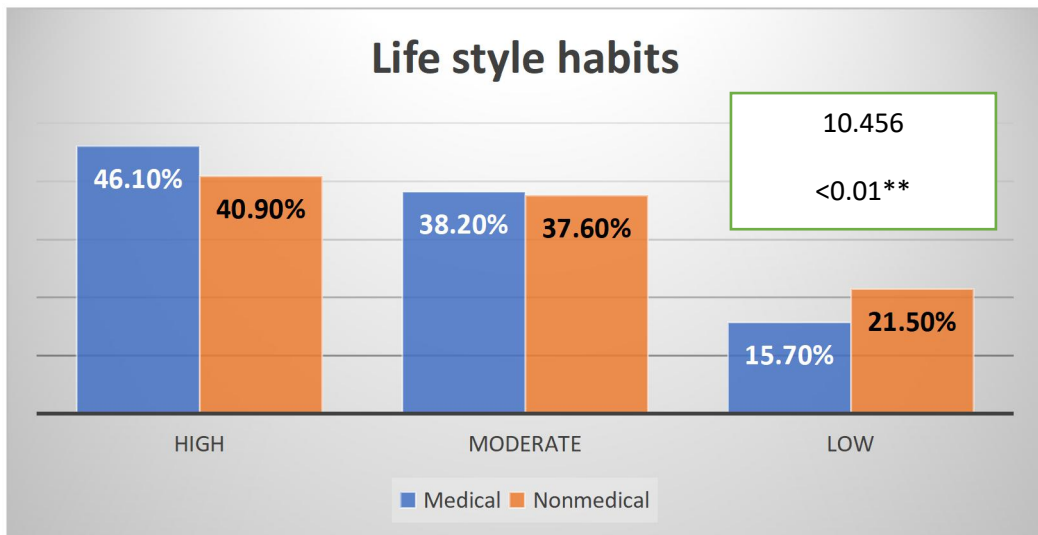


Figure (4): Distribution of Studied Subjects in Relation to their Total Lifestyle Habits

Table (10): Correlation between studied variables for medical students and Nonmedical students

Items		Total knowledge medical students	Total disability medical students	Total lifestyle medical students	Total knowledge nonmedical students	Total disability nonmedical students	Total lifestyle nonmedical students
Total knowledge	r. p		-0.356 <math><0.05^{*}</math>	0.416 <math><0.05^{*}</math>		-0.356 <math><0.05^{*}</math>	0.416 <math><0.05^{*}</math>
Total disability	r. p			-0.671 <math><0.01^{**}</math>			-0.671 <math><0.01^{**}</math>

*Slight significant <math><0.05</math> *high significant <math><0.01^{**}</math>

Discussion:

Regarding answering the research question related to the prevalence and characteristics of migraine in medical and non-medical students of Zagazig University, the present study results revealed a highly prevalent migraine among the studied students University. These results might be due to different stressors and triggering factors in different universities and in different areas, like COVID-19 epidemics during the data collection from the internship students of nursing. Furthermore, the curricula in the Faculty of Pharmacy, and Faculty of Nursing especially the internship students, and Faculty of Education, and Faculty of Engineering requires continuous effort, hard work, and concentration, and, thus, evaluation and management of migraine among medical students or non-medical are of great importance. Therefore, educational and urgent

programs should be started to undertake early detection of students at risk. As well, geographical location, socioeconomic and physical activities could also be a contributing factor in variation of migraine prevalence.

Moreover, in this study, the prevalence of migraine was high among females in the two groups, this phenomenon may be due to hormonal influence especially estrogen. Estrogen increases the Ca^{2+} levels and lowers Mg^{2+} level, causing an imbalance that may enhance neuronal excitation and stimulate migraine. It also enhances the synthesis and release of calcitonin gene-related peptide (CGRP) and nitric oxide, which may provoke migraine by reinforcing vasodilatation with activating and transmitting pain signals to the trigeminal nerve (Rojano et al., 2018). This finding agrees with that of Rafi et al. (2021) in Bangladesh, who found that 90% of students suffered from moderate to severe migraine headache. Another earlier carried out by Zarea

et al. (2018), in Iran, revealed that 81.53% of participants had experienced migraine. The findings of this present study were higher as compared with several studies accounting for 27.9%, in Kuwait University (Al-Hashel et al., 2014); 61.8% in Kingdom of Saudi Arabia (Mays et al., 2016); 26.3% in another Saudi Arabia, study done in Jeddah by Ibrahim et al. (2017), 51.5% among non-medical students and 12.7% among medical students in KSA (Alharbi et al., 2018); 30% in India (Raju, 2018), 8.9% in Croatia (Xiao & Yaojie, 2018), 30.5% in Spain (Torres-Ferrus et al., 2020), 34% in Wollo University (Birkie et al., 2021), 13.06% in Gondar University (Birru et al., 2016), 35% in Nepal (Manandhar et al., 2015), 7.9% in Southeast China (Gu & Xie, 2018); 28% in India (Menon & Kinnera, 2021). These differences might be due to time variation, cultural and geographical differences, environmental factors, and sampling size differences.

Concerning medication used in the present study, slightly more than three fifths of the medical group used Panadol for migraine and more than tenth of the medical group used Ibuprofen while most of the non-medical group used it. This might be due to that Panadol migraine is an effective, clients with moderate to severe migraines experienced effective relief with just one dose. These findings are in disagreement with those of Alharbi et al. (2018), in Hail University, KSA who reported that acetaminophen (paracetamol) was the most common drug used for migraine reported by 57.3% for nonmedical and 26.2% for medical students. However, another study for the same author, in KSA as well found that Acetaminophen was used by 83.1% followed by Mefenamic acid (24.6%) as the most commonly used drugs for migraine. This difference might be due to geographical differences, and sampling size differences. As well, in the current study, more than half of the both groups demonstrated using medication with physician prescription. These findings could be explained by a relatively light severity of migraine. As well as, over-the-counter analgesics are easily available. Similarly, a study done in Beni-Suef University, by Oraby et al. (2021), who found that 35.4% of medical students with migraine sought medical advice

for their headache; 32.5% of them visited a neurologist, 25% visited an ophthalmologist, and 22.5% visited an internist.

As regards family history of migraine, the current study results reported that, less than half of non-medical students compared to more than one third of medical students had their families suffered from migraines. This might be due to that migraine may be a hereditary disease. Research indicated that both genetic and environmental factors can lead to migraine. According to the American Migraine Foundation in a very recent study, revealed that a person with one parent with migraine had a 50% chance of developing migraine (Smith, 2021). In a previous study, done by Al-Hashel et al. (2014), in Kuwait University, they reported that family history has an important role in the prevalence of migraine, because 53.3% of their sample migraine had positive family history of migraine with highly significant association ($p < 0.0001$).

Concerning manifestation of migraine in the present study, the results revealed that there was a highly significant difference regarding presence of migraine when wake up between medical and non-medical groups (p value < 0.01). As well, there were significant differences regarding subjects headache period, first attack age, diagnosed migraine by physician, pulse type, headache at one side, experienced times of headache and pain of migraine radiated to, between medical and non-medical groups (p value < 0.05). For, less than half of the medical and non-medical groups' headache lasted for less than one hour, more than half of the medical group and less than half of the non-medical group had first attack of headache at 15 to 18 years old. Moreover, more than two thirds of the medical group and majority of the non-medical group were diagnosed of migraine by physicians. Additionally, less than half of the medical group had migraine at one side while, more than half of the non-medical group had migraine at both sides.

Considering, development of headache symptoms, majority of the medical group and non-medical group had gradual headache symptoms, while, about two thirds of the medical group and more than half of the non-

medical group had visual disturbances during headache attack, and less than half of the medical and non-medical groups had dizziness post headache attack. This might be due to these associated symptoms, known as migraine variant, when more prominent than the headache, it makes the diagnosis difficult and delay the management. As well, migraine is a major disability inducing disease. These results are supported by **Rafi et al. (2021)** in **Bangladesh**, who found 90% of their participants reported suffer from moderate to severe migraine, 56% had more than 5 attacks within the past month, nausea was the most commonly associated symptom (83.5%), followed by photophobia (72%) and vomiting (53%). More than 75% migraineurs had unilateral headache while more than 83% had pulsatile type of headache, psychological stress was reported most commonly as trigger for a migraine attack (55%), followed by irregular sleep (49%), noise (30.5%), use of electronic devices (30.5%) and physical activities (23%). Likewise, **Alharbi et al. (2018)**, in **KSA**, who found that 44.4% of medical and 45.2% of nonmedical, had their first attack at the age of 18-22 years, and 20.7% of non- medical and 31.0% of medical had migraine attack lasting 5-12 hours.

Regarding answering the research question related to knowledge level about migraine in medical and non-medical students of Zagazig University. This study results revealed that; majority of the medical group and more than three quarters of the non-medical group defined migraine correctly, also, majority of the medical group and less than three fifths of the non-medical group reported correct symptoms associated with a migraine. As well, more than half of the medical group had correct answer about migraine is a hereditary disease. Moreover, most of the medical group had correct answers about factors increasing symptoms of migraine compared to more than half of the non-medical group who gave incorrect ones. Concerning factors relieving symptoms of migraine, majority of the medical group had correct answers compared to almost three fifths of the non-medical group who showed incorrect ones.

Overall, majority of the studied medical group and more than half of the non-medical

group had satisfactory knowledge about migraine. This could be attributed to that medical student curriculum includes study this topic, and the non-medical unsatisfactory knowledge could be explained most of doctors don't give their clients had enough knowledge about their illness symptoms, diagnosis, prevention and treatment. Similarly, in a study carried out by **Alkudhairi et al. (2018)**, in **Saudi Arabia**, they found the level of knowledge was insufficient among 56.8% of non-medical students. These results matched also with those of **Alharbi et al. (2018)**, in **KSA**, who in a similar study found that, 48.9% of non-medical and 84.6% of medical students had a good background about migraine.

Regarding answering research question about degree of disability of migraine among medical and non-medical students of Zagazig University, this study results revealed that about three quarters of the medical group and more than three quarters of non-medical group showed missed work or school because due to headaches for at least 5 days at last 3 months. More than half of the medical group and three fifths of non-medical group reduced productivity at work or school by half or more for at least 5 days at last 3 months. More than half of the medical group and less than two thirds of non-medical group were not doing household work, at last 3 months for at least 5 days. Additionally, less than three fifths of the medical group and three fifths of non-medical group reduced productivity in household work by half or more for at least 5 days and both groups and non-medical group missed family, social or leisure activities for at least 5 days at last three months. Furthermore, half the medical group and more than one third of non-medical group had 4 to 7 average score on how painful were these headaches.

Overall, minorities of the medical group and non-medical group had no disability. About three quarters of the studied medical group and more than two thirds of the non-medical group had mild disability, and minorities of both groups had severe disability. It the point of view of the researches, this rate of disability decreased student productivity, which can be up to half of the total productivity. Migraine sufferers are mild to moderately disability features by signs and symptoms such

as loss of concentration, nausea, vomiting, and increase pain. With exertion, migraine sufferers were unable to perform daily activities. Moreover, migraine disability affects their quality of life, as it is connected with having “unhealthy lifestyle” and other medical comorbidities. This finding matched the results of the study by **Torres-Ferrus et al. (2020)**, in **Spain** who found that 44.1% showed some degree of migraine-related disability. This finding is also consistent with that of a study conducted by **Shaik (2015)**, in **Malaysia**, which reported that one third had moderate migraine disability, which rendering them unable to carry out daily activities.

Regarding answering the research question related to lifestyle habits among medical and non-medical students of Zagazig University, there were significant differences regarding subject’s physical activity habits, stress habits, diet habits, weight habits, sleep habits, fitness habits, and goals between medical and non-medical groups. Results revealed that less than half of both the medical group and non-medical group had moderate physical activity habits. As well, more than one third the medical group and more two fifths of non-medical group had moderate stress habits. Less than two fifths the non-medical group had moderate diet habits compared to an equal percentage of slightly more than two fifths of medical group had either high or moderate diet habits. Additionally, more than half of the medical group and less than half of non-medical group had high weight habits, and more than two fifths of the medical group had moderate sleep habits while the non-medical had high sleep habits. Furthermore, more than half of both groups had moderate fitness habits. As well, more than half the medical group and more than two fifths of non-medical group had moderate goals habits. Overall, less than half of medical students compared to two fifths of non-medical had high lifestyle habits. The researchers view that any changes in lifestyle such as avoiding migraine triggering factors, maintaining regular sleep patterns, and eating and working habits all effectively contribute to migraine prevention. This finding was similar to that of a study done in **Spain**, by **Torres-Ferrus et al. (2020)**, who reported that lower

physical activity and higher weight gain were also significantly associated with migraine.

As regards correlations between the studied variables the present study showed that there is a positive correlation between variables among studied medical students. There were positive correlations between total knowledge and total disability and total lifestyle. Additionally, there was a positive correlation between total knowledge and total disability and total lifestyle. It the point of view of the researches, this management of migraine requires a combination of medical and non-medical treatments including having healthy diets, minimum amount of caffeine consumption, and identification and avoidance of the triggering factors. So, education about lifestyle factors and knowledge were an important part of any migraine management plan. This finding supported by **Menon and Kinnera (2021)**, in **India**, who mentioned that there was a positive correlation between total knowledge and total disability & total lifestyle ($p < 0.01$).

Conclusion:

Based on the study results the following conclusion can be deduced: The study showed that the prevalence of migraine among the studied students of Zagazig University was very high. Additionally, nearly three quarters of the medical group and majority of the non-medical group were diagnosed of migraine by physicians. Furthermore, the majority of the medical group and more than half of the non-medical group had satisfactory knowledge about migraine. Moreover, less than three fifths of the medical group and less than half of the non-medical group demonstrated that prolonged use of a computer or mobile phone as a cause of migraine, and more than three quarters of the medical group and half of the non-medical group used muscle relaxation, analgesics and exercises as relieving and preventive measures to guard against attacks. Overall, minorities of both groups had no disability. About three quarters of the medical group and two thirds of the non-medical group had mild disability. Additionally, less than half of medical students compared to two fifths of non-medical had high lifestyle habits. There was a positive correlation between total

knowledge and total disability and total lifestyle among medical and non-medical students.

Recommendations:

Based on the study findings and research questions the following recommendations can be suggested:

- Early screening and diagnosis of migraine and adequate management can be beneficial for students to reduce the burden of migraine and consequently enhance their academic performance.
- Stress management programs should be developed so that students can learn the correct methods of stress alleviation, which in turn will lessen the impact of migraine on their academic performance and other activities.
- Attention should be given to those study participants who had a family history of migraine.
- Further community-based population studies and awareness programs should be carried out to improve knowledge about migraine prevention and treatment.
- Replication of the study on a larger probability sample acquired from different geographical areas in Egypt to figure out the main aspects of the migraine problem.

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