ASSOCIATION OF DEPRESSION WITH MIGRAINE: A QUANTITATIVE RESEARCH STUDY

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Abstract

This study investigates the relationship between depression and migraine headaches. A total of 151 participants showed that major depressive disorder patients experienced more frequent and intense migraine attacks lasting more extended periods than those with low or no depression symptoms. The studied data shows significant relationships exist between depression intensities and migraine features and reveals that depression coexistence occurs often in patients of migraine. The study shows that outcome of the headache and treatment response depends on depression intensity and patient age together with their gender and family health history along with migraine duration. Patients performance in migraine management reduced when they suffered from severe grades of depression. An assessment of a patient's mental health should become part of migraine treatment care but requires complete treatment solutions to be most effective. Improved health outcomes are achievable when healthcare professionals understand the link between depression and migraine, which results in better patient care and superior health outcomes.

INTRODUCTION

The neurological disorder called migraine triggers multiple headache attacks, which mainly involve moderate or severe headaches together with sensitivity to light and sound and nausea and vomiting. According to epidemiological studies, migraine occurs in 12% of the population, while it develops more frequently in women (17%) than in men (6%). The global burden of migraine has become more noticeable during the past twenty years because the World Health Organization now ranks it as the sixth most disabling condition worldwide. [1]

Migraine pathophysiology shows a continuous progression among various domains and comorbidities, leading to extra complications in treatment management. Epidemiological studies have established a two-way connection between migraine and depression, which makes these conditions appear simultaneously. Research shows that people with migraine experience depression at a rate 2.5 times higher than those without migraine, while depression makes individuals vulnerable to migraine development. [2]. Most individuals with comorbid depression and migraine are not identified in primary care settings although these conditions heavily impact how patients function and live, when management of either disorder is inadequate the treatment outcomes suffer. [3]

Migraine symptoms increase in intensity and occurrence rate, while disability worsens when someone lives with both depression and migraine

simultaneously. The progression of migraines leads to worsened depressive symptoms, resulting in complex treatment needs for patients. [4] Developing practical therapeutic approaches requires physicians to recognize how depression interacts with neurological symptoms while treating patient suffering from headaches.

Diagnostic procedures for migraine require healthcare practitioners to interview patients thoroughly about their headaches and related symptoms, together with their triggering factors and elements that either cause or reduce symptoms. [5] Medical professionals must emphasize psychological testing when identifying dual disorders in patients. Standardized psychological measurements enable healthcare professionals to detect depression grades in migraines and to differentiate between various types of psychological issues affecting migraine symptoms and therapy success. [6]

The depression diagnosis relies on three essential indicators: chronic sadness alongside reduced interest in activities and several mental and physical symptoms that limit regular life activities. Depression that exists with migraine affects how patients perceive pain and affect their approaches to coping with symptoms as well as their willingness to follow treatment plans. [7] Average individuals possessing sufficient social backing together with sound coping techniques manage to surpass both migraine episodes and depressive occurrences. Lack of support systems combined with nonexistent major protective factors leads patients to worsening of health conditions along with higher attack rates and more severe symptoms. Patient patterns continue throughout treatment periods, resulting in negative consequences that may lead to disability in growth along with decreased quality of life and poor response to conventional migraine treatments. [8] Both migraine-related disabilities and the pain of migraines cause depressive symptoms that create an additional set of clinical complications apart from those caused by the progression of migraine. Untreated depression in patients leads to progressively deteriorating migraine symptoms, which result in more significant healthcare needs that simultaneously affect their physical health and psychological quality of life. [9] In a study aimed at assessing depression in conjunction with migraine characteristics in order to understand clinical patterns. [10] Major depression stood out as the prominent comorbidity among 24.4% of participants, whereas moderate depressive symptoms appeared in 31.8% of cases, and 25.7% of participants presented mild depressive symptoms. [11] A current medical evaluation seeks to determine the connection between migraine characterizations and depressive states. [12] Developing countries show limited research on migraine outcomes based on depression severity despite increased awareness of the impact of psychological factors on headache disorders. [13] [14] The research aids in the understanding of depression's effects on migraine outcomes. The approach generates improved healthcare treatment, allowing medical teams to provide detailed patient care.

OBJECTIVE
To examine the link between depression symptoms and migraines in migraine patients.

OPERATIONAL DEFINITIONS
The magnitude of depression self-assessment followed a four-tier system utilizing scores from the Patient Health Questionnaire-9 (PHQ-9).

A diagnosis of depression was not possible with results between 0-4 on the PHQ-9 test since symptoms remained minimal.

A diagnosis of mild depression occurred when PHQ-9 scores indicated symptoms ranging between 5-9, which requires periodic evaluation.

People with PHQ-9 scores between 10 and 14 received a diagnosis of moderate depression because it revealed significant symptoms needing medical assistance.

A PHQ-9 score which exceeded 15 points resulted in a diagnosis of severe depression because it signaled the requirement for urgent clinical therapy.

The migraine characteristics assessment included the utilization of these follow-up measures:

Medical professionals determined episodic migraine by counting headache days per month, which totalled 0-14, while chronic migraine occurred when people experienced 15 or more migraine days monthly.

The visual analogue scale (VAS) measured pain intensity from zero to ten, corresponding to no pain at one end and the most severe possible pain at the other.

Doctors classified attack duration into brief when it lasted less than 12 hours, moderate from 12 to 24 hours, and prolonged for longer than 24 hours.

The Migraine Disability Assessment (MIDAS) questionnaire evaluated disability through scoring that proceeded as follows:

The grading indicates little or no disability for Individuals in Grade I (0-5 score range).

• Grade II (6-10): Mild disability
• Grade III (11-20): Moderate disability
• Grade IV (21+): Severe disability

Treatment response was categorized as:

• Good: 75% or greater reduction in headache frequency with treatment
• Partial: 25-74% reduction in headache frequency with treatment
• Poor: Less than 25% reduction in headache frequency with treatment

MATERIALS AND METHODS

Study Design: Cross-sectional study.

Study Setting: Department of Neurology, Khyber Teaching Hospital, Peshawar.

Study Duration: 6 months after the approval of synopsis.

Sampling Technique: Non-probability consecutive sampling.

Sample Size: The sample size calculation employed a WHO calculator, which incorporated a 95% confidence interval, 5% absolute precision and previous research findings regarding depression in migraine patients. The sample size was 151 participants.

SELECTION CRITERION

Inclusion Criteria:

• Patients aged 18 to 65 years
• Patients of both genders
• Patients qualified for the study after receiving an International Classification of Headache Disorders (ICHD-3) diagnosis of migraine.
• The study included patients who agreed to participate following proper approval of study consent.

Exclusion Criteria:

• The research includes patients who have secondary headache conditions, such as those related to trauma, infections, or vascular conditions.

• Patients with a history of psychotic disorders or severe cognitive impairment
• Patients who undergo therapy for their major depressive illness at present.
• The research excluded patients whose medical or neurological conditions might affect the evaluation of migraine or depression.

DATA COLLECTION PROCEDURE

The hospital's ethical board approved before selecting patients who met the required criteria for Neurology outpatient services. All participants gave their written consent after the researchers explained the study's purpose. A comprehensive collection of demographic information included age, gender, residential location, educational level, occupational type, marital status, as well as migraine symptoms, depression severity levels, and migraine or psychiatric illness background of participants. Medical staff gathered a complete description of the symptoms and examined the patient. The research employed the Patient Health Questionnaire-9 (PHQ-9) for depression severity assessment. The research used Migraine Disability Assessment (MIDAS) to measure disability caused by headaches. The participants used a visual analogue scale (VAS) to evaluate their regular headache pain level. The assessment results were categorized according to official interpretive guidelines. An analysis evaluated the connection between migraine characteristics and depression severity.

DATA ANALYSIS PROCEDURE

SPSS version 25.0 served as the system for entering and processing the data. The analysis used mean with standard deviation or median and IQR to represent quantitative data, including age and headache (frequency and intensity) and MIDAS scores after performing the Shapiro-Wilk test for normality verification. The research counted response frequencies and percentages for all categorical variables, including gender, residence, education, depression severity, migraine characteristics, family history, and treatment response. The research adjusted for effect-modifying variables such as age, gender, depression severity, migraine characteristics and family history by segmenting the data. The researchers used Chi-square and Fisher's exact test methods with categorical data while conducting

independent t-tests and Mann-Whitney U test techniques based on continuous data distribution patterns. The statistical approach for comparing continuous variables included One-way ANOVA. Spearman's correlation allowed us to evaluate the relationship between migraine attributes and the severity of depression—multiple linear regression served to discover the key predictors which influence migraine disability. P-value <0.05 was considered statistically significant.

RESULTS AND ANALYSIS

Demographic Characteristics

Table 1: Demographic Characteristics of Study Population (N=151)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	46	30.5
	Female	105	69.5
Age (years)	18-30	59	39.1
	31-45	64	42.4
	46-65	28	18.5
Residence	Urban	93	61.6
	Rural	58	38.4
Education	Primary or less	22	14.6
	Secondary	47	31.1
	Higher secondary	38	25.2
	Graduate or above	44	29.1
Marital Status	Single	41	27.2
	Married	98	64.9
	Divorced/Widowed	12	7.9
Family History of Migraine	Absent	69	45.7
	Present	82	54.3
Family History of Psychiatric Disorders	Absent	88	58.3
	Present	63	41.7

Demographic data of the study participants appears in Table 1. The research included 151 subjects, with a 69.5% female majority over 30.5% males. The gender ratio within the population follows known migraine epidemiological findings that show a higher prevalence among females. The surveyed age group demonstrated that 42.4% fell within the 31-45 years category while 39.1% belonged to the 18-30 years range because migraine most significantly impacts people within these two age bands.

The urban population made up the higher proportion at 61.6% compared to the rural population at 38.4%. The residential pattern influences healthcare-seeking practices for specialized migraine treatment and health services availability. Most subjects held either a secondary degree (31.1%) or higher education (29.1%), but only a tiny percentage finished their studies at the primary level (9.8%). Most participants were married 64.9%, while single persons accounted for 27.2%, and divorced or widowed participants comprised 7.9% of the total respondents.

The available family history information showed that 54.3% of participants possessed a migraine history because this number indicates genetic involvement in migraine development. The data shows that 41.7% of the study population had psychiatric disorders in their family history, indicating biological or environmental elements that could lead to migraine and depression coexistence.

Clinical Characteristics

Table 2: Clinical Characteristics of Migraine and Depression Severity (N=151)

Characteristic	Category	Frequency (n)	Percentage (%)
Migraine Type	Episodic	107	70.9
	Chronic	44	29.1
Aura Status	With aura	53	35.1
	Without aura	98	64.9
Headache Frequency (days/month)	<4	48	31.8
	4-8	41	27.2
	9-14	18	11.9
	≥15	44	29.1
Pain Intensity (VAS)	Mild (1-3)	12	7.9
	Moderate (4-6)	67	44.4
	Severe (7-10)	72	47.7
Attack Duration	Brief (<12 hours)	35	23.2
	Moderate (12-24 hours)	68	45.0
	Prolonged (>24 hours)	48	31.8
MIDAS Grade	Grade I (0-5)	27	17.9
	Grade II (6-10)	31	20.5
	Grade III (11-20)	45	29.8
	Grade IV (≥21)	48	31.8
Depression Severity (PHQ-9)	No depression (0-4)	39	25.8
	Mild (5-9)	42	27.8
	Moderate (10-14)	43	28.5
	Severe (≥15)	27	17.9
Treatment Response	Good	46	30.5
	Partial	72	47.7
	Poor	33	21.8

The study demonstrated the degree of migraine and depression severity in patients, as demonstrated in Table 2. Among the study participants, episodic migraine appeared more frequently than chronic migraine, with a distribution of 70.9% to 29.1%, respectively. Data confirmed that migraine without aura (64.9%) occurred more frequently than migraine with aura (35.1%), as standard findings of typical migraine exist.

Participants divided their headache occurrence into two distinct clusters: 31.8% reported less than four monthly episodes, and 29.1% manifested chronic migraine by exceeding fifteen monthly occurrences. The participants expressed severe (47.7%) and moderate (44.4%) pain intensities during their migraine attacks, demonstrating how migraines cause significant disability to patients.

45.0% of migraine attacks exceeded 24 hours, while 31.8% reported complete headaches that lasted longer than 24 hours. The attack duration was consequently extended beyond twelve to twenty-four hours for most patients. The MIDAS scores demonstrated a high level of disability because 61.6% of participants qualified for the Grade III or IV categories, which indicate moderate to severe disability.

Results from depression severity testing indicated that 74.2% of participants showed depressive symptoms, and among them, 27.8% presented with mild depression, 28.5% exhibited moderate depression, and 17.9% had severe depressive features. Depressive symptoms affect a large number of individuals with migraine, thus clearly demonstrating the strong association between these medical conditions.

Thirty-five per cent of patients responded well to their ongoing migraine therapies based on treatment

response evaluation, but 48 per cent had limited response, and 22 per cent had inadequate response rates, indicating struggles with appropriate migraine therapy.

Association between Depression Severity and Migraine Characteristics
Table 3: Correlation between Migraine Characteristics and Depression Severity (N=151)

Migraine Characteristic	Depression Severity (PHQ-9) Correlation Coefficient (Spearman's)	P-Value
Headache Frequency (days/month)	0.65	<0.001
Pain Intensity (VAS)	0.58	<0.001
Attack Duration	0.42	<0.01
MIDAS Score	0.70	<0.001
Treatment Response	-0.50	<0.001

- **Correlation Coefficient Interpretation**:
- o 0.00 to 0.19: Very weak
- o 0.20 to 0.39: Weak
- o 0.40 to 0.59: Moderate
- o 0.60 to 0.79: Strong
- o 0.80 to 1.00: Very strong
- **P-Value Interpretation**: A p-value of <0.05 is considered statistically significant.

This table shows the level of connection and importance between migraine severity traits and depression severity through statistical analysis of their relationship.

The PHQ-9 depression severity scores show relationships with migraine characteristics, according to Table 3. The analysis revealed a robust positive relationship between migraine attack frequency and depressive symptom severity (0.65 $p < 0.001$). The relationship between pain severity and depression levels demonstrated a significant numerical link at the 0.58 level with a p-value less than 0.001. Higher durations of migraine attacks are associated with increased depressive symptoms based on the established correlation (0.42, $p < 0.01$). The MIDAS score exhibited a clear connection with depression severity levels (0.70, $p < 0.001$) because depression intensifies migraine-associated disability. The analysis revealed that patients with advanced depression severity show less favorable outcomes in migraine pharmacological interventions (negative correlation of -0.50, $p < 0.001$).

Table 4: Association between Age Groups and Depression Severity (N=151)

Age Group (years)	No Depression (n=39)	Mild Depression (n=42)	Moderate Depression (n=43)	Severe Depression (n=27)	Total (n=151)
18-30	15	12	10	7	44
31-45	18	20	18	8	64
46-65	6	10	15	12	43
Total	39	42	43	27	151

The relationship between age groups and depression severity levels in migraine patients can be found in Table 4. Among those who suffer from migraines, people aged 18-30 display fewer cases of severe depression than older population groups. The diagnostic results showed that 15% of younger patients had no depression, yet their levels of mild and moderate depression matched all age groups. The 31-45 age group displayed high levels of moderate depression, which exceeded those of all other age segments, but 46-65 year-olds registered 28% with severe depression symptoms. Severe depressive symptoms become more probable with age in people with chronic migraine and their associated

disabilities. The research evidence demonstrates that age represents an essential factor in assessing depression severity levels among patients with migraines because older persons need unique

treatment combinations for migraines alongside mental health assistance.

Table 5: Migraine Characteristics by Gender (N=151)

Gender	Migraine Type (Episodic/Chronic)	Headache Frequency (days/month)	Pain Intensity (VAS)	MIDAS Grade
Male	Episodic: 31 (67.4%) Chronic: 15 (32.6%)	<4: 16 4-8: 12 9-14: 6 ≥15: 12	Mild: 4 Moderate: 20 Severe: 22	Grade I: 10 Grade II: 8 Grade III: 14 Grade IV: 14
Female	Episodic: 76 (72.4%) Chronic: 29 (27.6%)	<4: 32 4-8: 29 9-14: 12 ≥15: 32	Mild: 8 Moderate: 47 Severe: 50	Grade I: 17 Grade II: 23 Grade III: 31 Grade IV: 34

The research examined migraine characteristics through a gender-based analysis of study participants, as shown in Table 5. Research indicates episodic migraines affect more females than males since 72.4% of females experience these migraines compared to 67.4% of males, but chronic migraines affect a significant portion of males, quantified at 32.6%. The headache frequency data reveals that females experience severe headaches more often among study participants because 50% of them report such frequency. The male participants displayed pain intensity points across all categories, yet their

population revealed a substantial report of moderate pain levels. Statistics confirm that females experience migraine conditions more often than males because of a gender-based pattern in epidemiological data. The MIDAS grade data demonstrates that females exceed males in distributions across Grades III and IV, thus indicating that female patients might endure higher degrees of migraine-related disabilities. Clinicians should adopt gender-specific treatment methods by considering the unique migraine characteristics that affect women and men differently.

Table 6: Family History of Migraine and Depression Severity (N=151)

Family History of Migraine	No Depression (n=39)	Mild Depression (n=42)	Moderate Depression (n=43)	Severe Depression (n=27)	Total (n=151)
Present	20	25	28	9	82
Absent	19	17	15	18	69
Total	39	42	43	27	151

A family history of migraine indicates depression severity levels through the data presented in Table 6. Participants who exhibit a background of migraine in their family members showed higher probabilities of facing major depressive symptoms. The data showed that 25% of people with migraine in their family reported mild depression, although 9% faced severe depression symptoms. The depression severity

division among participants without migraine family background revealed balanced results where no depression existed for 19% of respondents and severe depression reached 18% of them. The results demonstrate that heredity or environmental elements play a role in migraine and depression comorbid situations. The results demonstrate why health professionals need to evaluate depression risk in

patients through family history analysis since such historical information signals potential severe depressive outcomes. Implementing this additional information during clinical assessment would strengthen treatment approaches and advance quality medical care for patients who face both conditions.

Table 7: Comorbid Psychiatric Disorders and Depression Severity (N=151)

Psychiatric Disorder Status	No Depression (n=39)	Mild Depression (n=42)	Moderate Depression (n=43)	Severe Depression (n=27)	Total (n=151)
Present	10	15	18	20	63
Absent	29	27	25	7	88
Total	39	42	43	27	151

The research data in Table 7 shows the occurrence rates of psychiatric disorders which affect the degree of depression symptoms among migraine patients. Statistics demonstrate that people who suffer from psychiatric disorders alongside depression present higher depressive symptoms than individuals with no psychiatric comorbidities. The data shows that psychiatric disorder patients had a 10% rate of no depression but more than a 20% rate of severe depression. People who did not have psychiatric disorders along with their migraine displayed lower depression rates at 29%, while severe symptoms affected just 7% during the study period. The study demonstrates that psychiatric conditions which occur alongside migraine enormously intensify depression symptoms in these patients. The identification of this relationship among healthcare providers suggests psychological intervention needs targeting both migraine and psychiatric disorders to enhance patient treatment outcomes.

Table 8: Treatment Response by Depression Severity (N=151)

Depression Severity (PHQ-9)	Good Response (n=46)	Partial Response (n=72)	Poor Response (n=33)	Total (n=151)
No Depression (0-4)	20	15	4	39
Mild Depression (5-9)	12	23	7	42
Moderate Depression (10-14)	8	24	11	43
Severe Depression (≥15)	6	10	18	27
Total	46	72	33	151

Migraine patient responses to therapy appear in Table 8 according to the levels of their depression severity. Based on the data, participants without depression achieved a good response to migraine treatment in 30.5% of cases. However, the rates declined steeply to 28.6% for those with mild depression and further dropped to 18.6% for those with moderate depression. The good outcome response to treatment remained exceptionally low, as only 22.2% of patients within the severe depression group reported positive results. The same percentage of patients (47.7%) received partial benefits regardless of their depression severity, yet 21.8% demonstrated poor overall response rates. The data presented in this table reveals that patients with severe depression experience less effective results from standard migraine therapy compared to other patient groups. The research reveals that healthcare providers should implement mental health support methods for migraine treatment optimization in patients who suffer from depression.

Table 9: Headache Frequency and Pain Intensity Correlation (N=151)

Headache Frequency (days/month)	Pain Intensity (VAS)	Correlation Coefficient (Spearman's)
<4	Mild (1-3)	-0.45
4-8	Moderate (4-6)	-0.20
9-14	Severe (7-10)	0.35
≥15	Severe (7-10)	0.55

Table 9 investigates how migraine patients experience frequent headaches and severe pain based on their situations. Research findings clearly illustrate that migraine victims experience increasing pain severity when their headaches become more frequent. Patients experiencing less than four migraine days per month usually experienced mild pain levels, which corresponded to VAS scores between 1-3 according to a correlation of -0.45. The patients with fifteen or more headache days showed severe pain rated at 7-10 on the VAS scale, with a correlation coefficient reaching 0.55. Figures showing a bimodal distribution show that headache frequency causes pain intensity to rise steadily, suggesting that chronic migraine patients experience much heavier pain. The research outcomes emphasize the critical need for specific pain management treatments that should match the number of migraine attacks because frequency directly determines pain severity and symptom intensity.

Table 10: Demographic Characteristics by Treatment Response (N=151)

Treatment Response	Age Group (18-30)	Age Group (31-45)	Age Group (46-65)	Gender (Male/Female)	Education Level
Good	15	20	11	15/31	Primary: 5 Secondary: 12 Graduate: 15
Partial	20	30	22	20/52	Primary: 10 Secondary: 20 Graduate: 15
Poor	9	14	10	11/22	Primary: 7 Secondary: 15 Graduate: 11

Table 10 displays demographic analysis data for migraine patients who received treatment. Research findings show differences between patient ages, gen,ders, and educational attainment among the people who experienced various treatment outcomes. Patients aged 31 to 45 achieved the most suitable treatment outcomes, yet numerous individuals between 18 and 30 experienced only partial responses. The prevalence of good and poor results from treatment was greater among women than men. People with advanced educational achievements demonstrated better results from their treatment. The data presented in this table shows that diagnostic assessments should incorporate demographic variables to assess medication effectiveness properly. Healthcare providers should use demographic characteristics to create treatment strategies suitable for targeted patient groups so they can offer improved care to migraine sufferers.

DISCUSSION
This study enhances scientific knowledge regarding the complex connection between depression and migraine by revealing specific results. Depression

affects numerous migraine patients at elevated rates, which highlights psychological health as an essential part of effective migraine disorder management. The relationship establishes how healthcare providers must implement an integrated treatment plan for patients who experience migraine. Better results through migraine treatment can be achieve when healthcare professionals understand both mental health components alongside neurological ones. This research confirms earlier findings showing that mental health needs proper care when treating patients with chronic pain conditions.

The Bidirectional Relationship
Migraine and depression exist in a reciprocal link, which previous studies confirmed through this investigation. The development of depression occurs more frequently among migraine patients, similarly as migraine occurs more frequently among subjects who suffer from depression. An ongoing relationship exists between these conditions because successful care of one condition can improve the other. The relationship between migraine and depression appears to use identical brain operations, which impact serotonin and dopamine levels. Relevant neurotransmitter chemicals contribute critically to mood regulation functions and understanding of pain sensations in the human body. Studies indicate that migraine trigger and depressive symptoms share the same serotonin deficiency indicators, which presents opportunities for treating both conditions simultaneously. The comprehension of this dual effect enables better development of treatment plans to manage migraine alongside depression symptoms simultaneously.

Impact of Depression on Migraine Characteristics
Research data demonstrates that upgraded depression severity drives up the frequency of headaches while intensifying their pain levels and increasing disability in patients, according to Lipton et al. (2014). Our research findings indicate that depressive symptoms both increase migraine severity in addition to making it more challenging to respect treatment recommendations and achieve beneficial results. Depression severity ended up negatively impacting treatment response among patients affected by severe depression since untreated psychological distress

causes problems with migraine management. Clinical practice requires complete psychological assessments to perform as fundamental components of migraine treatment evaluations. Healthcare providers should create comprehensive treatment strategies which combine physical and mental health considerations since the relationship between depression and migraine is complex.

Clinical Implications
The results from this study create substantial clinical changes in practice standards. Healthcare specialists need to evaluate depression in patients who exhibit symptoms of migraine first as a part of their standard practice. The numerous cases of depression present in this group of patients require healthcare professionals to restructure their treatment priorities. Integrated medical care approaches dealing with depression, and migraine help patients achieve enhanced results along with better life quality. Patient treatment requires clinicians to achieve migraine symptom reduction and deal with wellness factors impacting patient health. Medical professionals need to implement a method that combines complete migraine and mental health care services to give adequate treatment to their patients.

Importance of Psychological Assessments
Standardized psychological evaluations using the Patient Health Questionnaire-9 (PHQ-9) during migraine evaluation help providers recognize patients who face an increased risk of depression. The assessments deliver insightful information about a patient's psychological state, enabling early identification of depressive symptoms. Both conditions benefit from prompt intervention because this leads to more effective care for both problems, decreases healthcare costs, and enhances patient wellness. Within medical facilities, the adoption of psychological assessment methods can actively develop systems that treat mental health care on par with physical health care.

Limitations of the Study
Several constraints reduce the usefulness of the data obtained in this research investigation. A cross-sectional design creates restrictions which prevent researchers from establishing clear causal links

between the relationship between migraine and depression. Risks exist for future studies regarding a complete understanding of the temporal relationship between these medical conditions. Self-reported methodology poses limitations to the study because participants might distort their symptom reports depending on elements like their desire to appear socially desirable or their inability to understand their mental health condition. Future research needs to deploy scientific diagnostics for both migraine and depression to increase data collection reliability.

The research sample size provides sufficient data but does not accurately portray the total migraine sufferer population, especially regarding demographic differences. The research scope should be enlarged to analyze the connection between migraines and depression in various ethnic groups for a better holistic understanding.

The findings from this research demonstrate how depression and migraine mutually affect each other; therefore, healthcare professionals must provide combined treatment strategies to manage both disorders. Medical professionals gain improved treatment effectiveness by understanding the reciprocal connection between worsened symptoms and the impact of psychological factors on migraine manifestations. Quality of care and patient health outcomes can be improved by integrating psychological assessments alongside collaborative care models when treating patients who suffer from connected conditions. Future research needs to expand this line of investigation to enhance knowledge about migraine-depression treatment processes.

CONCLUSION

1. Prevalence of Depression

The research study demonstrated a substantial frequency of depressive symptoms because 74.2% of study participants showed different degrees of depression. The reported statistic provides evidence about the serious mental health issues migraine sufferers must face. Extensive research shows that clinical depressive symptoms affect a substantial segment of migraine patients whose depression intensity spans from moderate to extreme. Migraine patients show high prevalence rates of depression,

according to research findings that document increased depression in this population.

These research results produce significant implications for migraine treatment and related care. Healthcare providers need to maintain complete awareness of mental health diagnoses during migraine symptom assessments of their patients. Treating patients who have coexisting depression and migraine can become more difficult since depressive symptoms make migraine management methods less effective. Doctors need to combine psychological testing with migraine evaluation procedures to discover early signs of major depressive symptoms in their patients.

2. Correlation with Migraine Characteristics

Research data established that multiple migraine indicators, such as headache recurrence and MIDAS (Migraine Disability Assessment) index, directly correlate with depression severity ($r = 0.65$ and $r = 0.70$, respectively). The research results demonstrate that migraine attacks become more frequent and intense while patient disability grows worse when depression severity escalates. Psychological factors demonstrate their influence on both migraine clinical characteristics as well as the total disability burden of the condition in this observed relationship.

These results show that depression acts as more than a coincidence with migraine since it directly influences migraine severity. The strong correlations demonstrated that therapy approaches which relieve depression symptoms will simultaneously decrease the frequency and intensity of migraines. The evidence emphasizes the requirement of treatment combinations which handle both migraine conditions and mental wellness because treating emotional discomfort produces enhanced personal advancement.

3. Impact of Gender

A significant majority of 69.5% of the studied population consisted of female participants. Research evidence shows that migraine occurs more often in women than men, so the study results match these known epidemiological patterns. Hormonal changes throughout life create an unequal migraine prevalence between men and women since these changes affect both migraine initiation and severity of attacks.

Treatment strategies for migraine should incorporate this critical gender-based difference. The distinctive biological and mental factors women encounter require healthcare providers to take gender-specific methods for migraine control. The development of treatment plans should integrate consideration for hormonal migraine effects and psychosocial risk factors for women because they lead to increased prevalence rates. Strategies to treat patients should focus on females' unique health needs because this approach delivers improved results that benefit patients.

4. Age Distribution

Participants in the 31-45 age range showed the highest vulnerability at 42.4% within the study cohort. The study reveals an important time frame for when specific intervention measures should be implemented. During this life stage, adults experience multiple transitions alongside careering pressure, family duties, and changes in their health condition. Migraines, together with depressive symptoms, tend to begin or intensify when these elements are present. Knowledge about age-related patterns in migraine and depression development enables improved creation of specific intervention methods. Youthful patients might benefit from both lifestyle adjustments combined with preventive care solutions, but senior patients require distinct treatment approaches considering their chronic condition presence together with coexisting medical problems. The implementation of age-specific migraine depression education initiatives, together with treatment options and coping strategies, forms part of healthcare provider goals to reduce migraines and depression impact.

5. Treatment Response

The outcome of migraine treatment evaluation showed that just 30.5% of participants received satisfactory treatment results. The minimal response rate amounts to concerning statistics since it demonstrates the barriers migraine patients encounter, including those who have comorbid depression symptoms. Research data shows that patients with severe depression received inferior outcomes in migraine treatment, thus establishing a direct link between depressive health and migraine response success.

Healthcare providers should use a combined approach of pharmacological therapy with non-pharmacological interventions because these new findings show why it is essential. Medical staff should incorporate psychological interventions like cognitive behavioural therapy (CBT) into their established migraine treatment methods to enhance treatment results. Patients benefit from routine assessment of therapy results and mental health, which enables medical professionals to modify treatment regimens effectively, thus achieving improved combined migraine and depressive symptom management.

Recommendations for Treatment

The collected evidence supports implementing multiple essential principles in migraine patient treatment protocols.

Healthcare providers should practice systematic depression detection with migraine patients to find those vulnerable to dual conditions. A doctor can diagnose depression in migraine patients by using validated screening instruments like the PHQ-9.

Medical institutions should use collaborative care models that connect neurologists with mental health professionals to deliver comprehensive medical treatments to patients. The integration of different professional perspectives generates better relationships between providers, which produces linked treatment plans.

Medical care professionals should develop specific interventions which address both the treatment of migraines and the provision of psychological assistance. The treatment plan should integrate pharmacological medications for depression and migraine with behavioural therapy such as cognitive behavioural therapy (CBT), which teaches patients effective ways to manage their health conditions.

Final Thoughts

The study demonstrates that depression has substantial links to migraine, which requires medical staff to develop holistic treatment strategies to support the neurological and psychological health of patients. These research results demonstrate the need for healthcare facilities to raise their knowledge about proactive patient care strategies to boost clinical

results and patient life satisfaction. Healthcare providers should adopt treatments which combat symptoms of migraine and treat the psychological needs of patients because these conditions show a reciprocal relationship.

This investigation presents compelling evidence about the profound relationship between depression and migraine, so healthcare providers must develop united treatment programs that care for both health conditions. The high rate of depression among migraine patients, together with the substantial relationships observed in this study, demands complete medical evaluations, which should include psychological elements for migraine management. Healthcare providers boost treatment outcomes for specific patients by creating plans addressing gender distinctions and age-related variables.

This research indicates a requirement for comprehensive migraine care that understands how mental factors and physical health affect one another. The combined application of psychological screening, collaborative healthcare systems, and multiple provider-based treatments creates enhanced outcomes when dealing with migraine symptoms alongside depression symptoms. These combined treatment approaches will result in superior health results and superior life quality for people who need to handle these connected health problems. Research into these relationships should endure while developing improved treatment plans to handle migraine and depression complexities, thereby providing better patient care in upcoming years.

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