



## Determining the association and the resulting effects between family history and depression with migraine.

**Osamah Abdulhameed Aleewe**

M.B.Ch.B.-F.I.C.M.S. (**Neurology**)  
Iraqi Ministry of Health, Baghdad Al-Rusafa Health Directorate, Dr. Saad AL Witry Hospital for Neurosciences, Baghdad, Iraq.  
[Oah2726@yahoo.com](mailto:Oah2726@yahoo.com)

**Ibrahim Safaa Kareem**

M.B.Ch.B.-(CABS) Candidate of Arab board of psychiatry,  
The Psychiatric Office Manager.  
Iraqi Ministry of Health, Thi Qar Health Office, The General Al-Husein Hospital, Thi-Qar, Iraq.  
[dibraheem2000@yahoo.com](mailto:dibraheem2000@yahoo.com)  
[Fsky80@yahoo.com](mailto:Fsky80@yahoo.com)

**Temeem Majid Nassir**

M.B.Ch.B.-F. I. B. M. S. (**Neurology**)  
Neurologist  
Iraqi Ministry of Health, Maysan Health Office, Maysan Teaching Hospital, Maysan, Iraq.  
[drtemeem@gmail.com](mailto:drtemeem@gmail.com)

**ABSTRACT**

**Background**

It is the most common type. Up to 66% of migraine attacks are without aura and was formerly called a classic migraine, in which the patient has five distinct typical attacks in his life and

Migraines last 4 - 72 hours

**Purpose**

The research aims to determine the association and the resulting effects between family history, depression, and migraine headaches.

**Patient and Method**

Based on a cross-sectional study of 200 patients collected from different Hospitals in Iraq. In this study, migraine patients were relied upon, Primary and secondary headache patients were excluded.

**Result**

Relying on the statistical analysis program to analyze data and demographic information, a statistically significant relationship was found between family history and migraine headache patients with a p-value of 0.0045

**Keywords:**

Migraine, Headache, Family History, Depression, Episodic, Chronic

**Introduction**

It is a type of primary headache in the usual cases; the attack lasts from 4 to 72 hours, the symptoms can be severe, and the pain is often one-sided and may also be accompanied by

symptoms such as nausea, sensitivity to light, sound, and smells [1].

In 25% of patients, signs of an epileptic seizure appear, often before the headache but sometimes also after the headache [2].

Migraine is a type of primary headache, that occur due to a disturbance in the nerves, blood vessels, and chemicals in the brain, and it is more common in women, and may affect children sometimes, and occurs in the age period from 10 years to forty years and often disappears at the age of fifty.

Migraines are two to three times more common in women than in men. Children generally do not have migraines. Patients usually develop the disease in their teenage or middle age. In general, migraines are the second most common type of headache after tension headaches. [3,4]

Migraine symptoms are easy to describe. A typical migraine is unilateral, often in the frontal and temporal region of the head, is sharp, throbbing, aggravated by a change in body position physical exertion. The pain is accompanied by increased sensitivity to bright light and loud sounds, and at the height of the pain, nausea, vomiting, and fever may appear [5,6,7].

For a long time, migraines were thought to be related to the vessels that supply the brain, and the aura was thought to arise from the spasm of the arteries in the brain, and the throbbing pain resulted from compensatory vasodilation [8, 9, 10].

It is now known with certainty that migraines are based on the increased excitability of nerve cells in the brain (neurons), and it is not known exactly how it arises, but genetics and family history of migraines play an important role [11,12].

If both parents suffer from migraines, it is very likely That the child also gets sick, and with a pain attack, the excitement spreads from the affected brain cells to the neighboring neurons, then the pathological pain impulses spread to large areas of the brain, including those responsible for pain and so a pain attack occurs [13].

Migraine is the most common cause of recurrent headaches of moderate to severe severity [14].

The prevalence of this disease for one year is 18% in women and 6% in men in Iraq, where migraine usually begins at an early age, and therefore the degree of its severity changes

over the years; After 50 years, some studies have shown a genetic predisposition to migraine headaches [15].

All migraine symptoms occur during an attack, which consists of four stages of development, although not all can be fully represented as most migraine sufferers feel relief between attacks [16].

The migraine precursor phase occurs earlier than all other symptoms of an attack and affects more than half of patients [17].

Aura, if present, is the next stage in which only a third of migraine patients have an aura, and it may not develop in every attack. By definition, an aura is a reflection of a specific process (temporary and not harmful to health) that occurs in the brain and is linked to the mechanism of a migraine attack, as it lasts from 10 to 30 minutes, but it could be longer [18].

The headache phase is the most severe in most people, lasting from several hours to 2-3 days; migraines are usually very severe, most often occurring on one side of the head, but they can also affect the entire head.

The pain most often occurs in the frontal or temporal region, although it can be localized in any part of the head [19].

The last stage is feeling tired, irritable, or depressed, and it is difficult to focus, and these symptoms can last for up to 24 hours [20].

Anxiety and depression are common neuropsychiatric symptoms that seriously affect the quality of life. Depressive disorders are among the leading causes of disability in the world, major depressive disorder is estimated to be the second-largest cause of disease burden after ischemic heart disease, and studies have shown that both anxiety and depression are associated with migraine headaches. The relationship goes both ways, with migraine sufferers more likely to be depressed. Epidemiological studies have shown that migraine sufferers are twice as likely to develop anxiety from depression. Related studies have shown that chronic long-term attacks, severe headaches, longer duration, higher frequency of episodes, poor sleep quality, poor life satisfaction, and other factors are all risk factors associated with migraine patients with anxiety and depression. Mental

and psychological disorders such as depression and sleep disturbances are higher. Research has shown that there is a "dose-response" relationship between the two diseases, which means that there is a relationship between the severity of one disease and the other. Frequent migraine attacks are associated with an increased prevalence of depression and may also result from lower pain thresholds and increased cortical excitability. Mental disorders such as depression are a major risk factor for exacerbating episodic migraines into chronic daily headaches.

## Patient and method

### Patient sample

Data and demographic information of patients suffering from migraine were collected from different Hospitals in Iraq, where 100 patients were collected. Also, 100 control groups were collected, divided into 71 women and 29 men, and the average age ranged between 30 to 45 years.

### Study design

Based on a cross-sectional study of 200 patients collected from different Hospitals in Iraq. In this study, migraine patients were relied upon. The headache diagnosis is considered clinical by clarifying the patients about the headache they suffer from, in addition to the data that can be collected in the medical interview. Patient demographic data Various aspects are taken into account: the onset and location of the pain, as well as the presence of a positive or negative family history.

Data and demographic information were collected for family history with age, and by relying on the distributed questionnaire, and

## Result

existing headache attacks were identified, and Migraines are classified according to patients Which collected

1. Without aura: - Common migraines are at least three times more common than migraines with auras, and the required criteria (IHS) for the diagnosis of migraine without aura are as follows:
  - A- at least five headache episodes fulfilling
  - B- Each attack lasts between 4 and 72 hours (with ineffective or absent treatment)
  - C- moderate to severe pain
2. Migraine headache with aura

One classification of migraine is migraine with typical aura, which is characterized by an aura that precedes the headache. An aura is a complex neurological symptom that usually occurs before the headache, but can also appear after the headache has begun, or persist until the headache stage.

By relying on the cross-tabulation according to the type of migraine, we find that the classification was made on the basis of Chronic and Episodic.

By distributing a questionnaire containing a set of questions about depression, anxiety, and sleep quality rates to patients, the response score was evaluated out of 10 degrees.

### Study period

The period of the study for collecting patient information and data was between two periods, 2-9-2019 to 18-9-2020

### Aim of research

The research aims to evaluate migraine headaches and determine the association and resulting effects with family history depression

**Table 1- Cross-tabulation of control group according to age**

<b>Sex control * age control Cross tabulation</b>													
<b>Count</b>													
		Age control											Total
		30	31	32	33	34	35	36	37	38	39	40	
Sex control	f	7	6	6	6	6	6	7	7	8	6	6	71
	m	3	3	3	3	3	3	2	2	1	3	3	29
Total		10	9	9	9	9	9	9	9	9	9	9	100

**Table 2- characteristics of control results**

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Sex</b>				
f	71	71.0	71.0	71.0
m	29	29.0	29.0	100.0
<b>Smoking</b>				
no	95	95.0	95.0	95.0
yes	5	5.0	5.0	100.0
<b>Alcohol</b>				
no	95	95.0	95.0	95.0
yes	5	5.0	5.0	100.0
Total	100	100.0	100.0	
<b>Family history of migraine</b>				
Yes	12	12	12	88

**Table 3-** results related Depression

T	Mean	Sd
Beck Depression Inventory	6.534	4.24
Scale of depression	5.12	2.9
Scale of Anxiety	4.8	3.3
Sleep Quality	6.874	2.87

**Table 4 –** Cross-tabulation according to type of migraine

age * type * Cross tabulation				
Count				
		type of migraine		Total
		Chronic	Episodic	
Age	33.00	5	4	9
	38.00	10	6	16
	39.00	9	7	16
	40.00	10	7	17
	41.00	4	4	8
	42.00	4	4	8
	43.00	10	7	17
	45.00	4	5	9
Total		56	44	100

**Table 5-** results of patients

	Frequency	Percent	Valid Percent	Cumulative Percent
Sex				
f	53	53	53	53
m	47	47	47.1	100.0
type of migraine				

Chronic	56	56	56	56
Episodic	44	44	44	100.0
Smoking				
no	81	75.0	75.0	82.4
yes	19	17.6	17.6	100.0
Alcohol				
no	87	80.6	80.6	88.0
yes	13	12.0	12.0	100.0
Aura				
with Aura Episodic	10	10	10	90
Chronic	11	10	10	100.0

**Table 6-** results related Depression

T	Mean	Sd
<b>Episodic</b>		
Beck Depression Inventory	8.7	6.6
Scale of depression	6.9	3.6
Scale of Anxiety	8.1	4.4
Sleep Quality	8.4	2.1
<b>Chronic</b>		
Beck Depression Inventory	9.1	7.2

Scale of depression	7.3	3.5
Scale of Anxiety	9.3	4.1
Sleep Quality	8.8	3.67
Family history of migraine	N	%
Episodic	19	44
Chronic	22	56

**Table 7- p-value of results**

T	P
Age	0.23
Sex (female)	0.891
Sex (male)	0.546
Aura	0.01
Smoke	0.93
Alcohol	0.03
Beck Depression Inventory	0.0021
Scale of depression	0.001
Scale of Anxiety	0.005
Sleep Quality	0.001
Family history of migraine	0.0045

**Discussion**

In this study, 200 patients were collected, of whom 100 had migraine headaches and 100 were control groups, and by relying on statistical analysis in analyzing information and demographic data, the real value to age and arithmetic mean for the total control group was  $34.95 \pm 3.20$ . As for migraine patients, it was

$40.09 \pm 3.07$ , and through Table 1, it can be seen in knowing the distribution of the control group depending on age, we find that the listening group was 71 % and the male group was 29 %.

The rate of addicts to smoking and alcohol was very low in control group; in addition to the family history of migraine patients, it

constituted 12% of the total number to the control group. As for the results related to depression, it was low when compared with episodic and chronic.

As for the group of patients, we find that the percentage of females was slightly more than that of the males, and the group of patients was divided into two groups: chronic 56 patients and episodic 44 patients, and the percentage of patients who smoke and alcohol was more than the control group as shown in table 5.

Also, the migraine headache of the group of patients was divided into two groups with aura and without for episodic and chronic.

the ratio of migraine headaches to episodic with aura was ten patients, as for chronic was 11 patients.

The prevalence of migraine headaches can be that higher frequency coincides with the onset of disease symptoms and that there are very common triggers depending on the year of study, such as stress, short periods of sleep, prolonged fasting, poor study habits, anxiety, allergies, volatiles from laboratories, atopy, major insomnia from Respiratory system.

After stratification by sex, a difference in family history and aura presentation was shown in that the prevalence of positive family history was higher in male patients without aura in the symptomatic group.

By studying the tables, we find that the prevalence in family history was more widely distributed among females than males, and significant statistical differences were noted in relation to family history, where the value was 0.0045, and this proves the validity of our study.

An association of migraine headaches with cigarette smoking cannot be demonstrated. Selleck et al. published in 2005 he worked on migraines in Turkey, whose results showed no association between migraines and cigarette smoking; on the other hand, a study by Lopez-Mesonero et al. In 2008, they reported a difference of about a third more than migraine patients with smokers.

It was interesting to find a relationship Statistically significant between migraine with Aura and family history, which indicates that People with a family history have 1.8 times,

this result is consistent with that described by Russell and others in Denmark who got it from First-degree relatives of migraine sufferers Without aura, they had 1.9 times the risk of developing a migraine Without aura and 1.4 times higher than migraine with aura.

In 2015, Martin et al. found 2.2-4.0 times the number of migraine headaches in people with depression than in the general population. Louter et al. found that 45% of migraine sufferers suffered from depression. Although it is widely accepted that migraine and depression are co-morbidities, the data in the literature are unclear, and studies have reported no clear association between migraine and depression.

In addition, studies have suggested that there is a "dose-response" relationship between the two diseases, which means that there is a correlation between the severity of one disease and the other. Louter et al. suggest that frequent migraine attacks are associated with an increased prevalence of depression.

The association between migraine and depression is complex, with both genetic and environmental factors at play. The physiological basis of the relationship between migraine and depression is unclear. It's theorized that the hypothalamus is a potential nexus between the two diseases. Louter et al. noted that the relationship between depression and allodynia "suggests hypothalamic modulation of the trigeminal vascular pathway." Mainero et al. using fMRI found that migraine attack frequency was associated with periaqueductal gray (PAG) and wedge. There is an association between functional connectivity of the nucleus, anterior insula, and hypothalamus.

### Conclusion

A statistically significant association was found with a family history of migraine, as the exploratory OR test showed that patients with a family history were more likely to have migraines.

Small significant differences were found between migraines and their association with depression level. It is also possible that there may be more frequency of migraine triggers



associated with depressive disorders. The association between migraine and depression may also influence treatment options. Beck and others argue that Cognitive behavioral therapy helps patients maintain their daily functions while also learning how to manage chronic pain. At the same time, Cognitive behavioral therapy can also avoid drug interactions and is an effective way to treat migraines and mild to moderate depression.

### Recommendation

1. The disease has a great familial impact, as about 70% of those who suffer from migraines have a first-degree relative who suffers from it, and first-degree relatives of a person who suffers from migraines are more likely to have migraines than other people, at an average of 1.5-2 times more.
2. association was found between migraine and depression, and although migraine and depression are related, the two diseases independently contributed to lower quality of life.

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