P-ISSN: 2709-6254	Journal of Development and Social Sciences	October-Dec 2024, Vol. 5, No. 4
O-ISSN:2709-6262	https://doi.org/10.47205/jdss.2024(5-IV)13	[140-154]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

A Comparative Study of Psychiatric Comorbidity in Migraine Patients in Khyber Pakhtunkhwa

[1]Fariha Munir, [2] Mariam Jabeen* and [3] Dr. Umm e Kalsoom

1. M. Phil, Psychology, Department of Psychology, Shaheed Benazir Bhutto Women University, Peshawar, KP, Pakistan
2. MS-Child Guidance and Educational Counseling, Clinical Psychology Unit, Government College University, Lahore, Punjab, Pakistan
3. Assistant Professor, Department of Psychology, Shaheed Benazir Bhutto Women's University, Peshawar, KP, Pakistan

***Corresponding Author:** mariam.jabeen007@gmail.com

ABSTRACT

Migraine and psychological disorders are frequently co-occurring around the globe. The present study aimed to compare psychiatric comorbidity in migraine patients. Sample (N=300; n=150 migraine patient, n=150 non-migraine patient) including both genders, males and females, were selected using a purposive sampling technique with ages 20-60 years. For data collection Migraine disability assessment, Migraine specific quality of life, Hospital anxiety and depression scale, and The Suicidal Behavior Questionnaire were used to assess stress, migraine, depression, quality of life, and suicidal behaviors respectively. Correlation analysis revealed that significant relationship between migraine, suicide behavior, depression, and anxiety, and significant differences between non-migraine patients and migraine patients. The migraine patients were experiencing a significant level of depression and anxiety. Migraine patients also score lower on the quality of life than non-migraine patients. Results also revealed that females are more vulnerable to the diagnosis of migraine while males score higher on suicidal behaviors. The study's findings would be applicable in the clinical setting and helpful for clinicians, program developers, and policymakers to design interventions and coping strategies for migraine pain and its negative consequences.

KEYWORDS Anxiety, Burden, Depression, Migraine, Quality of Life, Suicidal Behaviors

Introduction

Migraine, a devastating type of headache, presents symptoms such as vomiting, nausea, and heightened sensitivity to light, sound, and aromas. It affects a significant portion of the global population, with a prevalence of 14.2% in eastern India. Among individuals aged 20 to 40 globally, chronic migraine stands out as the most dominant form of headache, with its incidence peaking around the age of 40 years, overlapping with the prime working years (Raggi et al., 2014).

Migraine ranks as the third-leading cause of disability in individuals under 50 (Herekar et al., 2017). Its symptoms profoundly disrupt daily life, leading to reduced social interactions and career opportunities. The economic toll is significant, with productivity loss, absenteeism, and potential unemployment outweighing medical expenses. Additionally, migraine is often accompanied by sleep disturbances, depression, and cognitive dysfunction, further impacting work performance and socioeconomic status. Furthermore, this disruption of sleep, including increased daytime drowsiness, worsens the quality of life (Stavem et al., 2017).

Hindiyeh et al., (2020) reported that migraine triggers encompass a wide array of foods, with two main categories: those containing substances similar to the brain's Neurotransmitters and those containing substances that mimic Neurotransmitters. Common trigger foods include caffeine, chocolates, and items with nitrites as preservatives,

such as aged cheeses and certain packaged foods. Similarly, these foods also trigger psychological problems such as anxiety and vice versa. These triggers may provoke physical responses, distinct from allergies, which can manifest immediately or take days to appear. Moreover, true food triggers may interact with other conditions, making it even more challenging to identify.

Migraine and psychiatric diseases are frequently co-occurring, and psychiatric comorbidities frequently intensify headache symptoms and cause the severity of migraine. Studies show a strong correlation between psychological disorders such as anxiety depression and migraines. Studies suggest that the risk of concurrent or comorbid psychological disorders is two to three times higher in people with migraines than in non-migraine. This increased frequency could be caused by similar neurobiological processes, such as the dysregulation of neurotransmitters like serotonin, which is important for controlling mood and pain perception. In addition, migraines and other chronic pain disorders often carry a heavy emotional cost that exacerbates psychological discomfort and exacerbates migraine symptoms (Saha et al., 2021).

Migraine is often associated with certain disorders such as stress, sleep disorders, and even suicidal tendencies. The onset of migraines involves complex and largely unknown mechanisms, with a range of community-based and physiological risk factors speculated to be triggered, such as hormonal issues, genetic predisposition, environmental factors, and certain medical conditions like coronary, neurological, and immune disorders. In the United States, migraine affects over 28 million Americans and is even more common than asthma and diabetes combined. These migraines affect women three times more than men, with the most affected age bracket being between 30-50 years, and 35 is the most susceptible age among women. Around 10% of the population suffers from migraines, with the condition most common in men between the ages of 30 and 40 (Lipton et al., 2001).

Literature Review

Gray and colleagues (1999) highlight in their research that stress is one of the primary major causes of migraine with common stressors including fatigue, sleep disruptions, and shifts in one's sleep schedule. Likewise, they also reported that some physiological factors that may trigger migraines include hunger, exercise, and pain. Menstrual cycle changes are also known to be a common migraine cause, especially hormonal shifts in the pre- and postmenopausal periods (Gray et al., 1999). In another research, it was also reported that the nature of migraines makes it challenging to differentiate between unfavorable outcomes, causes, and consequences (Lemmens et al., 2019).

Hormonal fluctuation plays a significant role in the chemistry of the brain and affects the mood of an individual. Literature showed a strong relationship between hormonal change and migraine that can influence the brain pathways related to pain (Reddy et al., 2021). Similarly, a study indicated a possible relationship between hormonal status and migraines, especially involving sexual hormones (Hipolito et al., 2018). It is estimated that women suffer from migraines twice as often as men, with studies indicating variations in migraine attacks according to gender assignment. Findings of some structural neuroimaging investigations have shown that there are differences in female migraine patients compared to male and non-migraine male and female patients (Lay & Broner, 2009).

The functional MRI investigation has shown sex differences in both the intensity of the pain experience and the neural networks involved in migraine. Even though migraines differ substantially in men and women, depending on genetic and behavioral predispositions, hormonal changes are essential. Climacteric factors such as menstruation, childbirth, menopause, and the use of hormonal contraceptives are known to alter the frequency of migraines. A recent systematic analysis of 12 studies revealed that hormonal

replacement therapy (HRT), high estrogen levels, and substantial estrogen oscillations can be another factor for worse prognosis for patients with migraine (Ornello et al., 2021).

Previous studies reported genetics also play a major role in the onset of migraines; for example, monozygotic twins have a higher probability of experiencing migraines in comparison to dizygotic twins. There is evidence of heritability with the rate of genetic transmission estimated at 42%. A family history of migraines supports these findings, as migraines in familial contexts are associated with increased polygenic risk scores (Gormley et al., 2018; Zhao et al., 2016). Migraine has been considered a risk factor for substance use and substance, though the connection is not as strong as with depression and anxiety disorders. This connection between migraines and substance addiction could be explained by the co-occurrence of substance dependence and bipolar disorder (Radat & Swendsen, 2005).

In migraine patients alcohol is proven to be one of the causative factors of migraines, making the probability of an attack rise to 51%. However, it is still not clearly understood how alcohol provokes migraines (Dresler et al., 2019). In research migraine and sleep problems exhibit a strong and evident relationship depending on the type and frequency of migraines where chronic migraine patients report more sleep disturbances than patients with intermittent migraines (Buse et al., 2020; Kelman & Rains, 2005). Migraines and insomnia are associated with sleep disorders such as respiratory disorders, neurological disorders, hypersomnia, and disruptions in the circadian rhythm. Further, sleep disorders are also a major cause of migraine since disturbances in sleep or alterations in the regular sleep-wake cycle can trigger migraines. Migraine patients are over three times more likely to experience insomnia and vice versa compared to non-migraine patients (Boardman et al., 2005).

Migraines are also linked to certain personality traits including perfectionism, neuroticism, restrained aggression, and depression (Lateef et al., 2016). The role of triggers is significant in explaining the nature of migraines, where stressors build up to a migraine tripping point. Expanding across this pathway, laboratory studies show that multiple stressors occurring in close sequence are more effective than a single stressor, pointing to the coincidence of triggers. More work should be conducted to better understand the complex relationship between psychosocial, interpersonal, professional, hereditary, and nutritional components in the onset of migraines (Borkum, 2016).

Migraine is closely linked with elevated psychological distress, whereby stress is often recognized as a cause of migraines (Woldeamanuel & Cowan, 2017). This connection has been known for many years and studies indicate that migraines have a genetic basis and that people with migraines are often low-stress responders and stress seekers (Peroutka, 2014). Stress and anxiety are frequently cited causes of migraines, reducing the quality of life (QOL) for affected individuals (Robbins, 1994; Lantéri-Minet et al., 2011).

Comorbid generalized anxiety disorder (GAD) is common in migraine patients, where the studies show a bidirectional relationship between GAD and migraines, implying that GAD could be an antecedent of migraines (Mercante et al., 2011). Likewise, although the link between obsessive-compulsive disorder (OCD) and migraines remains inconclusive, studies show that those with migraines have a higher prevalence of OCD than those without migraines (Antonaci et al., 2011). Another condition associated with migraines includes post-traumatic stress disorder (PTSD) where the prevalence of the condition among intermittent migraine patients was found to be higher than that of the normal population (Peterlin et al., 2011). This association is important because PTSD is known to contribute to higher levels of headache-related disability in migraine patients. While the relationship between certain personality traits and migraines is uncertain, certain personality disorders, such as trait anxiety and somatic symptoms, may influence migraine occurrence and

management. These disorders can complicate migraine treatment and increase difficulties in therapy execution (Luconi et al., 2007).

According to various studies, individuals with headaches, particularly migraines, have a higher incidence of major depressive disorder compared to those without headaches. Research from Korea and Italy found significant proportions of migraine sufferers also experiencing depression, with percentages ranging from 23% to 36.3%. Meta-analyses have consistently shown a higher prevalence of depression among migraineurs compared to non-migraineurs (Zhang et al., 2019). Migraine sufferers are particularly prone to current depression, with the severity of pain contributing to lower quality of life and increased depressive symptoms. The relationship between migraines and depression is bidirectional, with migraines predicting depression and vice versa. There's also a specific link found between distress and migraines with aura (Ashina et al., 2012; Samaan et al., 2009).

Multiple studies indicate that a significant percentage of migraine sufferers have clinical depression compared to those without headaches. Genetic factors, neurotransmitters such as serotonin and dopamine, and neural circuits play a role in the connection between depressive disorders and migraines. Although some studies have not found a direct link between major depressive illness and migraines, the overwhelming majority support the association between depression and migraines (Peterlin et al., 1993). Migraine and psychiatric comorbidities have a bidirectional relationship, complicating diagnosis and medical treatment. Anxiety, for example, can heighten pain perception and increase the chance of migraine episodes, while frequent migraines can contribute to the development of anxiety disorders, creating a vicious cycle. Likewise, depressed symptoms can higher risk of migraine and can result in a lower quality of life and more healthcare use. It is essential to comprehend this interaction to create management plans that effectively treat both the psychological and physical aspects of migraine disorders (McCracken et al., 2024).

Despite migraine being a prevalent condition, many people who suffer from it remain misdiagnosed. According to the research mentioned above, many people rely on medication to manage their pain. As a result, public awareness about the effectiveness of migraine-specific is crucial to alleviate suffering and prevent migraines from becoming chronic. Migraine pain affects a large percentage of the population, with varied degrees of severity. Identifying migraine causes is critical to reducing migraine severity. So, because illness affects the life quality of a person, it's critical to raise awareness is essential so that those who are affected can get medical help and maintain a clear focus in their lives. Therefore, the primary aim of the current study was to conduct a comparative analysis of psychiatric comorbidities among migraine patients and to find out the relationship between anxiety, depression, quality of life, and suicide ideation in patients with chronic migraine. This area has not been much research in Pakistan, particularly in this region. Therefore, this study aims to investigate psychiatric comorbidities of migraine patient population of Khyber Pakhtunkhwa (KP).

Bio-Psychosocial Model Theoretical Framework

The bio-psychosocial model also discusses the biological, psychological, and social aspects of the migraine patient. This model explains that biological aspects of migraine include genetic predisposition, hormone changes, neurotransmitter imbalances such as serotonin, and environmental triggers. This model states that patients with migraines also experience psychological problems that include stress, anxiety, depression, and coping strategies.

Emotional stress also triggers psychological reactions to pain, such as anxiety of another attack due to which symptoms of migraine can also prolong. According to Cloninger et al., (1993), migraines have a specific personality type that both impacts and is influenced

by how they perceive their migraine. Certain personality traits such as neuroticism may influence migraine attacks or initiation of the disease. According to the bio-psychosocial model, migraine patients showed higher levels of harm avoidance and persistence, as well as lower levels of self-directedness, than non-migraines. According to Eysenck's three-factor model, neuroticism is a personality trait that symbolizes the proclivity for instability as well as sentiments like worry, fear, anger, and frustration. Several studies find higher levels of neuroticism in migraines than in non-migraines, and lower levels of extraversion (Rosignoli et al., 2022). Social factors such as work stress, family interactions, and access to healthcare can all have an impact on migraine frequency and severity.

Hypotheses

H1. Depression and anxiety might be high among migraine patients with medication as compared to migraine patients with no medication.

H2. Depression and the use of medicine have a relationship with suicidal ideation among migraine patients as compared to non-migraine patients.

H3. There might be a negative correlation between intensity of pain, disturbed sleep, and quality of life among migraine patients.

H4. Females might have more chronic migraine as compared to males.

H5. Males might score high on migraine disability assessment as compared to females.

Material and Methods

Nature

The research design used for this study was cross-sectional with a survey method.

Population

The population of the current research was migraine.

Sample and Sample size

The sample for the present study using purposive sampling consisted of 150 outdoor patients suffering from migraine visiting neurological department of from neurological departments of Ayub Medical Complex Hospital, Combined Military Hospital, Lady Reading Hospital Peshawar, Frontier Medical College, Abbottabad International Medical College, and 150 Non-migraine patients. The participants were both male and female ages ranging from 20-60 years.

Instrument

Demographic information

A self-made demographics information sheet was used for Age, gender, education, marital status, onset age, pain frequency (chronic or episodic), pain intensity, pain 8 duration every day, how many hours a day, whole day, how many days a week, treatment medication, sleep, no medication.

Migraine Disability Assessment Questionnaire

The MIDAS questionnaire was created to improve migraine treatment by assessing headache-related impairment. Headache patients are asked five questions and are given a

score based on the number of days they have been unable to participate in activities owing to migraine in the previous three months. Separate population-based studies of migraine sufferers were used to assess the questionnaire's core uniformity, test-retest dependability, and legitimacy (exactness) (Steward et al., 2001). The Cronbach's alpha reliability of the scale ranged from α=.77 to α=.87.

Migraine - Specific Quality of Life Questionnaire

The Migraine-Specific Quality of Life Questionnaire version 2.1 (MSQ) is a 14-item MSQ developed in 1992 by Glaxo SmithKline Research and Development Limited (GSK) to assess how migraines affect and/or bound day-to-day working across three spheres: RR (7 items assessing how migraines bound one's everyday societal and work-related undertakings); PR (4 items assessing how migraine avert these undertakings); EF (3 items assessing the sentiments linked with migraines). Participants rate the following on a 6-point scale: "none of the time," "a little bit of the time," "some of the time," "a good bit of the time," "most of the time," and "all of the time," with marks ranging from 1-6. The sum of item responses is used to calculate raw dimension scores, which are then rescaled from 0-100, with upper scores specifying higher quality of life. (Rendas et al., 2013). The Cronbach's alpha reliability of the scale ranged from α=.70 to α=.80.

Hospital Anxiety and Depression Scale

Zaigmond and Snaith (1983) developed this scale. This questionnaire consists of 14 items in which 7 questions develop to measure anxiety and 7 for depression. This scale takes two to three minutes to complete. Score from 0 to 21 (best to worst). Calculated for each subscale, tallies of fewer than 7 show non-cases, 8-10 show mild, 11- 14 show moderate, and 15-21 tally indicate glaring anxiety and depression (Stern, 2014). The Cronbach's alpha relaibilty of the scale α=.89.

Suicidal Behaviour Questionnaire-Revised (SBQ-R)

The suicidal behavior questionnaire (SBQ) is a 34-item self-report examination established by Linehan et al., (1981). Linehan et al. devised a new scale with four and fourteen items. The SBQ-R brief version is frequently used to assess the possibility of suicide in youngsters and grownups. The suicidal behavior questionnaire revised (SBQ-R) has four items with total scores ranging from 3 to 18. Internal consistency for the psychiatric adolescence inpatient sample was (= 0.88), for the psychiatric adult inpatient sample was (= 0.87), and Cronbach's alpha reliability was α =.80 for the non-clinical university student group (Osman et al., 2001; Aloba et al., 2017).

Procedure

In the current study, 300 participants ranging in age from 20-60 years were included. The sample was based on two groups: Group I (n= 150) migraine patients from the general medical, psychiatric, and neurological outdoor patients of different hospitals of Peshawar and Abbottabad (KP). Whereas, Group II (n= 150) drawn from the Non-migraine patient has no migraine symptoms. Those meeting exclusion and inclusion criteria were invited to contribute to the study. Willing participants were briefed about the study objectives and also ensured about the confidentiality of the data. They also confirmed that they have the right to withdraw from the study. Both males and females participated in the study.

Data Collection

Migraine patients were approached both online and in person. Data was collected from 2020 -2021.

Data Analysis

Data was analyzed using SPSS. Reliability analysis and descriptive statistics analysis were done in the first step. The second step was using correlation analysis to examine the relationship between the study variable and simple linear regression analysis to examine the study variables' predictive relationship. In the third phase, the difference between the research variables was analyzed using independent sample t-tests. The study's hypotheses were:

Ethical Considerations

Initially, the topic was approved by the departmental ethical committee at Shaheed Benazir Bhutto University, Peshawar, Khyber Pakhtunkhwa (KPK). Participants were briefed about the purpose of the research. The confidentiality and anonymity of the participants were assured. It was also informed to the participants that they could withdraw from the research at any time. Permission to use a scale for data collection was taken from the original authors.

Results and Discussion

Table 1 shows the results of descriptive analysis that includes mean, standard deviation, and reliability analysis. The data consistency was assessed using the Cronbach alpha of all the variables i.e., Migraine Disability Assessment scale, Migraine Specific Quality of Life, Hospital Depression Anxiety scale, and Suicide behaviors scale are .98, .97, .95, .93 respectively.

Table 1
Descriptive and Psychometric properties of the Scales

Scales	M	*SD*	Range	Alpha Coefficient
MD	8.02	3.68	5-20	.98
MSQL	28.41	16.97	14-70	.97
HAD	8.43	4.53	0-34	.95
Dep scale	7.89	2.34	0-34	.79
Anx scale	6.67	1.63	0-34	.84
SBQLR	22.12	10.45	0-19	.93

Table 2
Demographic Characteristics of the Study Variable (N=300)

Sample Description	F	%
Sample		
Non-migraine patient	150	50
Migraine Patients	150	50
Patient Gender		
Male	150	50
Female	150	50
Age		
20-35	240	80
36-50	19	6.3
51-65	41	13.7
Education level		
Primary	5	1.7
Secondary	17	5.7
Higher	267	89
Vocational	11	3.7
Migraine Diagnosis		
Chronic	179	59.66
Episode	118	39.3
Pain Duration		
Everyday	21	7
Once a week	124	41.3

Other	155	51.7
Pain Intensity		
No Pain	122	40.66
Mild	29	9.66
Moderate	96	32.0
Severe	53	17.66
Disturbed Sleep		
Yes	120	40
No	180	60
Medication		
Yes	98	32.3
No	202	67.7

Table 3 describes inter-correlations among scales. Results suggest that Migraine Disability Assessment scale has a significant positive correlation Migraine Specific Quality of Life (r =.70, p < .01), the Hospital Depression Anxiety scale (r =.73, p < .01), and also the Suicide behaviors scale. (r =.36, p < .01). Migraine Specific Quality of Life has a significant positive correlation with the Hospital Depression Anxiety scale (r =.81, p < .01) and the Suicide behaviors scale. (r =.48, p < .01) while the Hospital Depression Anxiety scale has a significant positive relation with the Suicide behaviors scale (r =.13, p < .01).

Table 3
Correlation Analysis for all the Variables Used in the Study (N = 300)

Variables	M	SD	MD	MSQL	HAD	SBQLR
MD	8.02	3.68	--	.70**	.73**	.36**
MSQL	28.41	16.97		--	.81**	.48*
HAD	8.43	4.53			--	.62*
SBQLR	22.12	10.45				--

***p* < .01.

Table 4 describes inter-correlations among scale and demographic variables. Results suggest that Pain duration has a significant positive correlation with Disturbed sleep (r =.71, p < .01), while significant negative relationship with Migraine Specific Quality of Life (r =-.80, p < .01) while Disturbed sleep also has a significant negative relation with Migraine Specific Quality of Life (r =-.74, p < .01).

Table 4
Correlation Analysis (N = 300)

Variables	M	SD	Pain Duration	Disturbed Sleep	MSQL
Pain duration	2.45	.62	--	.71**	-.80**
Disturbed sleep	1.60	.49		--	-.74**
MSQL	28.41	16.97			--

*Note. MSQL= Migraine Specific Quality of Life **p* < .01.

Depression and medication use were used as predictor variables, while suicide behaviors were used as the outcome variable in a regression analysis. With an ΔR2 value of.39, the predictors with F (3, 297) = 98.14, p <.001, can account for 39% of the variance in the dependent variable. The results show that whereas medication use (β = -.43, p <.05) has a negative effect on migraine patients' suicidal behaviors, depression (β =.20, p >.001) has a significant favorable effect on suicide behaviors.

Table 5
Regression Analysis for Predicting Suicide behaviors of migraine patients from Depression and use of medications (N= 300)

	Suicide behaviors		
Variables	*β*	*ΔR²*	*F*
Depression	.20***	.39	98.14
use of medications	-.43*		

***p* < .01, ****p* < .001, **p* < .05

Table 6 reflects the difference in depression and anxiety on construct using medications in migraine patients. The change in the mean is proved significant with medications {t (198) = 14.41, p < .05}. It implies that migraine patients were higher on depression and anxiety who are not using medications.

Table 6
Comparison of use of medications on depression, Anxiety, of migraine patients (N = 300)

Variables	With medications (n = 98)		Without medications (n = 202)			Cohens d
	M	*SD*	*M*	*SD*	t (298)	
Depression	8.54	3.94	3.32	4.44	15.20	1.24
Anxiety	11.38	3.71	2.34	4.44	11.88	2.20

*p .05. **p < .01.

The findings in Table 7 show the differences between genders in migraine construct diagnosis. It is determined that the mean difference in females is significant {t (198) = -.90, p <.05}. It suggests that women were diagnosed with migraines at a higher rate than men.

Table 7
Comparison of Gender on the diagnosis of migraine (N = 300)

Variables	Males (n = 150)		Females (n = 150)		t (298)	Cohens d
	M	*SD*	*M*	*SD*		
Migraine diagnosis	87	.93	98	1.09	-. 90	7.35

*p .05. **p < .01.

The gender mean difference is represented in Table 8 on suicidal behaviors in migraine patients. The mean difference is found to be significant in males {t (198) = .75, p < .05}. It implies that males were higher on suicidal behaviors than females.

Table 8
Comparison of Gender on suicidal behaviors (N = 300)

Variables	Males (n = 150)		Females (n = 150)		t (298)	Cohens d
	M	*SD*	*M*	*SD*		
Migraine diagnosis	2.01	3.82	1.69	3.47	. 75	0.01

*p .05. **p < .01.

Discussion

The present study aimed to explore the comparative study of psychiatric comorbidity in migraine patients. The basic purpose of the separate study was to explore the aims and hypotheses of the study.

It was hypothesized that there would be a correlation between passion for pain, disturbed sleep, and migraine patients' life quality. Relationship analysis supported the supposition as it shows that Pain duration has a noteworthy positive correlation with concerned sleep and a significant negative relationship with migraine-specific quality of life while disturbed sleep also has a momentous negative relation with migraine-specific quality of Life (See Table 4). It is also proven by the support of empirical evidence that frequent studies have shown a negative relation among study variables. Niv and Kreitler's (2001) examination of the association between pain and quality of life found that it negatively impacts both physical and psychological aspects of life. The outcome is conditional on the original illness and the person's exclusive traits, as well as the pain's length, severity, acuteness, affectivity, and meaning. Studies on cancer pain in particular have demonstrated that QOL is sensitive to the administration of pain and the calming techniques used (Niv & Kreitler, 2001).

The second hypothesis in this study inquires that depression and the use of medicine will cause desperate ideation among migraine patients associated with non-migraine patients. Regression analysis results support this suggestion of depression and the use of medication as predictor variables and Suicide behaviors as outcome variables. The ΔR^2 value of .39 indicates that 39% variance in the dependent variable can be accounted for, by the predictors with F (3, 297) = 98.14, $p < .001$. The findings indicate that depression has a significant positive effect on *Suicide behaviors* while the use of medications has a negative impact on suicidal behaviors of migraine patients (See Table 5). Associated with the outcome of the present study one study investigated the Factors most significantly linked with SI were depression ranging from 14.6 (migraine) to 38.6 (stroke) this was reported in a study of SI in neurological disorders. And nervousness 8.6 for migraines, and 15.3 for epilepsy (Altura et al, 2016). The existence of any pain condition was shown to be strongly linked with lifetime suicidal thoughts, according to another research in the same field titled suicidal thoughts and Behavior among Adults with Self-reported Pain Conditions. Lifetime suicide thoughts and plans were still strongly linked with severe or frequent headaches and "other" chronic pain; "other" chronic pain was still associated with attempts (Braden & Sullivan, 2008).

The third hypothesis stated that depression and anxiety will be high among migraine patients with medication as associated with migraine patients with no medicine. The results of the t-test of the present study demonstrated the mean differences in depression and anxiety on paradigm-using medications in migraine patients. The mean difference is found to be significant on with medications. It implies that migraine patients were higher on depression and anxiety who are not using medications (See Table 6). In the supporters of the contemporary study, the empirical studies have also proved that depression and anxiety would be more if they remained untreated. There seems to be a construction between migraine and affective ailments, notably sadness and anxiety, as shown by research looking at the relationship between migraine and psychiatric comorbidity. Both the efficacy of migraine therapy and the patient's quality of life may be enhanced by addressing the underlying causes of depression and anxiety. Patients who suffer from chronic pains are more prone to misuse or abuse pain drugs due to unwarranted usage. Warning symptoms of medicine abuse in a patient should advance red flags. (Sheftell & Atlas, 2002). Detoxification and preventative therapy have been shown to suggestively decrease disability, sadness, and anxiety in people with MOH (Bendtsen et al., 2014)

According to the fourth hypothesis, Females will have more chronic migraine as associated with males. This hypothesis is also supported by the results of the t-test which shows that mean alterations of gender on construct diagnosis of migraine. The mean difference is found to be significant in Females. It suggests that females were higher on diagnosis of migraine than males (See Table 7). It is also supported by the earlier literature that many studies considered the gender difference in migraine easy-going along with their symptomology and other characteristic features. Women were shown to be at greater risk for developing migraine and PM, according to one research. Migraine and PM signs, air, related disability, and healthcare usage were all more common in women than in men. (Buse et al., 2013). Another research looked at the same issues, including the occurrence, impact, and treatment of migraine and severe headaches. Especially among women of childbearing age, migraine, and other severe headaches are a dominant and significant public health concern (Smitherman et al., 2013). Another research found that the greatest rates of Chronic Migraine (CM) in middle-aged women from low-income families. Inability due to severe headaches was more prevalent and common specifically among females with chronic migraine patients (Buse et al., 2012).

The last hypothesis of the present study considers that males will score high on hopeless behaviors as compared to females. The results of the t-test show the mean differences of gender in depressive behaviors in migraine patients (See Table 8). It is also supported by previous studies, according to one research looking at how irresponsibility

rates vary depending on gender, women had a higher occurrence of deliberate self-harm (DSH) and there is a healthier link between DSH and male suicide. It implies that female DSH is not always motivated by suicide ideation. DSH also used to express pain or to change the behavior and attitudes of others, appears to be more dominant in females (Hawton et al, 1998). It has been shown that DSH is linked with increased dangerous ideation in men. In community samples, females greatly more than men in writing irresponsible thoughts (Hawton, 2000).

Conclusion

This research explores a comparative analysis of Psychiatric Comorbidity in Migraine Patients. Results declared significant differences between these two groups i.e., normal and migraine patients. Migraine patients are experiencing a significant level of depression and anxiety. Migraine patients also score low on the quality of life as compared to migraine patients, which means they have a poor quality of life which ultimately leads them towards many challenging issues like disrupted sleep patterns, dysfunctioning in daily activities and even worsening their condition up to the level of getting involved in suicidal behaviors. Findings confirmed that a Level of depression, anxiety, and suicidal behaviors can be reduced by proper use of medications. Results also revealed that females are more vulnerable to the diagnosis of migraine. At the same time, males score higher on suicidal behaviors which implies that the ability to cope is higher in females, and males diagnosed with migraine comorbid with depression and anxiety are unable to adapt or implement coping leading them to the suicidal behaviors.

Recommendations

Researchers interested in this domain should also focus on the ways to reduce and coping strategies along with the effective medication to relieve migraine. The present study is quantitative, it can also be explored using qualitative or mixed methods to investigate the in-depth knowledge. Data collected from a single source can also impact the replicability of the study, it is suggested that the data should also be explored from multiple resources. The sample size is small due to the time limit which can impact the generalizability of the study, in future researchers interested in this topic should take a larger sample to identify the prevalence and to enhance external validity.

References

Ahmed, T., Huma, A., Ahmed, W., Balouch, N., & Malhani, W. (2018). Migraine persistence among university students- A case study of SMBBMU Larkana. *Rads J Pharm Sci*, *6*, 254-8.

Alharbi, A.A., Alharbi, S.H., Albalawi, A.M., Alshdokhi, A.M., Alanazi, W.A., Alsiraa, M.N., Alkhrisi, M.H., Al-Ostaz, S.A., Al-Harbi, D.A., & Alruwaili, R.M. (2018). Migraine among medical and non-medical students of Hail University. *The Egyptian Journal of Hospital Medicine, 71*, 3343-3350.

Altura, K. C., Patten, S. B., Fiest, K. M., Atta, C., Bulloch, A. G., & Jetté, N. (2016). Suicidal ideation in persons with neurological conditions: prevalence, associations and validation of the PHQ-9 for suicidal ideation. *General Hospital Psychiatry*, *42*, 22-26.

Antonaci, F., Nappi, G., Galli, F., Manzoni, G. C., Calabresi, P., & Costa, A. (2011). Migraine and psychiatric comorbidity: a review of clinical findings. *The Journal of Headache and Pain*, *12*(2), 115–125. https://doi.org/10.1007/s10194-010-0282-4

Ashina, S., Serrano, D., Lipton, R. B., Maizels, M., Manack, A. N., Turkel, C. C., Reed, M. L., & Buse, D. C. (2012). Depression and risk of transformation of episodic to chronic migraine. *The Journal of Headache and Pain*, *13*(8), 615–624. https://doi.org/10.1007/s10194-012-0479-9

Aurora, S. K., Cao, Y., Bowyer, S. M., & Welch, K. M. (1999). The occipital cortex is hyperexcitable in migraine: experimental evidence. *Headache*, *39*(7), 469–476. https://doi.org/10.1046/j.1526-4610.1999.3907469.x

Bakhshi, K.N., & Saqib (2014). The prevalence, classification, and characteristics of headache in medical students of Karachi, Pakistan, *Journal of Pioneering Medical Sciences*. *6*, 78-83.

Barbanti P, Fabbrini G, Pesare M, Cerbo R. (2001). Neurovascular symptoms during migraine attacks. *Cephalalgia*, *21*(4):295.

Baskin, S. M., Lipchik, G. L., & Smitherman, T. A. (2006). Mood and anxiety disorders in chronic headache. *Headache*, *46 Suppl 3*, S76–S87. https://doi.org/10.1111/j.1526-4610.2006.00559.x

Bendtsen, L., Munksgaard, S., Tassorelli, C., Nappi, G., Katsarava, Z., Lainez, M., Leston, J., Fadic, R., Spadafora, S., Stoppini, A., & Jensen, R. (2013). Disability, anxiety, and depression associated with medication-overuse headaches can be considerably reduced by detoxification and prophylactic treatment. Results from a multicentre, multinational study (COMOESTAS project). *Cephalalgia*, *34*(6), 426-433. https://doi.org/10.1177/0333102413515338

Blumenfeld, A. M., Bloudek, L. M., Becker, W. J., Buse, D. C., Varon, S. F., Maglinte, G. A., Wilcox, T. K., Kawata, A. K., & Lipton, R. B. (2013). Patterns of use and reasons for discontinuation of prophylactic medications for episodic migraine and chronic migraine: results from the second international burden of migraine study (IBMS-II). *Headache*, *53*(4), 644–655. https://doi.org/10.1111/head.12055

Boardman, H. F., Thomas, E., Millson, D. S., & Croft, P. R. (2005). Psychological, sleep, lifestyle, and comorbid associations with headache. *Headache*, *45*(6), 657–669. https://doi.org/10.1111/j.1526-4610.2005.05133.x

Borkum, J. M. (2015). Migraine triggers and oxidative stress: A narrative review and synthesis. *Headache: The Journal of Head and Face Pain*, *56*(1), 12-35. https://doi.org/10.1111/head.12725

Braden, J. B., & Sullivan, M. D. (2008). Suicidal thoughts and behavior among adults with self-reported pain conditions in the national comorbidity survey replication. *The Journal of Pain*, *9*(12), 1106-1115. https://doi.org/10.1016/j.jpain.2008.06.004

Buse, D. C., Loder, E. W., Gorman, J. A., Stewart, W. F., Reed, M. L., Fanning, K. M., & Lipton, R. B. (2013). Sex differences in the prevalence, symptoms, and associated features of migraine, probable migraine and other severe headache: results of the American migraine prevalence and prevention (AMPP) study. *Headache: The Journal of Head and Face Pain*, *53*(8), 1278-1299.

Buse, D. C., Manack, A. N., Fanning, K. M., Serrano, D., Reed, M. L., Turkel, C. C., & Lipton, R. B. (2012). Chronic migraine prevalence, disability, and socio-demographic factors: results from the American migraine prevalence and prevention study. *Headache: The Journal of Head and Face Pain*, *52*(10), 1456-1470.

Buse, D. C., Reed, M. L., Fanning, K. M., Bostic, R., Dodick, D. W., Schwedt, T. J., Munjal, S., Singh, P., & Lipton, R. B. (2020). Comorbid and co-occurring conditions in migraine and associated risk of increasing headache pain intensity and headache frequency: results of the migraine in America symptoms and treatment (MAST) study. *The Journal of Headache and Pain*, *21*(1), 23. https://doi.org/10.1186/s10194-020-1084-y

Buse, D. C., Silberstein, S. D., Manack, A. N., Papapetropoulos, S., & Lipton, R. B. (2013). Psychiatric comorbidities of episodic and chronic migraine. *Journal of Neurology*, *260*(8), 1960–1969. https://doi.org/10.1007/s00415-012-6725-x

Cloninger, C. R., Svrakic, D. M., & Przybeck, T. R. (1993). A psychobiological model of temperament and character. *Archives of General Psychiatry*, *50*(12), 975. https://doi.org/10.1001/archpsyc.1993.01820240059008

Dodick D. W. (2018). Migraine. *The Lancet, 391*(10127), 1315–1330.

Dresler, T., Caratozzolo, S., Guldolf, K., Huhn, J., Loiacono, C., Niiberg-Pikksööt, T., Puma, M., Sforza, G., Tobia, A., Ornello, R., & Serafini, G. (2019). Understanding the nature of psychiatric comorbidity in migraine: A systematic review focused on interactions and treatment implications. *The Journal of Headache and Pain*, *20*(1). https://doi.org/10.1186/s10194-019-0988-x

Ferrari, M., Goadsby, P., Roon, K., & Lipton, R. (2002). Triptans (serotonin, 5-HT1B/1D agonists) in migraine: detailed results and methods of a meta-analysis of 53 trials. *Cephalalgia*, *22*(8), 633-658. https://doi.org/10.1046/j.1468-2982.2002.00404.x

Goadsby, P., Grosberg, B., Mauskop, A., Cady, R., & Simmons, K. (2014). Effect of noninvasive vagus nerve stimulation on acute migraine: An open-label pilot study. *Cephalalgia*, *34*(12), 986-993. https://doi.org/10.1177/0333102414524494

Gormley, P., Kurki, M., Hiekkala, M., Veerapen, K., Häppölä, P., Mitchell, A., Lal, D., Palta, P., Surakka, I., Kaunisto, M., Hämäläinen, E., Vepsäläinen, S., Havanka, H., Harno, H., Ilmavirta, M., Nissilä, M., Säkö, E., Sumelahti, M., Liukkonen, J., & Palotie, A. (2018). Common variant burden contributes significantly to the familial aggregation of migraine in 1,589 families. *Neuron*, *98*(4), 743-753. https://doi.org/10.1016/j.neuron.2018.04.014

Gray, R. N., Goslin, R. E., McCrory, D. C., Eberlein, K., Tulsky, J., & Hasselblad, V. (1999). *Drug treatments for the prevention of migraine headaches*. Agency for Health Care Policy and Research (US).

Guidetti, V., Galli, F., Fabrizi, P., Giannantoni, A. S., Napoli, L., Bruni, O., & Trillo, S. (1998). Headache and psychiatric comorbidity: clinical aspects and outcome in an 8-year follow-up study. *Cephalalgia: An International Journal of Headache*, *18*(7), 455–462. https://doi.org/10.1046/j.1468-2982.1998.1807455.x

Guidetti, V., Galli, F., & Sheftell, F. (2010). Headache attributed to psychiatric disorders. *Handbook of Clinical Neurology*, 657-662. https://doi.org/10.1016/s0072-9752(10)97055-3

Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. (2018). *Cephalalgia: An International Journal of Headache*, *38*(1), 1–211. https://doi.org/10.1177/0333102417738202

Hepp, Z., Dodick, D. W., Varon, S. F., Gillard, P., Hansen, R. N., & Devine, E. B. (2015). Adherence to oral migraine-preventive medications among patients with chronic migraine. *Cephalalgia: An International Journal of Headache*, *35*(6), 478–488. https://doi.org/10.1177/0333102414547138

Herekar, A. A., Ahmad, A., Uqaili, U. L., Ahmed, B., Effendi, J., Alvi, S. Z., Shahab, M. A., Javed, U., Herekar, A. D., Khanani, R., & Steiner, T. J. (2017). Primary headache disorders in the adult general population of Pakistan – a cross-sectional nationwide prevalence survey. *The Journal of Headache and Pain*, *18*(1). https://doi.org/10.1186/s10194-017-0734-1

Hindiyeh, N. A., Zhang, N., Farrar, M., Banerjee, P., Lombard, L., & Aurora, S. K. (2020). The role of diet and nutrition in migraine triggers and treatment: A systematic literature review. *Headache: The Journal of Head and Face Pain*, *60*(7), 1300-1316. https://doi.org/10.1111/head.13836

Hipolito Rodrigues, M. A., Maitrot-Mantelet, L., Plu-Bureau, G., & Gompel, A. (2018). Migraine, hormones, and the menopausal transition. *Climacteric*, *21*(3), 256 266. https://doi.org/10.1080/13697137.2018.1439914

Holroyd, K., Drew, J., Cottrell, C., Romanek, K., & Heh, V. (2007). Impaired functioning and quality of life in severe migraine: The role of Catastrophizing and associated symptoms. *Cephalalgia*, *27*(10), 1156-1165. https://doi.org/10.1111/j.1468-2982.2007.01420.x

Hunfeld, J., Passchier, J., Perquin, C., Hazebroek-Kampschreur, A., Van Suijlekom-Smit, L., & Van der Wouden, J. (2001). Quality of life in adolescents with chronic pain in the head or at other locations. *Cephalalgia*, *21*(3), 201-206. https://doi.org/10.1046/j.1468-2982.2001.00187.x

Ibrahim, N.K., Alqarni, A.K., Bajaba, R.M., Aljuhani, F., Bally, A.M., & Wakid, M.H. (2018). Migraine among students from the faculty of applied medical sciences, King Abdulaziz University, Jeddah, Saudi Arabia. *Journal of Advances in Medicine and Medical Research*, *27*(11), 1-10

Juang, K., Wang, S., Fuh, J., Lu, S., & Su, T. (2000). Comorbidity of depressive and anxiety disorders in chronic daily headache and its subtypes. *Headache: The Journal of Head and Face Pain*, *40*(10), 818-823. https://doi.org/10.1111/j.1526-4610.2000.00148.x

Karimi, L., Hoppe, D., Burdick, C., Buultjens, M., Wijeratne, T., & Crewther, S. G. (2020). Recent evidence regarding the association between migraine and suicidal behaviors: A systematic review. *Frontiers in Neurology*, *11*. https://doi.org/10.3389/fneur.2020.00490

Kelman, L., & Rains, J. C. (2005). Headache and sleep: Examination of sleep patterns and complaints in a large clinical sample of Migraineurs. *Headache: The Journal of Head and Face Pain*, *45*(7), 904-910. https://doi.org/10.1111/j.1526-4610.2005.05159.x

Lateef, A., Dahar, M. A., & Latif, K. (2016). Impact of migraine headache on psychosocial life of Type-D personality in medical students. *Rawal Medical Journal*, *41*(4), 410-414.

McCracken, H. T., Thaxter, L. Y., & Smitherman, T. A. (2024). Psychiatric comorbidities of migraine. *Handbook of Clinical Neurology*, *199*, 505–516. https://doi.org/10.1016/B978-0-12-823357-3.00013-6

Peterlin, B. L., Rosso, A. L., Sheftell, F. D., Libon, D. J., Mossey, J. M., & Merikangas, K. R. (2011). Post-traumatic stress disorder, drug abuse, and migraine: new findings from the National Comorbidity Survey Replication (NCS-R). *Cephalalgia: An International Journal of Headache*, *31*(2), 235–244. https://doi.org/10.1177/0333102410378051

Reddy, N., Desai, M. N., Schoenbrunner, A., Schneeberger, S., & Janis, J. E. (2021). The complex relationship between estrogen and migraines: a scoping review. *Systematic Reviews*, *10*(1), 72. https://doi.org/10.1186/s13643-021-01618-4

Rosignoli, C., Ornello, R., Onofri, A., Caponnetto, V., Grazzi, L., Raggi, A., Leonardi, M., & Sacco, S. (2022). Applying a biopsychosocial model to migraine: Rationale and clinical implications. *The Journal of Headache and Pain*, *23*(1). https://doi.org/10.1186/s10194-022-01471-3

Saha, S., Lim, C. C. W., Cannon, D. L., Burton, L., Bremner, M., Cosgrove, P., Huo, Y., & J McGrath, J. (2021). Co-morbidity between mood and anxiety disorders: A systematic review and meta-analysis. *Depression and Anxiety*, *38*(3), 286–306. https://doi.org/10.1002/da.23113