

# Burden and Triggering Factors of Migraine with and without Aura: A Study in a Tertiary Care Centre

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## A B S T R A C T

**Introduction:** One of the common debilitation pain disorder is migraine. Migraine is classified into 2 types, migraine with aura and migraine without aura. This study was done to assess the epidemiological and trigger factors between migraine with and without aura.

**Material and methods:** 100 patients with migraine were selected randomly and were divided into 2 groups. Group I had 50 patients who had migraine with aura and 50 without aura. Demographic details, details of headache, triggering factors for the headaches were noted for all the patients as well as the relieving factors.

**Results:** 100 patients with migraine were selected randomly and were divided into 2 groups. Group I had 50 patients who had migraine with aura and 50 without aura. The mean age of the patients in the study was  $35.18 \pm 9.6$  years among the patients with migraine with aura and  $30.91 \pm 5.1$  years among the patients with migraine without aura. Photophobia was seen in 49 (98%) of the cases in patients with aura and in 18% of the cases without aura. The most common triggering factors among the patients was exposure to the environment especially extreme sunlight, lack of proper sleep, stress.

**Conclusion:** Proper counselling must be given to the patients to encourage them to seek medical help for the headaches, so that their quality of life and the burden of headache would reduce.

**Keywords:** Migraine, Aura, Triggering Factors, Relieving Factors

## INTRODUCTION

One of the common debilitation pain disorder is migraine. This is characterized by severe headache with photophobia and phonophobia and sometimes gastrointestinal disturbances which may result in reduction in quality of life, loss productivity and sometimes disability.<sup>1</sup> Some of the comorbidities are psychiatric illnesses such as anxiety and depression.<sup>2</sup> These patients at times may exhibit temperamental dysregulation and may have suicidal tendencies and psychological impairment.<sup>3</sup> It has also been reported that such patients may have defective cognition and dementia.<sup>4-6</sup>

It is one of the most underdiagnosed and under treated disease as there are no biological markers for diagnosis. The diagnosis is therefore done only symptomatically with the help of radiology.<sup>7,8</sup> Migraine is quite prevalent and is estimated to affect more than 80 million patients in USA and Europe alone.<sup>9</sup> According to WHO, it belongs to the highest class of disability. This is very widespread all over the world, so the treatment is of utmost importance.<sup>10</sup> It is the second leading cause of number of years living with this disability, especially in the younger and the middle aged patients<sup>8</sup>.

This disease is known to occur more often in females than in males. Around 15-18% of women in USA are said to be suffering with migraine.<sup>11-12</sup> This is due to the changing hormonal levels in the females.<sup>11,13,14</sup>

Migraine is classified into 2 types, migraine with aura and migraine without aura. A phase of the attack before the onset of headache is called aura. These symptoms can be high sensitivity to light and sound and nausea.<sup>15</sup> These neurological symptoms arise from the cortex or the brainstem and are reversible. These symptoms may last for around 60 minutes before the onset of the headache. It has been reported that 99% of the patients complain of visual symptoms before the headache. The patients may also complain of sensory and language or speech change.<sup>16-18</sup> Some of the patients may experience symptoms after the headache also. These symptoms may include hyperactivity, depression, certain food cravings, fatigue, repetitive yawnings etc.

These are a lot of similarities in the clinical presentation between the migraine with aura and without aura, however, whether they are a same entity or different is still unclear. This study was done to assess the epidemiological and trigger factors between migraine with and without aura.

## MATERIAL AND METHODS

This study was done by the department of medicine at Mallareddy medical college for women during the period 18 months. This study was approved by the Institutional ethical Committee. The patients between the ages 18 to 50 years who had come to the hospital with headache were screened for migraine. The nature of the study was explained to the patients and informed consent was taken from all of the patients who were included into the study. 100 patients were selected randomly and were divided into 2 groups. Group I had 50 patients who had migraine with aura and 50 without aura.

Patients with headaches other than migraine, any underlying pathology, psychiatric illness and underlying neurological illness, overuse of drugs for headaches which could hinder the outcome of our study were excluded from the study.

All the patients were subjected to medical and radiological examination. Blood samples were collected from the cubital vein for routine biochemical and hematological investigations such as Random Blood Sugar levels, Complete Blood picture, Haemoglobin estimation, Erythrocyte Sedimentation Rate, Liver Function test, Renal Function test etc. The patients were diagnosed as migraineurs with or without aura based on the International Headache Society, 2013 ICHD-3 beta.<sup>19</sup> Demographic details were taken from all the patients, including socioeconomic status, education, smoking and non smoking, alcoholism. The details of the headache, such as frequency, intensity, duration were also collected. They triggering factors for the headaches were noted for all the patients as well as the relieving factors. The triggering factors were the conditions which enhances the chances of headache and relieving factors were the conditions that reduces the headache.

Statistical analysis was done using SPSS software. Mann Whitney's test was done for comparison of the 2 groups for significance.

## RESULTS

100 patients were included into the study and 50 had migraine with aura and 50 had migraine without aura. Out of the 50 with aura, 41(82%) were females and 9 (18%) were males and out of the patients without aura, 39 (78%) were females and 11 were males. Out of the total 100, 80 (80%) were females and 20 (20%) were males (fig: 1).

The mean age of the patients in the study was 35.18 ± 9.6 years among the patients with migraine with aura and 30.91 ± 5.1 years among the patients with migraine without aura. At the start of migraine, the mean age was 18.25 ± 3.41 years for the patients with aura and 19.77 ± 4.59 years for the patients without aura. This difference was however not significant. 11 (22%) of the patients with aura and 8 (16%) of them without aura were diabetic. The intensity of pain in the patients with aura was significantly more than those without aura. Among the patients with aura, the headache was severe in 34 (68%) of the cases, moderate in 14 (28%), and mild in 2 (4%). Among those without aura, 26 (52%) had severe headaches, 19 (38%) had moderate and 5 (10%) had mild. The pain was unilateral in 7 (14%) of the cases

among the patients with aura and 14 (28%) among the patients without aura, bilateral in 5 (10%) and 9 (18%), UL to BL in 38 (76%) and 27 (54%) among patients with aura and without aura respectively. 15 (30%), 18 (36%), 2 (4%), 1(2%) of the patients with aura experiences severe, moderate, mild and no nausea respectively while among the patients without aura, the same was experienced in 9 (18%), 13 (26%), 16 (32%) and 12 (24%) respectively. Photophobia was seen in 49 (98%) of the cases in patients with aura and in 18% of the cases without aura. 17 (34%) each had either severe or moderate phonophobia in patients with aura, but only 1 (2%) had a severe phonophobia among the patients without aura. Dizziness was observed in 18 (36%) and 4 (8%) among the patients with and without aura respectively. 9 (18%) of the patients with aura had speech disorder during the headache and 43(86%) had loss of concentration. Among the patients without aura, speech disorder was seen only in 1 (2%) patient but loss of concentration was observed in 41 (82%) of them (Table: 1).

The most common triggering factors among the patients was exposure to the environment especially extreme sunlight. 46 (92%) of the patients with aura and 35 (70%) of the patients without aura complained of the same. The most common trigger was return to the home after an outing in the sun, especially in the afternoon. The common complaint was that on return, spots appear in front of the eyes and within the hour, headache sets in. Another common trigger was lack of proper sleep in both the cases. This was the most common among the patients without aura, where 42 (84%) complained of the same while among the patients with aura, it was seen in 33 (66%) of the cases. Stress was another common trigger seen

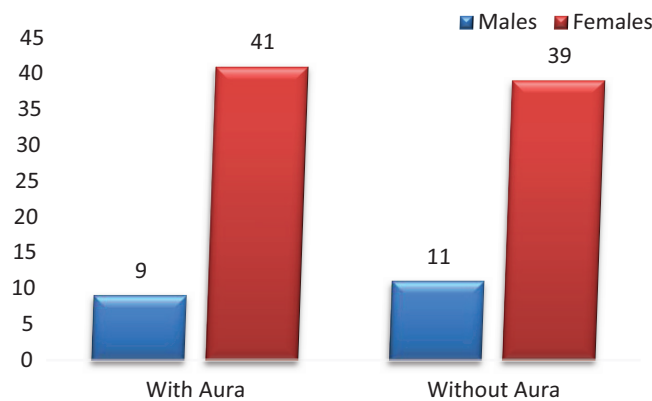


Figure-1: Sex wise distribution of patients

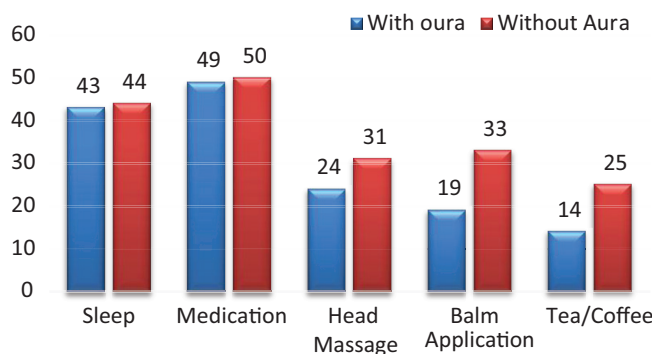


Figure-2: Relieving factors

Variables	Group I Migraine with aura	Group II Migraine without aura
Mean age (±SD) in years	35.18 ± 9.6	30.91 ± 5.1
Mean age at the start of migraine	18.25 ± 3.41.	19.77 ± 4.59
Diabetes mellitus	11 (22%)	8 (16%)
Familial History	28 (56%)	12 (24%)
Pain Intensity		
Mild	2 (4%)	5 (10%)
Moderate	14 (28%)	19 (38%)
Severe	34 (68%)	26 (52%)
Pain site		
Unilateral	7 (14%)	14 (28%)
Bilateral	5 (10%)	9 (18%)
UL to BL	38 (76%)	27 (54%)
Nausea		
None	2 (4%)	12 (24%)
Mild	15 (30%)	16 (32%)
Moderate	18 (36%)	13 (26%)
Severe	15 (30%)	9 (18%)
Photophobia		
None	1 (2%)	41 (82%)
Mild	2 (4%)	7 (14%)
Moderate	15 (30%)	2 (4%)
Severe	32 (64%)	0
Phonophobia		
None	4 (8%)	9 (18%)
Mild	12 (24%)	21(42%)
Moderate	17 (34%)	19 (38%)
Severe	17 (34%)	1 (62%)
Dizziness		
Yes	18 (36%)	4 (8%)
No	32 (64%)	46 (92%)
Speech Disorder		
Yes	9 (18%)	1 (2%)
No	41 (82%)	49 (98%)
Loss of concentration		
Yes	43 (86%)	41 (82%)
No	7 (14%)	9 (18%)
Frequency per month	4.19 ± 1.06	2.28 ± 0.91
Duration of migraine (hours)	23.62 ± 8.5	20.22 ± 5.12
Poor quality of life	47 (94%)	44 (88%)
<b>Table-1: Pain characteristics among patients with and without aura</b>		

in 24 (48%) of Group 1 and 27 (54%) of group 2. Sudden external climatic changes and onset of summer were other common causes seen in 23 (46%) of the cases with aura and 12 (24%) of the cases without aura. Continuous watching of Tv and mobiles was another common cause as seen in 16 (32%) of patients with aura and 20 (40%) of patients without aura (Table: 2)

Pain medication was the best way of finding relief to most of the patients in both the categories with migraine. The other common relieving factor was sleep as seen in 43 patients with aura and 44 patients without aura. Head massage, especially with oil, brought relief to 24 (48%) of patients with aura and 31 (62%) of the patients without aura. Application of pain balm was preferred among 19 (38%) of the patients with

Variables	Group I Migraine with aura	Group II Migraine without aura
Exposure to environment		
Yes	46 (92%)	35 (70%)
No	4 (8%)	15 (30%)
Erratic sleep		
Yes	33 (66%)	42 (84%)
No	17 (34%)	8 (16%)
Stress		
Yes	24 (48%)	27 (54%)
No	26 (52%)	23 (46%)
Climatic changes		
Yes	23(46%)	12 (24%)
No	27 (54%)	38 (76%)
Tv/Mobiles		
Yes	16 (32%)	20 (40%)
No	34 (68%)	30 (60%)
Travel		
Yes	38 (76%)	29 (58%)
No	12 (24%)	21 (42%)
Menstruation		
Yes	22 (53.7%)	16 (41%)
No	19 (46.3%)	25 (64.1%)
Erratic Food Habits		
Yes	36 (72%)	26 (52%)
No	14 (28%)	24 (48%)
<b>Table-2: Triggering Factors</b>		

aura and 33 (66%) of the migraine patients without aura. A strong tea or coffee stimulant was taken by 14 (28%) of the patients with aura and 25 (50%) of the patients without aura (Fig: 2)

## DISCUSSION

The maximum burden of this condition was seen in females especially in their 30s. 80% of the females in this study had migraine compared to 20% males. This was in accordance with other studies, where a high prevalence was observed, more than twice, among females in comparison to males.<sup>20</sup> Migraine among the female is attributed to the female sex hormones especially during the large hormonal shifts such as that during pregnancy, puberty or menopause. It was reported that the first menstrual period is the major risk factor for migraine.<sup>21,22</sup> In women, other social factors, such as adverse experiences in childhood, such as assault, violence and sexual harassment are a major cause for migraine.<sup>23-25</sup> However, in our study, we did not take these factors into consideration. In a study by Rasmussen and Olesen, menstruation, influence of pregnancy and oral contraceptives had a greater role in patients without aura than with aura. We however found no significance between the two groups.<sup>26</sup> A study by Cupini et al stated that there was a significant percentage of patients without aura to have migraine during menstrual periods than those with aura, but in pregnancy, those patients with migraine with aura were significantly higher. During menopause or menarche, there was no difference between the two groups.<sup>27</sup>

The mean age of the patients in the study was 35.18 ± 9.6 years among the patients with migraine with aura and 30.91 ±

5.1 years among the patients with migraine without aura. At the start of migraine, the mean age was  $18.25 \pm 3.41$  years for the patients with aura and  $19.77 \pm 4.59$  years for the patients without aura. The lowest age was 15 years and highest was 25 years. A study in Europe reported that migraine is more prevalent during 20–50 years of age., while a study in USA reported the common age group to be between 18 – 44 years.<sup>28,29</sup>

The most common aggravating factors for the disease was exposure to unfavourable environment, especially extreme heat and light. Stress was observed in 51% of the cases, erratic sleep in 75%. A study by Rasmussen and Olesen reported stress to be the most common cause for migraine among the patients in their study.<sup>26</sup> Addiction to TV and mobiles as a cause of headaches was seen in 36%. 38 out of 80 women had migraine during their menstrual period. Most of the women show improvement of migraine after pregnancy or menopause.<sup>30-32</sup> Irregular eating habits and unhealthy foods are also a cause for migraine as seen in 62 patients. This was in concordance with another study by Rothrock JF, who also reported intake of certain foods like chocolates and cheese were common among with migraine than normal healthy controls.<sup>33</sup>

The intensity of pain was severe in most of the cases in both the groups. Overall, 60% of the patients with migraine had severe intensity of pain, with the most common site being UL to BL. This was similar to a study by Ray et al, where the intensity of pain was severe in 71.8% of the cases in migraineurs with aura and 59% in those without aura. The most predominant site of pain was UL to BL in 62% of the cases in migraineurs with aura and 42.8 % in those without aura.<sup>34</sup>

Photophobia and phonophobia were observed more in the patients who had migraine with aura (98%) rather than those without aura (18%). In a study by Rasmussen and Olesen, 90% of the patients had visual disturbances.<sup>26</sup> Speech disorder was seen in 18% of our cases with aura compared to 2% without, while a study by Rasmussen and Olesen reported that speech, sensory and motor disturbances were very rare and occurred only in presence of visual disturbance. Similar results were found in a study by Hansen et al.<sup>15</sup>

Nausea was observed in almost all the patients of migraine with aura and in 76% in patients without aura. Similar was the case with phonophobia, which was seen in 98% of the cases with aura, However, this was absent in 82% of the cases without aura.

Most of the patients complained of poor quality of life during the migraine attacks. This was consistent with studies by Lipton et al, who also observed low quality of life among the patients with migraine.<sup>35</sup> Anxiousness and stress was observed in female patients more than the male patients with migraine.<sup>36,37</sup>

## CONCLUSION

Migraine is more prevalent among women than men, and the most common cause is exposure to extreme environmental conditions such as sunlight, stress, erratic sleep and food habits, climatic variations etc among both the migraineurs with and without aura. Photo and phonophobia is more

common among the migraineurs with aura rather than without causing loss in quality of life.

Many of the people with migraine do not seek medical attention, but get relief from home remedies. Proper counselling must be given to the patients to encourage them to seek medical help for the headaches, so that their quality of life and the burden of headache would reduce.

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