

## Comparative Assessment on Etiological Factors and Quality Of Life of Migraine Patients: Students Versus Others – A Prospective Study

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### ABSTRACT

**BACKGROUND:** Migraine is a primary headache disorder characteristically having a unilateral location, pulsating quality, moderate or severe intensity, aggravation by routine physical activity and association with nausea and photophobia and phonophobia but with varied clinical presentations.

**AIM:** To assess and compare the etiological factors and quality of life between students and other migraine patients.

**METHODS:** Subjects are included in the study based on inclusion and exclusion criteria and divided into two groups: - Group-1 contains students and Group-2 has others. Data were collected by using a designed data collection form. The characteristics of headache featuring its onset, frequency, duration and type of pain and other associated migraine symptom were noted. Demographic characteristics of all subjects also were recorded. Medical history included current and previous diseases; medications were also noted.

**RESULTS:** A total of 89 subjects were included. Bright sunlight, noises, stressful events, travelling, sleep deprivation were some of the major trigger factors observed in Group-1. Bright sunlight, noises, sleep deprivation, stressful events, travelling are some of most trigger factors observed in Group-2. The mean MIDAS score observed in Group-1 is 5.40 and in Group-2 is 8.43.

**CONCLUSION:** The present study presents a general idea about trigger factors related to headaches. Bright sunlight, physical activity, noise, stressful events, tea/coffee deprivation, travelling, hunger, sleep, and fatigue parameters were some of the major trigger factors reported by both subject groups. The disability due to migraine is high in Group-2.

**KEYWORDS:** Migraine, Aura, Trigger factors, Quality of life

### I. INTRODUCTION

Headaches are one of the most common complaints patients present with in primary care settings. They are often correlated with stress, tension and a litany of existing medical conditions. Often, patients will live with headache pain for months or even years before seeking care. Over the counter remedies like aspirin, ibuprofen and acetaminophen are often used to reduce symptoms of pressure and pain prior to seeking medical advice. There are actually two main types of headaches, primary and secondary, and can differ greatly in intensity, frequency and duration. Primary: headaches include, but are not limited to, tension-type and migraine headaches and are not caused by other underlying medical conditions. Over 90% of headaches are considered primary. Secondary: headaches result from other medical conditions, such as infection or increased pressure in the skull due to tumor, disease, etc. These account for fewer than 10% of all headaches.<sup>(1)</sup>

### MIGRAINE HEADACHE

Migraine is a genetically influenced complex disorder characterized by episodes of moderate-to-severe headache, most often unilateral and generally associated with nausea and increased sensitivity to light and sound. The word migraine is derived from the Greek word "hemikrania," which later was converted into Latin as "hemigranea." The French translation of such a term is "migraine."<sup>(2)</sup>

## CLASSIFICATION OF MIGRAINE

Migraine can be classified in subtypes, according to the headache classification committee of the International Headache Society: <sup>(3)</sup>

- **Migraine without aura** is a recurrent headache attack of 4 to 72 hours; typically unilateral in location, pulsating in quality, moderate to severe in intensity, aggravated by physical activity, and associated with nausea and light and sound sensitivity (photophobia and phonophobia).
- **Migraine with aura** has recurrent fully reversible attacks, lasting minutes, of typically one or more of these unilateral symptoms: visual, sensory, speech and language, motor, brainstem, and retinal, usually followed by headache and migraine symptoms.
- **Chronic migraine** is a headache that occurs on 15 or more days in a month for more than three months and has migraine features on at least eight or more days in a month.
- **Complications of migraine**
  - **Status migrainosus** is a debilitating migraine attack that lasts more than 72 hours.
  - **Persistent aura without infarction** is an aura that persists for more than one week without evidence of infarction on neuroimaging.
  - **Migrainous infarction** is one or more aura symptoms associated with brain ischemia on neuroimaging during a typical migraine attack
  - **Migraine aura-triggered seizure** occurs during an attack of migraine with aura, and a seizure is triggered
- **Probable migraine** is a symptomatic migraine attack that lacks one of the features required to fulfil criteria for one of the above and does not meet the criteria for another type of headache.
- **Episodic syndromes that may be associated with migraine**
  - **Recurrent gastrointestinal disturbances** are recurrent attacks of abdominal pain and discomfort, nausea and vomiting, that may be associated with migraines.
  - **Benign paroxysmal vertigo** has brief recurrent attacks of vertigo.

○ **Benign paroxysmal torticollis** is recurrent episodes of head tilt to one side.

## II. MATERIALS AND METHODS

### STUDY DESIGN:

This was a prospective observational study.

### STUDY SITE:

This study was conducted at Department of Nephrology, PK Das Institute of Medical Science, Vaniyankulam, Ottapalam, Kerala. The study was approved by the Institutional Ethics Committee of Nehru College of Pharmacy, Pampady. Approval number: IEC/NOV/20/004

### STUDY DURATION:

The study was carried out between November 2020 to October 2021

### STUDY POPULATION:

In total 125 patients with headache and migraine were screened, 89 migraine patients were included in this study as per the inclusion exclusion criteria. And they were divided into 2 groups: Group-1 include 40 patients (students) and Group-2 include 49 patients (adults)

### INCLUSION CRITERIA

- Both male and female patients with migraine
- Any age groups
- Chronic headache >3 months of onset

### EXCLUSION CRITERIA

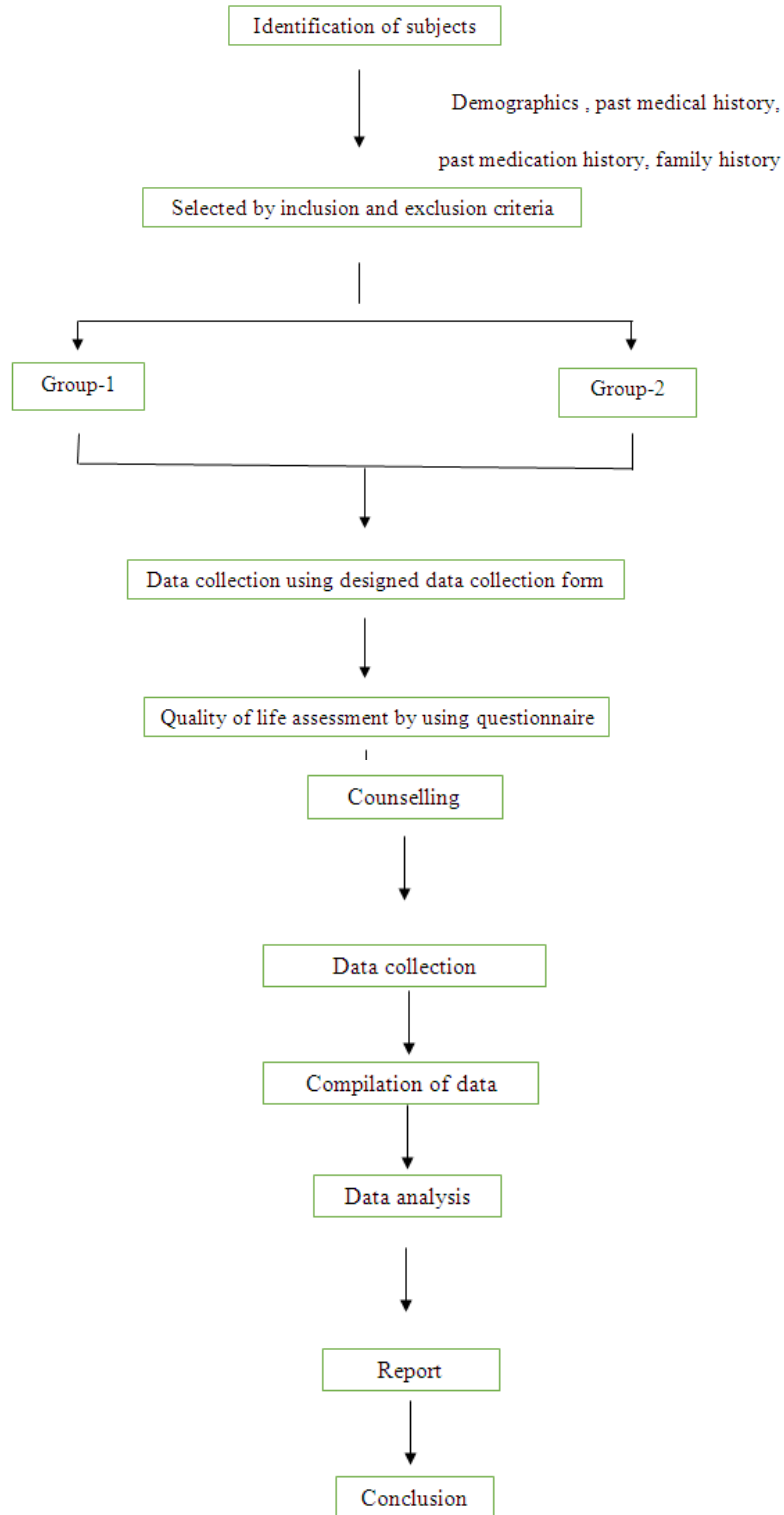
- Mentally retarded patients
- Acute headache (<3 months since onset)

Secondary headache (i.e., due to trauma, medical conditions (i.e. SOL such as tumor) or medications

### STUDY MATERIALS:

- Informed Consent
- Data Collection Form
- MIDAS Questionnaire

### PLAN OF THE STUDY



### III. METHODOLOGY

This prospective observational study was conducted on Migraine patients in a Tertiary care hospital. Prior permissions were obtained from the medical superintendent of the hospital to conduct this study. Migraine patients who met the inclusion criteria and who were willing to participate in the study were included in the study.

Approval from institutional ethics committee was obtained and all the participants gave written informed consent to participate in the study.

All headache patients with migraine were diagnosed by a senior consulting neurologist.

**Data collection:** Subjects were included in the study based on inclusion and exclusion criteria. Included subjects were divided into two group: - Group-1 contains students and Group-2 has others. Signed informed consent was taken from the patients who were willing to participate in the study. Data were collected by using designed data collection form. The characteristics of headache featuring its onset, frequency, duration and type of pain and other associated migraine symptoms that is vertigo and cervical pain were noted. Demographic characteristics of all subjects also were recorded. Family history of migraine were asked. Potential trigger factors for migraine were evaluated in all patients. A set of questions concerning the trigger factors was prepared, and the information about the trigger factors was collected with a structured interview. <sup>(32)</sup> Counselling session was conducted. Quality of life of migraine patients were assessed by

using Migraine Disability Assessment Questionnaire (MIDAS).

#### Statistical analysis

Data was entered in Microsoft Excel 2019. Frequency and percentages were calculated by using descriptive statistics. The obtained data was analysed by using IBM SPSS software. Correlation between triggering factors and associated characteristics such as gender and type of migraine was analysed by chi square test. Also chi-square test was performed to analyse correlation between demographic parameter and type of migraine; and between duration and migraine disability. Independent t-test was done to analyze the association between the group and migraine disability.

### IV. RESULTS

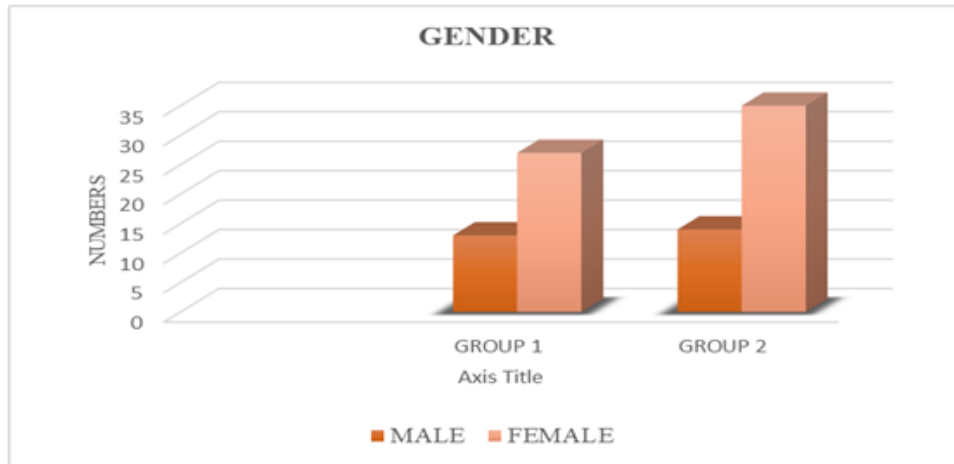
This prospective observational study was conducted in the Nephrology Department of P.K Das institute of medical sciences. In total 125 patients were screened and 89 patients were included in the study as per Inclusion exclusion criteria. Group-1 consists of 40 subjects and Group-2 Contains 49 subjects.

#### DISTRIBUTION OF SUBJECTS BASED ON GENDER

The subjects are categorized based on gender. Out of 40 subjects in Group-1, 13(32.5%) were male and 27(67.5%) were female. Out of 49 patients in Group-2, 14(28.57%) were males and 35(71.42%) were females.

**Table 1: Distribution of subjects based on gender**

Sl.no	GROUPS	MALE n (%)	FEMALE n (%)	TOTAL
1.	GROUP-1	13 (32.5)	27 (67.5)	40
2.	GROUP-2	14 (28.57)	35 (71.42)	49



**Fig 1: Distribution of subjects based on gender**

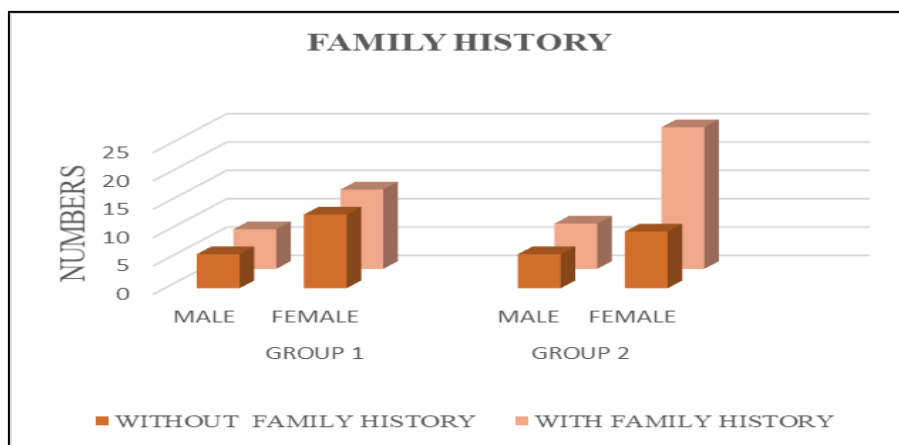
**DISTRIBUTION OF SUBJECTS BASED ON FAMILY HISTORY**

In Group-1, 19(47.5%) subjects do not have a family history, while 21(52.5%) subjects

have a family history. In the case of Group-2, 16(20.40%) subjects do not have a family history while 33(67.34%) subjects have a family history of migraine.

**Table 2: Distribution of Subjects based on family history**

Sl.no	PARAMETER	GROUP-1(N=40)			GROUP-2(N=49)		
		MALE n=13 n(%)	FEMALE n = 27 n(%)	TOTAL n (%)	MALE n=14 n(%)	FEMALE n=35 n(%)	TOTAL n (%)
1.	WITHOUT FAMILY HISTORY	6 (15)	13 (32.5)	19 (47.5)	6 (12.24)	10 (20.40)	16 (32.65)
2.	WITH FAMILY HISTORY	7 (17.5)	14 (35)	21 (52.5)	8 (16.32)	25 (51.02)	33 (67.34)



**Fig 2: Distribution of Subjects based on family history**

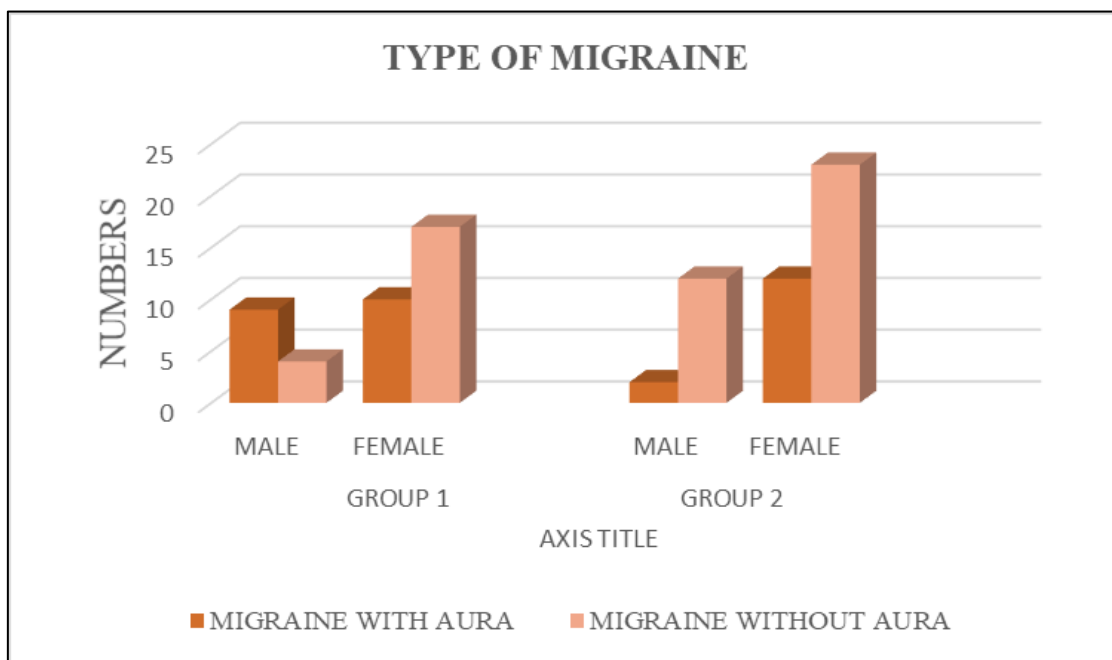
**DISTRIBUTION OF POPULATION-BASED ON TYPE OF MIGRAINE**

In the study, 19(47.5%) of subjects in Group-1 have migraine with aura, and 21(52.5%) of them have

migraine with aura. In Group-2, 14(28.57%) have migraine with aura and 35(71.42%) have migraine without aura.

**Table 3: Distribution of population-based on the type of migraine**

Sl.no	TYPE OF MIGRAINE	GROUP-1(n=40)			GROUP-2(n=49)		
		MALE n=13 (%)	FEMALE n=27 (%)	TOTAL n(%)	MALE n=14 (%)	FEMALE n=35 (%)	TOTAL n(%)
1.	MIGRAINE WITH AURA	9 (22.5)	10 (25)	19 (47.5)	2 (4.08)	12 (24.48)	14 (28.57)
2.	MIGRAINE WITHOUT AURA	4 (10)	17 (42.5)	21 (52.5)	12 (24.48)	23 (46.93)	35 (71.42)



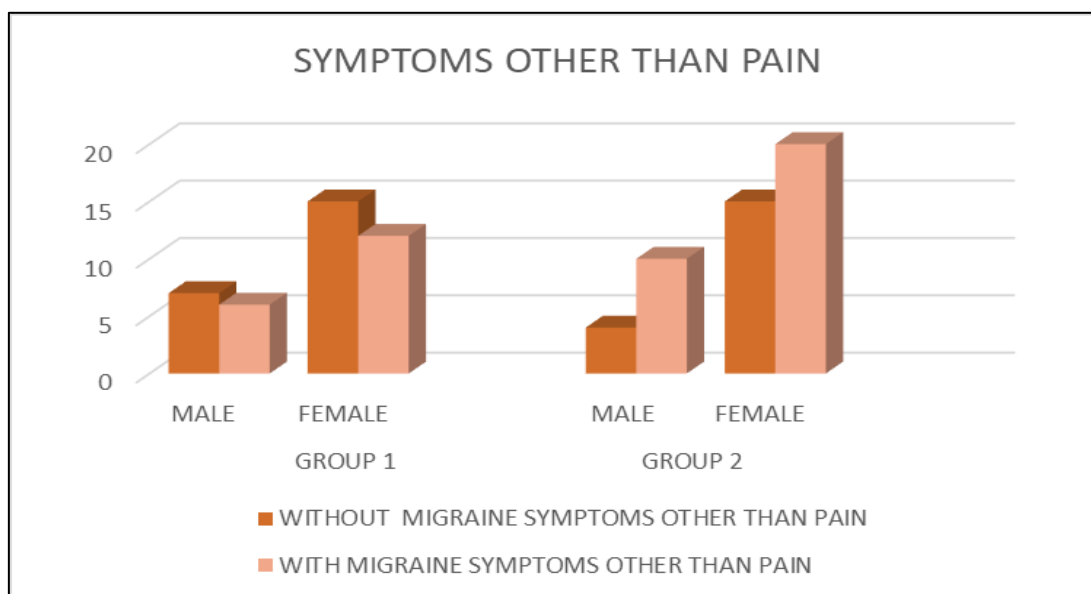
**Fig 3: Distribution of population-based on the type of migraine**

**5.4 DISTRIBUTION OF SUBJECTS BASED UPON PRESENCE OF MIGRAINE SYMPTOMS OTHER THAN PAIN**

Symptoms such as nausea and vomiting are by with most migraine headaches. But as per the data, those symptoms have occurred more in group-2 patient

**Table 4: Distribution of subjects based upon the presence of migraine symptoms other than pain**

Sl.no		GROUP-1(N=40)			GROUP-2(N=49)		
		MALE n=13 (%)	FEMALE n=27 (%)	TOTAL n (%)	MALE n=14 (%)	FEMALE n=35 (%)	TOTAL n (%)
1.	<b>WITHOUT MIGRAINE SYMPTOMS OTHER THAN PAIN</b>	7 (17.5)	15 (37.5)	22 (55)	4 (8.16)	15 (30.61)	19 (38.77)
2.	<b>WITH MIGRAINE SYMPTOMS OTHER THAN PAIN</b>	6 (15)	12 (30)	18 (45)	10 (20.40)	20 (40.81)	30 (61.22)



**Fig 4: Distribution of subjects based upon the presence of migraine symptoms other than pain**

**Table 5: Comparison between the type of migraine with different demographic parameters of Group-1**

PARAMETERS		TOTAL	MA	MoA	p-value
Gender	Men	13	9	4	0.091
	Women	27	10	17	
Age group	16-18	9	5	4	0.508
	19-22	19	7	12	
	23-25	12	7	5	
Family history	Present	21	7	14	0.059
	Absent	19	12	7	

MA: Migraine with aura, MoA: Migraine without aura

Table 5 shows the comparison between MoA and MA for different demographic parameters of Group-1. As per the chi-square test performed, the p-value between gender, age group, and family history; and type of migraine is 0.091, 0.508, and

0.059 respectively. The p-value obtained is not <0.05, which means there is no significant difference between any type of migraine and demographic factors in Group-1.

**Table 6: Comparison between the type of migraine and different demographic parameters of Group-2**

PARAMETERS		TOTAL	MA	MoA	p-value
Gender	Men	14	12	2	0.294
	Women	35	23	12	
Age group	23-35	22	14	8	0.643
	36-45	18	14	4	
	46-55	9	7	2	
Family History	Present	33	11	22	0.336
	Absent	16	3	13	
Occupation	Employed	40	29	11	0.702
	Unemployed	9	6	3	

MA: Migraine with aura, MoA: Migraine without aura

Table 6 shows the comparison between MoA and MA for different demographic parameters of Group-2. As per the chi-square test performed, the p-value between gender, age group, family history and occupation; and type of migraine is

0.294,0.643,0.336 and 0.702 respectively. The p-value obtained is not <0.05, which means there is no significant difference between any type of migraine and demographic factors in Group-1.

**Table 7: Comparison of trigger factors between genders of Group-1**

TRIGGER FACTORS	TOTAL		GENDER		p-value
	N	%	MALE	FEMALE	
Bright sunlight	29	72.5	9	20	1.000
Noises	24	60	5	19	0.054
Stressful events	21	52.5	8	13	0.427
Travelling	20	50	2	18	0.006*
Sleep deprivation	19	47.5	6	13	0.906
Menstruation	16	40	NA	16	NA
Studying	16	40	4	12	0.503
Physical activity	15	37.5	5	10	0.931
Hunger	15	37.5	3	12	0.298
Odours	14	35	2	12	0.090
Watching TV/computer	14	35	3	11	0.316
Pre-menstrual period	10	25	NA	10	NA



Fatigue	7	17.5	2	5	1.000
Tea deprivation	6	15	0	6	0.152
Coffee deprivation	4	10	1	3	1.000
Weather changes	4	10	0	4	0.284
Cold drinks/ice cream	3	7.5	0	3	0.538
Dairy product	2	5	1	1	0.550
High altitude	2	5	0	2	1.000
Chocolate	1	2.5	0	1	1.000
Cigarette smoking	1	2.5	0	1	1.000
Coffee consumption	1	2.5	0	1	0.482

\*  $p < 0.05$

Chi-square analysis was performed between trigger factors and gender to determine if there is any statistically significant difference between them. The results show that the trigger factors traveling have a statistically significant difference (p-value 0.006) with gender and any of trigger factors in Group-1.

**Table 8: Comparison of trigger factors between genders of Group-2**

TRIGGER FACTORS	TOTAL		GENDER		p-value
	N	%	MALE	FEMALE	
Bright sunlight	36	73.46	9	27	0.357
Noises	34	69.38	9	25	0.624
Sleep deprivation	30	61.22	9	21	0.781
Stressful events	30	61.22	6	24	0.095
Travelling	22	44.89	5	17	0.414
Hunger	19	38.77	5	14	0.925
Menstruation	18	36.73	NA	18	NA
Odours	15	30.61	3	12	0.502
Physical activity	13	26.53	4	9	1.000
Tea deprivation	13	26.53	1	12	0.075
Weather changes	13	26.53	3	10	0.731
Premenstrual period	13	26.53	NA	13	NA
Watching TV/computer	11	22.44	4	7	0.706
Fatigue	10	20.40	3	7	1.000
High altitude	8	16.32	4	4	0.202
Air pollution	6	12.24	3	3	0.334
Cold drinks/ice cream	4	8.16	2	2	0.568
Studying	4	8.16	1	3	1.000
Fatty meals	4	8.16	1	3	1.000
Coffee deprivation	3	6.12	1	2	1.000

Cigarette smoking	3	6.12	1	2	1.000
Chocolate	1	2.04	0	1	1.000
Rain	1	2.04	0	1	1.000
Dairy product	1	2.04	1	0	0.286

Chi-square analysis was performed between trigger factors and gender to determine if there is any statistically significant interaction between them. P-values obtained are greater than 0.05. The results show that in Group-2, there is no statistically significant difference between gender and any of the trigger factors.

**Table 9: Comparison of trigger factors with the type of migraine in Group-1**

TRIGGER FACTORS	TOTAL		TYPE OF MIGRAINE		p-value
	N	%	MA	MoA	
Bright sunlight	29	72.5	14	15	0.873
Noises	24	60	11	13	0.796
Stressful events	21	52.5	11	10	0.516
Travelling	20	50	9	11	0.752
Sleep deprivation	19	47.5	5	14	0.011*
Menstruation	16	40	5	14	0.093
Studying	16	40	8	8	0.796
Physical activity	15	37.5	6	9	0.462
Hunger	15	37.5	6	9	0.462
Odours	14	35	5	9	0.273
Watching TV/computer	14	35	6	8	0.666
Premenstrual period	10	25	4	6	0.721
Fatigue	7	17.5	2	5	0.412
Tea deprivation	6	15	2	4	0.664
Coffee deprivation	4	10	2	2	1.000
Weather changes	4	10	2	2	1.000
Cold drinks/ice cream	3	7.5	1	2	1.000
Dairy product	2	5	2	0	0.219
High altitude	2	5	2	0	0.219
Chocolate	1	2.5	1	0	0.475
Cigarette smoking	1	2.5	0	1	1.000
Coffee consumption	1	2.5	0	1	1.000

\*  $p < 0.05$

Chi-square analysis was performed between trigger factors and migraine to determine if there is any statistically significant interaction between them. The results show that the trigger factor of sleep deprivation (p-value 0.011) only has a statistically significant difference with the type of migraine.

**Table 10: Comparison of trigger factors with the type of migraine in Group-2**

TRIGGER FACTORS	TOTAL		TYPE OF MIGRAINE		p-value
	N	%	MA	MoA	
Bright sunlight	36	73.46	12	24	0.297
Noises	34	69.38	12	22	0.117
Sleep deprivation	30	61.22	4	26	0.008
Stressful events	30	61.22	10	20	0.518
Travelling	22	44.89	6	16	0.856
Hunger	19	38.77	5	13	0.925
Menstruation	18	36.73	5	13	0.925
Odours	15	30.61	4	11	1.000
Physical activity	13	26.53	4	9	1.000
Tea deprivation	13	26.53	5	8	0.357
Weather changes	13	26.53	4	9	1.000
Premenstrual period	13	26.53	2	11	0.297
Watching TV/computer	11	22.44	3	8	1.000
Fatigue	10	20.4	2	8	0.702
High altitude	8	16.32	0	8	0.085
Air pollution	6	12.24	1	5	0.659
Cold drinks/ice cream	4	8.16	1	3	1.000
Studying	4	8.16	1	3	1.000
Fatty meals	4	8.16	1	3	1.000
Coffee deprivation	3	6.12	0	3	0.548
Cigarette smoking	3	6.12	1	2	1.000
Chocolate	1	2.04	1	0	1.000
Rain	1	2.04	1	0	0.286
Dairy product	1	2.04	0	1	1.000

Chi-square analysis was performed between trigger factors and migraine headaches to determine if there is any statistically significant interaction between them. The results show that the trigger factor of sleep deprivation (p-value 0.008) only has a statistically significant difference with the type of migraine.

#### QUALITY OF LIFE OF MIGRAINE PATIENTS

The quality of life of migraine patients is assessed using Migraine Disability Assessment Score Questionnaire.

**Table 11: Number of Group-1 (male subjects) distributed based on MIDAS Questionnaire**

Sl.no	MIDAS Grade	Definition	MIDAS Score	AVERAGE NUMBER OF DAYS	NUMBER OF SUBJECTS

1.	I	Little or No disability	0-5	1.625	8
2.	II	Mild disability	6-10	6.5	2
3.	III	Moderate disability	11-20	14	1
4.	IV	Severe disability	21+	28.5	2

Out of 13 male patients in Group-1, 8 subjects have little or no disability, 2 patients have a mild disability, 1 patient has a moderate disability, and 2 patients have a severe disability.

**Table 12: Number of Group-1 (female subjects) distributed based on MIDAS Questionnaire**

Sl.no	MIDAS Grade	Definition	MIDAS Score	AVERAGE NUMBER OF DAYS	NUMBER OF SUBJECTS
1.	I	Little or No disability	0-5	2	20
2.	II	Mild disability	6-10	8.5	4
3.	III	Moderate disability	11-20	15	3
4.	IV	Severe disability	21+	-	-

Out of 27 female patients in Group-1, 20 subjects have little or no disability, 4 patients have a mild disability, 3 patients have a moderate disability, and no patient have a severe disability.

**Table 13: Number of Group -2 (male subjects) distributed based on MIDAS Questionnaire**

Sl.no	MIDAS Grade	Definition	MIDAS Score	AVERAGE NUMBER OF DAYS	NUMBER OF SUBJECTS
1.	I	Little or No disability	0-5	2.55	9
2.	II	Mild disability	6-10	9	2
3.	III	Moderate disability	11-20	13.5	2
4.	IV	Severe disability	21+	33	1

Out of 14 male patients in Group-1, 9 subjects have little or no disability, 2 patients have a mild disability, 2 patients have a moderate disability, and 1 patient has a severe disability.

**Table 14: Number of Group-2 (Female subjects) distributed based on MIDAS Questionnaire**

Sl.no	MIDAS Grade	Definition	MIDAS Score	AVERAGE NUMBER OF DAYS	NUMBER OF SUBJECTS
1.	I	Little or No disability	0-5	1.307	13
2.	II	Mild disability	6-10	8.181	11
3.	III	Moderate disability	11-20	14	8
4.	IV	Severe disability	21+	31	3

Out of 35 female patients in Group-1, 13 subjects have little or no disability, 11 patients have a mild disability, 8 patients have a moderate disability, and 3 patients have a severe disability.

**Table 15: Compares the Duration of migraine headache and Disability grouping of Group-1**

Sl.no	Duration of migraine	Disability grouping				p-value
		1.0	2.0	3.0	4.0	
1.	<1hr	3	1	0	0	0.239
2.	1-6	17	5	0	2	
3.	7-12	3	0	2	0	
4.	12-18	3	0	1	0	
5.	19-24	1	0	1	0	
6.	6 <1 day	1	0	0	0	

1.Little or No disability 2. Mild disability 3. Moderate disability  
 4.Severe disability

Chi-square analysis was performed between the duration and MIDAS disability grouping to determine if there is any statistically significant difference between them. The results show there is no statistically significant difference between the duration of migraine and quality of life.

**Table 16: Compares the Duration of migraine headache and Disability grouping of Group-2**

Sl.no	Duration of migraine	Disability grouping				p-value
		1.0	2.0	3.0	4.0	
1.	<1hr	0	2	0	1	0.138
2.	1-6	17	10	6	2	
3.	7-12	1	0	3	1	
4.	12-18	1	0	0	0	
5.	19-24	2	0	1	0	
6.	6 <1 day	1	1	0	0	

1.Little or No disability 2. Mild disability 3. Moderate disability  
 4.Severe disability

Chi-square analysis was performed between the duration and MIDAS disability grouping to determine if there is any statistically significant difference between them. The results show there is no statistically significant difference between the duration of migraine and quality of life.

**Table 17: Compares MIDAS disability scores of Group-1 and Group-2**

Sl.no		Group	N	Mean	Std. Deviation	p-value
1.	Score	1	40	5.40	7.088	0.085
2.		2	49	8.43	8.937	

Independent Student's t-test was performed between MIDAS disability scores of both Group-1 and Group-2. The result shows that the mean value in Group-2 has a higher value than Group-1, which indicates Group-2 experiences more migraine disability. And the p-value shows there is no significance between MIDAS disability scores of both the groups.

**Table 18: Compares etiological factors with quality of life of Group-1**

Sl.no	TRIGGER FACTORS	Yes / No	Disability grouping					p-value
			Little/No disability (n=28 (%))	Mild disability (n=6 (%))	Moderate disability (n=4 (%))	Severe disability (n=2 (%))	Total n=4 (%)	
1.	Bright sunlight	N	9 (32.1%)	1 (16.7%)	1 (25%)	0 (0%)	11 (27.5%)	0.699
		Y	19 (67.9%)	5 (83.3%)	3 (75%)	2 (100%)	29 (72.5%)	
2.	Physical activity	N	17 (60.7%)	4 (66.7%)	3 (75%)	1 (50%)	25 (62.5%)	0.923
		Y	11 (39.3%)	2 (33.3%)	1 (25%)	1 (50%)	15 (37.5%)	
3.	Tea deprivation	N	22 (78.6%)	6 (100%)	4 (100%)	2 (100%)	34 (85%)	0.388
		Y	6 (21.4%)	0 (0%)	0 (0%)	0 (0%)	6 (15%)	
4.	Coffee deprivation	N	26 (92.9%)	5 (83.3%)	3 (75%)	2 (100%)	36 (90%)	0.621
		Y	2 (7.1%)	1 (16.7%)	1 (25%)	0 (0%)	4 (10%)	
5.	Sleep deprivation	N	16 (57.1%)	3 (50%)	1 (25%)	1 (50%)	21 (52.5%)	0.688
		Y	12 (42.9%)	3 (50%)	3 (75%)	1 (50%)	19 (47.5%)	
6.	Fatigue	N	25 (89.3%)	4 (66.7%)	2 (50%)	2 (100%)	33 (82.5%)	0.152
		Y	3 (10.7%)	2 (33.3%)	2 (50%)	0 (0%)	7 (17.5%)	
7.	Odours	N	19 (67.9%)	2 (33.3%)	3 (75%)	2 (100%)	26 (65%)	0.262
		Y	9 (32.1%)	4 (66.7%)	1 (25%)	0 (0%)	14 (35%)	
8.	Menstruation	N	15 (53.6%)	4 (66.7%)	3 (75%)	2 (100%)	24 (60%)	0.512
		Y	13 (46.4%)	2 (33.3%)	1 (25%)	0 (0%)	16 (40%)	
9.	Weather changes	N	24 (85.7%)	6 (100%)	4 (100%)	2 (100%)	36 (90%)	0.592
		Y	4 (14.3%)	0 (0%)	0 (0%)	0 (0%)	4 (10%)	
10	Cold	N	27	6	2	2	37	0.009*

	drinks/ ice creams		(96.4%)	(100%)	(50%)	(100%)	(92.5%)	
		Y	1 (3.6%)	0 (0%)	2 (50%)	0 (0%)	3 (7.5%)	
11.	Chocolate	N	27 (96.4%)	6 (100%)	4 (100%)	2 (100%)	39 (97.5%)	0.932
		Y	1 (3.6%)	0 (0%)	0 (0%)	0 (0%)	1 (2.5%)	
12.	Dairy products	N	26 (92.9%)	6 (100%)	4 (100%)	2 (100%)	38 (95%)	0.825
		Y	2 (7.1%)	0 (0%)	0 (0%)	0 (0%)	2 (5%)	
13.	Noises	N	9 (32.1%)	4 (66.7%)	2 (50%)	1 (50%)	16 (40%)	0.432
		Y	19 (67.9%)	2 (33.3%)	2 (50%)	1 (50%)	24 (60%)	
14.	Stressful events	N	12 (42.9%)	4 (66.7%)	2 (50%)	1 (50%)	19 (47.5%)	0.767
		Y	16 (57.1%)	2 (33.3%)	2 (50%)	1 (50%)	21 (52.5%)	
15.	Travelling	N	13 (46.4%)	4 (66.7%)	2 (50%)	1 (50%)	20 (50%)	0.847
		Y	15 (53.6%)	2 (33.3%)	2 (50%)	1 (50%)	20 (50%)	
16.	Hunger	N	15 (53.6%)	5 (83.3%)	3 (75%)	2 (100%)	25 (62.5%)	0.317
		Y	13 (46.4%)	1 (16.7%)	1 (25%)	0 (0%)	15 (37.5%)	
17.	Cigarette smoke	N	27 (96.4%)	6 (100%)	4 (100%)	2 (100%)	39 (97.5%)	0.932
		Y	1 (3.6%)	0 (0%)	0 (0%)	0 (0%)	1 (2.5%)	
18.	Coffee consumption	N	28 (100%)	6 (100%)	3 (75%)	2 (100%)	39 (97.5%)	0.026*
		Y	0 (0%)	0 (0%)	1 (25%)	0 (0%)	1 (2.5%)	
19.	Studying	N	18 (64.3%)	3 (50%)	2 (50%)	1 (50%)	24 (60%)	0.87
		Y	10 (35.7%)	3 (50%)	2 (50%)	1 (50%)	16 (40%)	
20.	Watching TV/ computer	N	17 (60.7%)	4 (66.7%)	4 (100%)	1 (50%)	26 (65%)	0.46
		Y	11 (39.3%)	2 (33.3%)	0 (0%)	1 (50%)	14 (35%)	
21.	Premenstrual period	N	20 (71.4%)	5 (83.3%)	3 (75%)	2 (100%)	30 (75%)	0.782
		Y	8 (28.6%)	1 (16.7%)	1 (25%)	0 (0%)	10 (25%)	
22.	High altitude	N	26 (92.9%)	6 (100%)	4 (100%)	2 (100%)	38 (95%)	0.825
		Y	2 (7.1%)	0 (0%)	0 (0%)	0 (0%)	2 (5%)	

\*  $p < 0.05$

Chi-square analysis was performed between etiological factors and quality of life of migraine patients in Group-1. The result shows that cold drinks/ ice cream (p-value 0.009) and coffee consumption (0.026) have statistical significance with quality of life.

**Table 19: Compares etiological factors with quality of life in Group-2**

Sl. no	TRIGGER FACTORS	Yes / No	Disability grouping					p-value
			Little/No disability (n=22) (%)	Mild disability (n=13) (%)	Moderate disability (n=10) (%)	Severe disability (n=4) (%)	Total (n=49) (%)	
1.	Bright sunlight	N	4 (18.2%)	3 (23.1%)	4 (40%)	2 (50%)	13 (26.5%)	0.403
		Y	18 (81.8%)	10 (76.9%)	6 (60%)	2 (50%)	36 (73.5%)	
2.	Physical activity	N	16 (72.7%)	8 (61.5%)	8 (80%)	4 (100%)	36(73.5%)	0.454
		Y	6 (27.3%)	5 (38.5%)	2 (20%)	0 (0%)	13 (26.5%)	
3.	Tea deprivation	N	15 (68.2%)	9 (69.2%)	9 (90%)	3 (75%)	36 (73.5%)	0.606
		Y	7 (31.8%)	4 (30.8%)	1 (10%)	1 (25%)	13 (26.5%)	
4.	Coffee deprivation	N	21 (95.5%)	13 (100%)	8 (80%)	4 (100%)	46 (93.9%)	0.207
		Y	1 (4.5%)	0 (0%)	2 (20%)	0 (0%)	3 (6.1%)	
5.	Sleep deprivation	N	9 (40.9%)	4 (30.8%)	5 (50%)	1 (25%)	19 (38.8%)	0.743
		Y	13 (59.1%)	9 (69.2%)	5 (50%)	3 (75%)	30 (61.2%)	
6.	Fatigue	N	16 (72.7%)	12 (92.3%)	7 (70%)	4 (100%)	39 (79.6%)	0.318
		Y	6 (27.3%)	1 (7.7%)	3 (30%)	0 (0%)	10 (20.4%)	
7.	Odours	N	13 (59.1%)	10 (76.9%)	8 (8%)	3 (75%)	34 (69.4%)	0.565
		Y	9 (40.9%)	3 (23.1%)	2 (20%)	1 (25%)	15 (30.6%)	
8.	Menstruation	N	13 (59.1%)	8 (61.5%)	7 (70%)	3 (75%)	31 (63.3%)	0.893
		Y	9 (40.9%)	5 (38.5%)	3 (30%)	1 (25%)	18 (36.7%)	
9.	Weather changes	N	18 (81.8%)	9 (69.2%)	8 (80%)	1 (25%)	36 (73.5%)	0.114
		Y	4 (18.2%)	4 (30.8%)	2 (20%)	3 (75%)	13 (26.5%)	
10.	Cold drinks/ ice creams	N	20 (90.9%)	12 (92.3%)	10 (100%)	3 (75%)	45 (91.8%)	0.488
		Y	2 (9.1%)	1 (7.7%)	0 (0%)	1 (25%)	4 (8.2%)	
11.	Chocolate	N	22 (100%)	12 (92.3%)	10 (100%)	4 (100%)	48 (98%)	0.419
		Y	0	1	0	0	1	



			(0%)	(7.7%)	(0%)	(0%)	(2%)	
12.	Rain	N	22 (100%)	12 (92.3%)	10 (100%)	4 (100%)	48 (98%)	0.419
		Y	0 (0%)	1 (7.7%)	0 (0%)	0 (0%)	1 (2%)	
13.	Dairy products	N	21 (95.5%)	13 (100%)	10 (100%)	4 (100%)	48 (98%)	0.74
		Y	1 (4.5%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	
14.	Noises	N	8 (36.4%)	4 (30.8%)	3 (30%)	0 (0%)	15 (30.6%)	0.55
		Y	14 (63.6%)	9 (69.2%)	7 (70%)	4 (100%)	34 (69.4%)	
15.	Stressful events	N	8 (36.4%)	5 (38.5%)	5 (50%)	1 (25%)	19 (38.8%)	0.824
		Y	14 (63.6%)	8 (61.5%)	5 (50%)	3 (75%)	30 (61.2%)	
16.	Travelling	N	13 (59.1%)	6 (46.2%)	7 (70%)	1 (25%)	27 (55.1%)	0.403
		Y	9 (40.9%)	7 (53.8%)	3 (30%)	3 (75%)	22 (44.9%)	
17.	Hunger	N	15 (68.2%)	7 (53.8%)	7 (70%)	2 (50%)	31 (63.3%)	0.747
		Y	7 (31.8%)	6 (46.2%)	3 (30%)	2 (50%)	18 (36.7%)	
18.	Cigarette smoke	N	21 (95.5%)	11 (84.6%)	10 (100%)	4 (100%)	46 (93.9%)	0.400
		Y	1 (4.5%)	2 (15.4%)	0(0%)	0 (0%)	3 (6.1%)	
19.	Air pollution	N	19 (86.4%)	12 (92.3%)	8 (80%)	4 (100%)	43 (87.8%)	0.704
		Y	3 (13.6%)	1 (7.7%)	2 (20%)	0 (0%)	6 (12.2%)	
20.	Studying	N	19 (86.4%)	13 (100%)	9 (90%)	4 (100%)	45 (91.8%)	0.487
		Y	3 (13.6%)	0 (0%)	1 (10%)	0 (0%)	4 (8.2%)	
21.	Watching TV/ computer	N	16 (72.7%)	10 (76.9%)	8 (80%)	4 (100%)	38 (77.6%)	0.685
		Y	6 (27.3%)	3 (23.1%)	2 (20%)	0 (0%)	11 (22.4%)	
22.	Premenstrual period	N	15 (68.2%)	11 (84.6%)	7 (70%)	3 (75%)	36 (73.5%)	0.750
		Y	7 (31.8%)	2 (15.4%)	3 (30%)	1 (25%)	13 (26.5%)	
23.	Fatty meals	N	19 (86.4%)	12 (92.3%)	10 (100%)	4 (100%)	45 (91.8%)	0.546
		Y	3 (13.6%)	1 (7.7%)	0 (0%)	0 (0%)	4 (8.2%)	
24.	High altitude	N	20 (90.9%)	11 (84.6%)	8 (80%)	2 (50%)	41 (83.7%)	0.234
		Y	2 (9.1%)	2 (15.4%)	2 (20%)	2 (50%)	8 (16.3%)	

Chi-square analysis was performed between etiological factors and quality of life of migraine patients in Group-2. The result shows that there is no statistically significance between any of the trigger factors and quality of life.

## V. DISCUSSION

As per the results of the study performed, the responses from the patients showed that 97.5 % and 100 % of the patients reported more than 1 trigger factor in Group-1 and Group-2 respectively.

### MIGRAINE VS GENDER

Out of 40 patients in Group-1, 13(32.5%) were male and 27(67.5%) were female, while in Group-2 out of 49 patients, 14(28.57%) were male and 35(71.42%) were female, which indicates the prevalence of migraine is high in women. The study conducted by *Allais et.al* <sup>(52)</sup> "Gender-related differences in migraine" showed that several factors may modulate female predisposition to migraine throughout genetic and epigenetic mechanisms: hormones, brain structure, genetic polymorphism or mutation, life events, stress, and neuronal activity. All these are cross-connected, and they influence each other. This specific sex phenotype for women should be considered during clinical management and experimental studies.

### MIGRAINE VS EFFECT OF AURA, FAMILY HISTORY

In the study, 52.5a% in Group-1 and Group-2, 71.42% have migraine without aura. In Group-1, 47.5% of subjects do not have family history, while 52.5% of subjects have a family history. In the case of Group-2, 20.40% of subjects do not have a family history while 67.34% of subjects have a family history. *Yu-Wei Hsu et.al* in the study "Associations between migraine occurrence and the effect of aura, age at onset, family history, and sex: A cross-sectional study" showed different patterns of association between family history and migraine can be observed between men and women. A positive family history of migraine is correlated with an earlier age at onset, particularly among female patients without aura. <sup>(53)</sup>

### MIGRAINE VS TYPE OF MIGRAINE

In this study, the prevalence of migraine without aura is most common. *Zivadinov et al* conducted a study on "Migraine and tension-type headache in Croatia: a population -based survey of precipitating factors". The study showed that subjects with MA report a higher median number of

possible triggers per patient as compared to the MoA group.

### MOST IMPORTANT TRIGGER FACTORS ANALYSIS

#### BRIGHT SUNLIGHT

In the present study, 72.5% and 73.46% of subjects in Group-1 and Group-2 respectively have bright sunlight as the first major trigger factor for the reason of migraine. *Tekatas et.al* <sup>(54)</sup> in the study "Migraine Headache Triggered Specifically by Sunlight: Report of 16 Cases" explained that among those patients, the ones suffering headaches after being exposed to sunlight were examined comprehensively. Migraine headaches can be triggered by many different causes. As per their view sunlight is a single triggering factor that should be questioned in migraine patients.

#### STRESSFUL EVENTS

The majority of the study on headaches concluded that stressful events are one of the major trigger factors of a headache attack. The findings of the present study also support the earlier findings that stressful life events are the most common trigger in the whole sample. There is a complex relationship between stress and headache crisis. It has been proposed that acute stress may affect the biological modulatory pathways leading to increased sensitivity of the migraine cortex. However, this is yet to be proved experimentally. The reason behind stress acting as the significant trigger can be explained by the findings of *Houleet al.* <sup>(55)</sup> in the study "Forecasting Individual Headache Attacks Using Perceived Stress: Development of a multivariable prediction model for persons with episodic migraine" who detected a cumulative effect of combined high-stress levels and low sleep duration that influences the headache activity, thus, suggesting that stress acts as an enhanced trigger when it interacts with another factor.

#### FEMALE HORMONAL VARIANCE

As per the study performed by *Woberet al.* <sup>(56)</sup> "Triggers of migraine and tension-type headache", menstruation is the most important risk factor for the onset and the persistence of headache and migraine attack. In the present study, hormonal triggers like menstrual and premenstrual periods were reported by 40% and 25% of the female patients, respectively in Group-1; 36.73% and 26.53% of women in Group-2. These results are similar to the previous study. Several studies have analyzed the substantial mechanism between

headaches and menses, and it has been suggested that the fluctuation of serum estradiol and progesterone levels in the menstrual cycle is associated with higher headache activity in female migraineurs.

#### SLEEP

In the present study, 47.5% and 61.22% of the subjects reported sleep deprivation as an important initiating factor for headache in groups 1 and 2 respectively. According to Ho, changes in sleep hours, including night-shift work with irregular shifts between nocturnal and diurnal schedules, appeared to be a strong trigger. It shows that individuals who performed shift work had more often headaches. This finding is also supported by *Kelman et al.*<sup>(57)</sup> "The triggers or precipitants of the acute migraine attack", who concluded that short sleep leads to increased severity and frequency of migraine attacks.

#### QUALITY OF LIFE OF MIGRAINE PATIENTS

The quality of life of migraine patients was assessed using Migraine Disability Assessment Score. Out of 40 patients in Group-1, 28 subjects have little or no disability, 6 patients have a mild disability, 4 patients have a moderate disability, and 2 patients have a severe disability. In Group-2, out of 49 patients, 22 subjects have little or no disability, 13 patients have a mild disability, 10 patients have a moderate disability, and 4 patients have a severe disability. Most of the patients in the current study have mild/ little disability. According to the study of *Shafaq Jawed et al.*<sup>(58)</sup> "Effect of Migraine Headache on Productivity of Patients According to Migraine Disability Assessment Score: A Cross-Sectional Study", the majority of migraine patients were found to have severe disability, which affected their daily work and social activities. Despite an increase in the disability rate due to migraine, people do not seek regular medical care for this type of headache in Pakistan.

In this study, the subject who have migraine mostly belong to the age group 20-35 including both groups. In Group-2, it is noted that 40 subjects out of 49, are employed. *Pradeep R et al.*<sup>(59)</sup> explained in the study "Migraine Disability, Quality of Life, and Its Predictors", that migraine was more frequently seen in young- and middle-aged females. The longer duration, more frequent migraine attacks and headache with substantial to severe impact were predictors of both disability and detrimental effects on QOL in migraineurs.

Comorbid psychiatric conditions were found to be a significant contributory factor.

#### VI. CONCLUSION

This study makes important contributions to knowledge about the etiological factors associated with migraine and about the quality of life of migraine patients. The study reveals that the most prevalent trigger factors seen in student group are bright sunlight, noises, stressful events, travelling, sleep deprivation. In others, bright sunlight, noise, sleep deprivation, stressful events, travelling are some of most the trigger factors observed. As per the study result, female patient in the both groups are more prevent to migraine.

When comparing the quality of life of both migraine patients' groups, it was noted in public group patients are experiencing more disability due to migraine. Most subjects' experiences no or little disability. In student's group, it is observed that cold drinks or ice cream and coffee consumption have impact on their quality of life. In the adult population, there is no impact was observed in the quality of life with the etiological factors.

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#### ABBREVIATIONS

MA: Migraine with aura

MoA: Migraine without aura