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Evaluation of depression status among migraine patients during COVID-19 pandemic situation in Dhaka: A Hospital Based Cross Sectional Study by using DASS 21 Scoring System

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Abstract
This study was conducted to evaluate the depression status among migraine patients during COVID 19 pandemic situation in Dhaka. This was a cross sectional study which was taken at the outdoor of Bangabandhu Sheikh Mujib Medical University (BSMMU). This study was conducted in January to November 2021. Total 300 respondents with migraine and mental health problem were included in this study. DSS-21 scoring system was used as study tools in this study. Among 300 respondents 261 (87%) were female and 39(13%) were male. Among 261 female participants the prevalence of normal, mild, moderate, severe and extremely severe depression is reported respectively 12.7%, 38.7%, 27.3%, 4.3% and 4.0%; among 39 male participants the prevalence of normal, mild, moderate, severe and extremely severe depression is reported respectively 2.0%, 8.3%, 2.3%, 0.3% and 0.0%. No extremely severe depression male patient had found. The mean period for migraine suffering was reported 3.3982 years ±SD ±4.42. The prevalence of depression for normal, mild, moderate, severe, and extremely severe is respectively 14.7%, 47.0%, 29.7%, 4.7% and 4%. The mean and ±SD for depression is 1.36±0.928.The prevalence of Anxiety for normal, mild, moderate, severe, and extremely severe is respectively 7%, 8%, 53%, 10.7% and 21.3%. The mean and ±SD for anxiety is 2.31±1.107. Therefore patients need to maintain proper lifestyle to protect from anxiety and depression to control migraine problem. There are 5 socio-demographic factors were associated with depression which were statistically significant (age p=0.035, education p=0.000, residence p=0.000, occupation p=0.000 and monthly income p=0.000). Moreover type of migraine (p=0.003), and anxiety (p=0.000), were significantly associated with depression. Female are more prone to depression than male. Rich people have less depression than poor. Patients need to maintain proper lifestyle to protect from anxiety and depression to control migraine problem.
Keywords: *Depression, Migraine Patients, DSS-21 Scoring System.*

Introduction

Depression is a common health issue globally. More than 264 million people are affected. Depression is distinct from mood movements that are transient and from everyday emotional reactions to problems of their personal lives. Depression can be extreme when lasting a long time and of mild to significant severity. Exposure to lead will cause the infected patient to suffer significantly and perform less optimally at work, school, and at home. According to American Psychiatric Association, Depression is a common psychiatric condition that adversely affects how you behave, the way you think and how you behave [1].

Migraine is a common inherited multifactorial debilitating chronic signature neurovascular headache condition[2]. Although 12 percent of American adults suffer it, 2 predominantly female — in fact, it affects 3 times as many women as men[3][4]. The symptoms that follow migraine begin at an early stage and progress throughout the headache process, "suggesting that multiple neuronal systems function abnormally," structurally and functionally altering the brain (2). People with migraine have a higher prevalence of psychological diseases than other forms of headaches. Individuals with migraine are more vulnerable to being diagnosed with anxiety disorders, and those diagnosed with anxiety disorders are at a greater risk of migraine. Those suffering from depression have a more than 3-fold risk for developing migraines, but those with migraines that previously didn't have depression have a more than 3-fold risk for developing depression[5].

Many migraine patients suffer from symptoms of depression and anxiety. Migraine patients are between two to five times more likely to have these symptoms than patients without migraine. About 25% of patients with migraine have depression, and about 50% have anxiety. Some patients have symptoms of these disorders after living with migraine for years. Others develop them before migraine. At this time, scientists don't know the exact answer why all are so common. One of the brain chemicals involved in all these conditions is called serotonin. Hormone changes in women can also trigger both conditions. Symptoms of depression and anxiety are most common among people with chronic migraine, which is when headache attacks occur on 15 or more days a month. For people with fewer headaches, depression or anxiety puts them at risk for more headaches over time. Symptoms of depression and anxiety also impact other areas of health. Migraine patients with depression or anxiety have higher medical costs, are at increased risk for suicide, and have higher levels of disability than migraine patients without depression or anxiety. Also, and perhaps most importantly, headache treatments don't work as well when the depression or anxiety is not also being treated. Untreated patients are less likely to follow medicine or behavior treatment plans. They also show less response to headache medications, and are more likely to relapse. For these reasons, treating all these.

Patients reported that their migraines were more frequent and severe, and said they overused analgesics, according to the article published in The Journal of Headache and Pain[6]. Many also did not communicate with their neurologists. In addition, the authors from the IbnSina Hospital in Kuwait, determined that patients who were infected with COVID-19 reported a worsening of their headaches while they had the virus. In comparison to pre-pandemic period, approximately 60% of patients reported an increase in migraine frequency, 16% reported a decrease in frequency, and 10.3% transformed to chronic migraine.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged, and the disease was declared a pandemic in March 11, 2020[7]. Since then, the healthcare systems worldwide have come under tremendous pressure as this ongoing public health epidemic has escalated. Neurologists are burdened with delivering quality care to many patients with chronic diseases, and at the same

time, monitoring the spread of the CVID epidemic [8].

Literature Review

Migraine is widely considered one of the most crippling life-long neurological disorders, and people with migraine are disproportionately impacted by its consequences. Due to the high level of psychosocial stress, social isolation, disturbance of sleep and dietary patterns, as well as COVID-19-specific issues, some patients with migraine may lose their therapeutic response, particularly with cancellation of face-to-face visits and procedural treatments[9]. In an effort to respond to the situation headaches have been happening more often by introducing new methods such as phone calls or Internet-based applications. Too many of the countries were not capable of providing the same quality treatment as the other countries[10]. Migraines are rampant in Kuwait. A new population-based analysis of 15,523 subjects found that 30.1% of those surveyed were affected by episodic migraine, and 6.4% by chronic migraine (11)(12). We are not aware of the real-world effects of COVID-19 pandemic on patients with migraine to date.People with chronic migraine often experience depression or anxiety disorders. It's not uncommon for people with chronic migraine to struggle with lost productivity. They may also experience poor quality of life. Various study mentioned significant depression level among the migraine patients.

Objectives
General Objective
To evaluate the depression status among migraine patients during COVID 19 pandemic situation in Dhaka City.

Specific Objective
- To find out the prevalence of depression level, anxiety and migraine among the target group.
- To identify the correlation between depression and socio-demographic factors in pandemic situation.
- To examine the association between depression and clinical factor of migraine patients in pandemic situation.
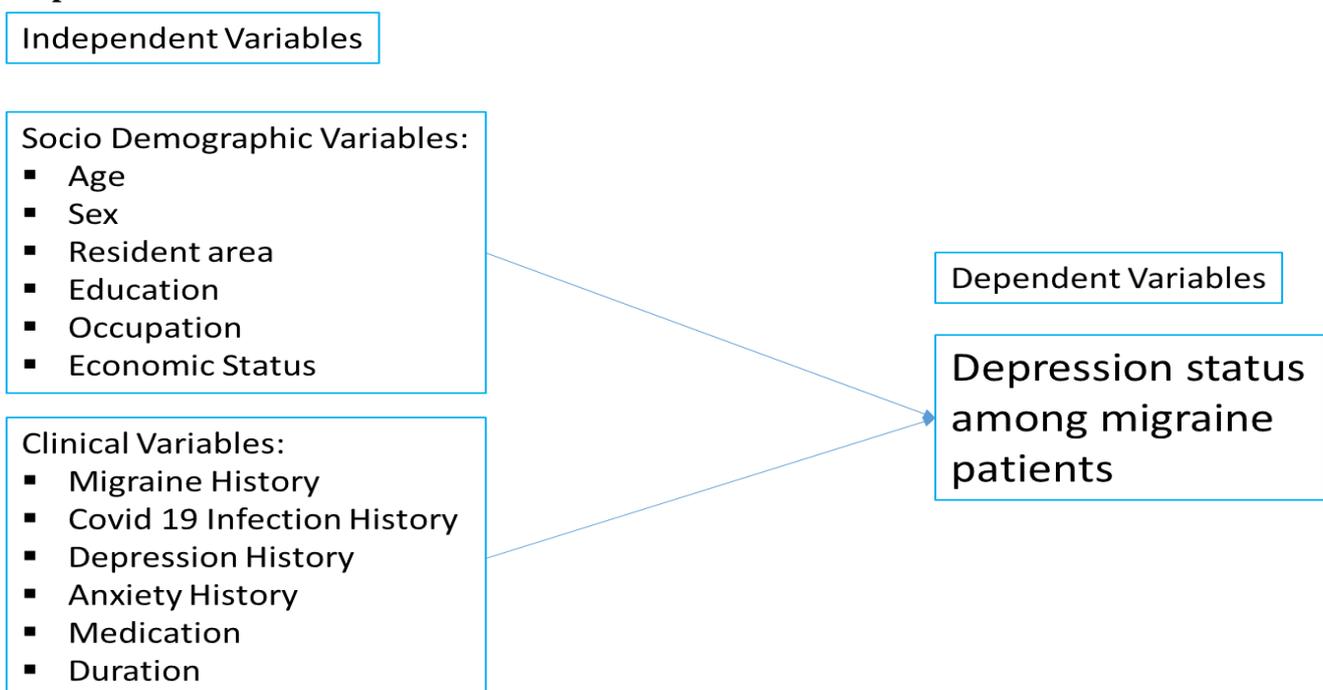
Conceptual Framework

Figure 1: Conceptual Framework

Methodology

Study Design: This was a cross sectional study.

Study Location: This study was taken at the outdoor of Bangabandhu Sheikh Mujib Medical University (BSMMU).

Study Period: This study was conducted in the fall season of this year. Initially four-month time period, this study has been planned.

Study Population: Respondent from various economic status.

Study Sample: Simple random sampling was used for this study.

Sample calculation: To estimate proportion:

$$N= (z^2pq)/d^2$$

Here, n= Number of sample

z= Level of significance / confidence level (at 5% level, z=1.96)

p= Expected proportion of event or prevalence of the event.

d= Allowable error/precision in the estimates of 'p' (proportion)

The frequency of depression was observed in approximately three-quarters (74.2%) of the migraine patients in the study of (Ahmed et. al. 2020)[13].

p=.74.2

q= 1-p=0.258

$$d=.05 \text{ (95\% CI)}$$
$$N= 3.846X.74.2X.258/.0025$$
$$= 295$$

As per statistical formula we calculate 295 sample. Considering non-response missing data we have collect 300 samples for this study.

Eligibility Criteria

Inclusion Criteria

Must be migraine patient

Exclusion Criteria

➢ Below 18 years old persons are outing range of this study.

➢ Any student who is not psychologically fit to understand the questions

➢ Any respondents who is not willing to participate

Development of research instrument

This was conducted by pre-tested questionnaire. The whole questionnaire was administrated by the researcher along with research assistants. The researcher was trained and advocates the assistants to collect data. Pre-tested data will be analyzed to see the accuracy of collected data.

Plan for data collection

One-month period was kept by planning for data collection. Researcher along with two research assistants was administrated the whole questionnaire.

Plan for data analysis

SPSS 23 and Microsoft Excel software used as principal software. STATA 24 used for some statistical analysis. JASP kept stand by for any kinds of complication.

Data presentation and interpretation

Data presented by compatible mixture of three basic methods. They are textual method, tabular method and graphical method. The demographic table and chart was introduced in Data presentation. The comparative analysis presented by a proper bar chart, pie chart or scatter plot. All tables of visual graphics representation were done by statistical software.

Data quality management

Data quality management was performed based on data integrity, completeness, validity, uniqueness, accuracy and consistency. Data quality management was started with finding out missing value, omit the repeated data, managed multiple data carefully. By this following data quality management was done.

Ethical Issues

• Study was performed with consent of respondent. There was no harm to human/animal in this study.

• It was ensured that their personal identity kept confidential and the data were used only for study purpose.

• Ethical clearance was taken from Bangladesh Bio-ethics Society.

Results
Socio-demographic status of the respondents
Among 300 respondents 261 (87%) were female and 39(13%) were male. Among 261 female participants the prevalence of normal, mild, moderate, severe and extremely severe depression is reported respectively 12.7%, 38.7%, 27.3%, 4.3% and 4.0%; among 39 male participants the prevalence of normal, mild, moderate, severe and extremely severe depression is reported respectively 2.0%, 8.3%, 2.3%, 0.3% and 0.0%. No extremely severe depression male patient had found. The mean period for migraine suffering was reported 3.3982 years ±SD ±4.42.

Table 1: Socio-demographic profile of the respondents

Prevalence of migraine, depression and anxiety:
Among the 300 migraine patients the prevalence of depression for normal, mild, moderate, severe, and extremely severe is respectively 14.7%, 47.0%, 29.7%, 4.7% and 4%. The mean and ±SD for depression was 1.36±0.928 (Figure 2).The prevalence of anxiety for normal, mild, moderate, severe, and extremely severe is respectively 7%, 8%, 53%, 10.7% and 21.3%. The mean and ±SD for anxiety is 2.31±1.107 (Figure 3).

| Variables	Frequency	Percent %	Mean	±SD
Sex				
Female	261	87.0	0.13	0.337
Male	39	13.0		
Age				
18-24	132	44.0	0.97	1.089
25-30	81	27.0		
31-40	61	20.3		
41-50	20	6.7		
51-60	2	0.7		
60+	4	1.3		
Education				
No Institutional Education	19	6.3	0.74	0.439
Primary	18	6.0		
Secondary	103	34.3		
Higher secondary	80	26.7		
Graduate	50	16.7		
Post graduate	30	10.0		
Residence				
Outside Dhaka	78	26.0	2.71	1.282
Inside Dhaka	222	74.0		
Marital status				
Unmarried	73	24.3	0.76	0.430
Married	227	75.7	0.430	
Occupation				
House wife	138	46.0	1.01	1.227
Student	75	25.0		
Job	58	19.3		
Driver	14	4.7		
Retired	6	2.0		
Business	9	3.0		
Monthly income				
<10000	125	41.7	0.95	0.938
10000-20000	78	26.0		
20000-30000	83	27.7		
30000-50000	14	4.7		
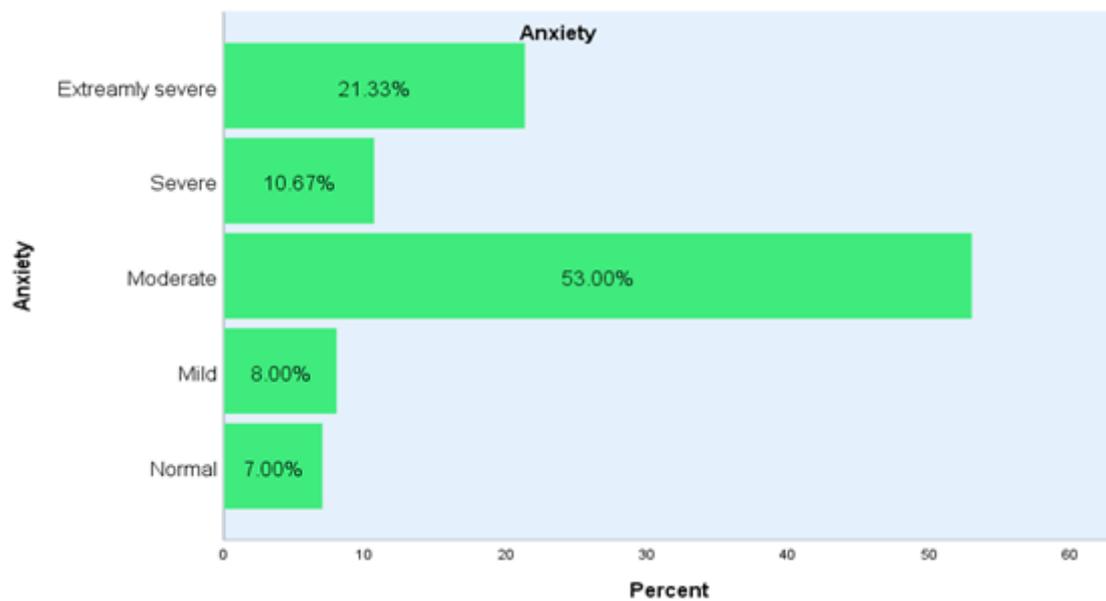
Figure 1: Prevalence level of anxiety
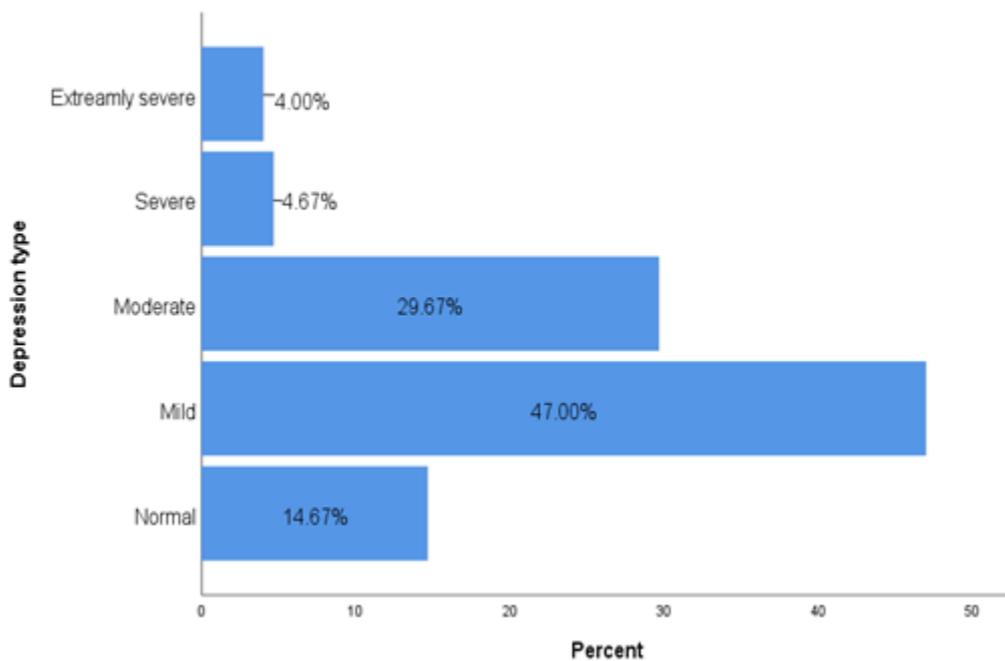
Figure 2: Prevalence of depression

Depression and socio-demographic factors:

Table 2 shows among 7 socio demographical factors, there 5 factors (age p=0.035, education p=0.000, residence p=0.000, occupation p=0.000 and monthly Income p=0.000) are statistically significant associates with depression. Table 3 shows among 5 clinical variables, there 2 variables (type of migraine p=0.003, and anxiety p=0.000)) are statistically significant associates with depression.

Table 2: Correlation between depression and socio-demographic factors (N=300)

Description	Depression type					P-Value
	Normal	**Mild**	**Moderate**	**Severe**	**Extremely severe**	
Age						
18-24	13	58	47	9	5	0.035
	4.3%	19.3%	15.7%	3.0%	1.7%	
25-30	12	39	23	2	5	
	4.0%	13.0%	7.7%	0.7%	1.7%	
31-40	15	24	18	3	1	
	5.0%	8.0%	6.0%	1.0%	0.3%	
41-50	3	16	1	0	0	
	1.0%	5.3%	0.3%	0.0%	0.0%	
51-60	1	1	0	0	0	
	0.3%	0.3%	0.0%	0.0%	0.0%	
>60	0	3	0	0	1	
	0.0%	1.0%	0.0%	0.0%	0.3%	
Sex						
Female	38	116	82	13	12	0.131
	12.7%	38.7%	27.3%	4.3%	4.0%	
Male	6	25	7	1	0	
	2.0%	8.3%	2.3%	0.3%	0.0%	
Education						
No Institutional Education	3	8	5	3	0	
	1.0%	2.7%	1.7%	1.0%	0.0%	
Primary	2	2	8	1	5	0.000
	0.7%	0.7%	2.7%	0.3%	1.7%	
Secondary	12	68	18	4	1	
	4.0%	22.7%	6.0%	1.3%	0.3%	
Higher secondary	12	24	38	3	3	
	4.0%	8.0%	12.7%	1.0%	1.0%	
Graduate	5	29	11	2	3	
	1.7%	9.7%	3.7%	0.7%	1.0%	
Post graduate	10	10	9	1	0	
	3.3%	3.3%	3.0%	0.3%	0.0%	
Residence						
Outside Dhaka	8	14	47	4	5	0.000
	2.7%	4.7%	15.7%	1.3%	1.7%	
Inside Dhaka	36	127	42	10	7	
	12.0%	42.3%	14.0%	3.3%	2.3%	
Occupation						
House wife	23	51	42	11	11	0.000
	7.7%	17.0%	14.0%	3.7%	3.7%	
Student	7	33	32	2	1	
	2.3%	11.0%	10.7%	0.7%	0.3%	
Job	10	33	14	1	0	
	3.3%	11.0%	4.7%	0.3%	0.0%	
Driver	1	12	1	0	0	
	0.3%	4.0%	0.3%	0.0%	0.0%	
Retired	3	3	0	0	0	
	1.0%	1.0%	0.0%	0.0%	0.0%	
Business	0	9	0	0	0	
	0.0%	3.0%	0.0%	0.0%	0.0%	
Monthly Income						
<10000	19	12	69	13	12	0.000
	6.3%	4.0%	23.0%	4.3%	4.0%	
10000-20000	4	56	17	1	0	
	1.3%	18.7%	5.7%	0.3%	0.0%	
20000-30000	8	73	2	0	0	
	2.7%	24.3%	0.7%	0.0%	0.0%	
30000-50000	13	0	1	0	0	
	4.3%	0.0%	0.3%	0.0%	0.0%	
Marital Status						
Unmarried	9	37	24	2	1	0.492
	3.0%	12.3%	8.0%	0.7%	0.3%	
Married	35	104	65	12	11	
	11.7%	34.7%	21.7%	4.0%	3.7%	
Total (N) =300(100%)						

Table 3: Association between depression and clinical factor of migraine patients (N=300)

Description	Depression type					P-Value
	Normal	**Mild**	**Moderate**	**Severe**	**Extremely severe**	
How long has migraine problem been going on?						
Before Pandemic	36	107	65	9	8	0.621
	12.0%	35.7%	21.7%	3.0%	2.7%	
After Pandemic	8	34	24	5	4	
	2.7%	11.3%	8.0%	1.7%	1.3%	
Type of Migraine						
Mild	21	90	45	2	5	0.003
	7.0%	30.0%	15.0%	0.7%	1.7%	
Chronic	23	51	44	12	7	
	7.7%	17.0%	14.7%	4.0%	2.3%	
Have you been affected by a COVID 19						
No	41	134	87	14	12	0.550
	13.7%	44.7%	29.0%	4.7%	4.0%	
Yes	3	7	2	0	0	
	1.0%	2.3%	0.7%	0.0%	0.0%	
Anxiety						
Normal	20	0	1	0	0	0.000
	6.7%	0.0%	0.3%	0.0%	0.0%	
Mild	1	19	3	0	1	
	0.3%	6.3%	1.0%	0.0%	0.3%	
Moderate	9	116	31	2	1	
	3.0%	38.7%	10.3%	0.7%	0.3%	
Severe	2	3	27	0	0	
	0.7%	1.0%	9.0%	0.0%	0.0%	
Extremely severe	12	3	27	12	10	
	4.0%	1.0%	9.0%	4.0%	3.3%	
Total (N) =300 (100.0%)						

Discussion

In this study the prevalence of depression & anxiety for normal, mild, moderate, severe, and extremely severe level is respectively 14.7%, 47.0%, 29.7%, 4.7% and 4%; 7%, 8%, 53%, 10.7% and 21.3%.A systemic review showed the prevalence of depression or depressive symptoms among medical students was 27.2% and that of suicidal ideation was 11.1%[14][13].

Majority of the moderate depression (19.3%) reported at age level of 18-24 years and 3.0% severe depression was reported at the age group of 18-24 years. 27.3% moderate depression reported at female participants while man reported 2.3%. No sever case have found at male while 4% extreme sever case have found at female participants.

12.7% moderate depression survivor is higher secondary level educated. According to the working status among the participant 14.0% house wife were suffering with moderate depression. 4.3% severe depression survivor had monthly income below 10000 Taka.

Age (p=0.035), education (p=0.000), residence (p=0.000), occupation (p=0.000) and monthly Income p= (0.000) are statistically significant associates with depression. Type of migraine (p=0.003), and anxiety (p=0.000) are statistically significant associates with depression. A study found that parental factors with a sound evidence base indicating increased risk for both depression and anxiety include less warmth, more inter-parental conflict, over-involvement, and aversiveness; and for depression additionally[15][14].

Conclusion & Recommendation

Female are more prone to depression than male. Rich people have less depression than poor. Age, education, residence, occupation and monthly income are statistically significant associates with depression. Type of migraine and anxiety are statistically significant associates with depression. Patients need to maintain proper lifestyle to protect from anxiety and depression to control migraine problem. Furthermore study regarding depression and migraine problem is highly recommended.

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