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PSYCHOSOCIAL FACTORS OF TREATMENT SATISFACTION IN INDIVIDUALS WITH MIGRAINE: A COMPARATIVE STUDY OF MEDICATION AND ACUPUNCTURE TREATMENT GROUPS

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Abstract

A correlational cross-sectional research design was conducted to examine the extent to which psychosocial factors, including Migraine Interictal Burden, Pain Perception, Perceived Stress, and Doctor-patient relationship, differ in the level of treatment satisfaction in medication and acupuncture treatment groups. The sample comprised (n= 30) MTG, (M = 25.53, SD = 2.93) and (n=30) ATG, (M = 27.7, SD =2.86) recruited through convenience and snowball sampling strategy from private hospitals and clinics. Data was collected using standardized measures, including Migraine Interictal Burden Scale (MIBS-4), Pain Belief and Perception Inventory (PBPI), Perceived Stress scale (PSS-10), Patient-Doctor Relationship Questionnaire (PDRQ) and Functional Assessment of Chronic Illness Therapy Treatment Satisfaction General (FACIT-TS-G). The findings revealed that the acupuncture treatment group reported comparatively higher treatment satisfaction than the Medication Treatment Group. It was found that among both groups, individuals who reported higher Migraine interictal burden perceive their pain as permanent, who believe that their pain is mysterious, also believe that pain is permanent and constant, and who believe pain is permanent also believe that it's constant, and a healthy DPR tends to increase the treatment satisfaction. However, the findings of the MTG are that individuals who reported higher Migraine interictal burden perceive their pain as mysterious, who believe that pain is permanent and constant, reported decreased treatment satisfaction. Furthermore, the findings of the ATG are that individual who reported higher Migraine interictal burden perceive their pain as constant, who believe that their pain is mysterious, also report more perceived stress and blame themselves more for their pain, and who believe that pain is permanent and constant report higher perceived stress. Regression analysis indicated that psychological factors were not found to be non-significant predictors of treatment satisfaction in both cohorts. However, the doctor-patient relationship was a significant predictor of treatment satisfaction in the ATG. The doctor-patient relationship was found to be a non-significant mediator in both cohorts, suggesting it's a significant factor, but not as a mediator. Meaningful differences emerged across sociodemographic and clinical factors. Women reported higher treatment satisfaction in MTG. On the other hand, the women reported pain as more mysterious in ATG. Individuals who have migraine with aura perceive their pain as more permanent and constant in MTG. The finding underscores the importance of addressing psychosocial

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determinants and sociodemographic variations, raises awareness about the efficacy of acupuncture treatment, and calls for better policies to allow more practice of acupuncture for effective treatment outcomes.

INTRODUCTION

Migraine is a recurring neurological condition that causes serious impairments in daily functioning and quality of life, imposing physical and psychological burden. It can be defined as sudden attacks of severe headache with sensitivity to light, nausea, and noise sensitivity (Buse et al., 2019). The patients often reported moderate-to-severe headache episodes. Psychosocial variables such as migraine interictal burden, pain perception, perceived stress, and doctor-patient relationship all play an important role in determining how patients undergoing treatments like acupuncture and medication perceive the effects or advantages, comply with the therapy, and differ in the level of satisfaction with it. Migraine sufferers often resort to alternative methods like acupuncture due to its positive results in managing pain and stress in light of the recurrent and unpredictable nature of migraines (Linde et al., 2016). In countries like Pakistan, the importance of psychosocial factors increases due to the high prevalence of migraines in younger populations, where stress, sleep, and lifestyle factors trigger migraines most frequently (Ayub et al., 2022; Mehmood et al., 2022).

According to current global studies on epidemiology, it is estimated that over 1 billion people globally have the disorder, thus accounting for the second leading cause of years lived with disabilities (YLDs) globally at all ages (Stovner et al., 2018). It is more common among females than men, with a three times greater prevalence rate among females, mainly due to hormonal and neurobiological factors (Stovner et al., 2018; Dong et al., 2024). The prevalence rate is normally within the range of 11% and 15%. The highest prevalence is observed in the age group 20 to 50 years old (Dong et al., 2024). According to the Global Burden of Disease data, there were about 43-44 million incident cases of migraines in 2019, indicating a steady increase in the number of patients over time when compared to the past decades (Li et al., 2023). Despite the relatively stable incidence rates, many countries in the developing world still face a lot of underreporting of migraine cases.

Migraines occur due to several genetic, neurovascular, and environmental causes. The primary mechanisms involved are: Genetics play a crucial role in making someone prone to migraines. Apart from biological causes, migraine headaches can often be triggered by different external and lifestyle-related elements. Some of the common triggers are changes in hormones, stress, poor sleep patterns, inadequate dieting habits, lack of hydration, and environmental factors like bright light or overpowering smells. Additionally, specific foods such as chocolate, coffee, aged cheeses, and other processed foods can act as triggers for some people. Migraine symptoms can be classified as prodrome, aura, headache, and postdrome phases: Prodrome, early symptoms occur 24 to 48 hours before a migraine attack, such as mood alterations, excessive yawning, tiredness, craving food, and neck stiffness. Aura, occurs in 20-30 percent of migraine patients and is characterized by visual, sensory, or speech disturbances. It can progress over several minutes and lasts up to an hour. Headache, pain is one-sided, pulsating, and generally worsened by physical activity. It is the main phase, during which a person experiences intense pain, and it can last between 4 and 72 hours. It can have the following symptoms, including nausea, vomiting, photophobia, and phonophobia. (Goadsby et al., 2017).

Migraines can be generally divided into two major groups: Migraine without aura, which is considered to be one of the most frequently occurring migraines, which account for about 70–80% of all migraines. The symptoms involve a one-sided, pulsing headache during 4 to 72 hours, along with such symptoms as nausea, photophobia, vomiting, and phonophobia. It is a common one. Migraine with aura (classic migraine) involves neurological symptoms preceding the headache symptoms, including such

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conditions as visual disturbance (seeing flashing lights or zigzag lines), sensory disturbance (numbness or tingling), and aphasia (speech disturbance). Aura symptoms normally last from 5 to 60 minutes (Lipton et al., 2017).

Management measures for migraine attacks can be broadly classified into three types: pharmacological, non-pharmacological approaches, and alternative modalities. Acute treatment for, migraine treatment is done to halt or lessen the intensity of a migraine attack once it starts. These should be used at the beginning of a migraine attack for best results. Non-steroidal Anti-Inflammatory Drugs (NSAIDs) are useful in mild to moderate migraines where there are no contraindications. Calcitonin gene-related peptide receptor antagonists are useful in managing nausea and vomiting in migraines. In addition, it helps increase the absorption of analgesics through the stomach wall. Prophylactic (Preventive) therapy should be considered in cases of frequent, prolonged, or debilitating migraines (≥4 attacks in a month or ≥8 headache days in a month), with an aim to reduce the severity and frequency of attacks and to reduce reliance on acute medications. Beta-blockers regulate vascular smooth muscle tone and sympathetic nerve stimulation. Anticonvulsant normalises neuronal excitability and prevents cortical spreading depression that causes aura.

Behavioural and lifestyle modifications are suggested as an adjuvant or alternative to medicines. Regular sleeping habits, proper nutrition, fluid intake and exercise. Avoidance of triggers (e.g., food, stress and environmental factors). Cognitive Behavioral Therapy (CBT) assists the patient in managing stress, coping techniques and perception of pain. Yoga, meditation, progressive muscle relaxation therapy and stress reduction therapy. Complementary and Alternative Medicine Modalities are attracting more attention due to safety issues and patient preference, especially in difficult-to-treat migraine cases. In acupuncture, Fine needles are used at certain anatomical points to control the transmission of pain signals. It reduces trigeminal vascular activation, facilitates the production of endorphins and reduces inflammatory neuropeptides such as CGRP.

Acupuncture has been in use for over 2,500 years and originates from Traditional Chinese Medicine (TCM). The earliest accounts of this therapy can be found in the classic Huangdi Neijing, where the principles of Qi, meridian flow, and Yin-Yang balance are explained in detail (Unschuld, 2016). It is employed in TCM, in which fine, sterilized needles are used for puncturing precise body points referred to as acupoints in order to control bodily processes and facilitate healing (Zhao, 2022). Imbalances in such energy flow are said to result in pain and disease, whereas acupuncture is supposed to restore the balance. In the past, acupuncture was mainly culturally driven, but nowadays, it is a well-known complementary and alternative medicine (CAM) that has been scientifically proven to be effective (Xu & Huang, 2020). The various forms and techniques of acupuncture include: Chinese Traditional Acupuncture, Manual Acupuncture, Electroacupuncture, Auricular Acupuncture, Scale Acupuncture, Korean Hand Acupuncture, and Laser Acupuncture. First invented as an essential method of Traditional Chinese Medicine (TCM), acupuncture is currently used in over 180 countries around the world. The increasing number of studies confirming its efficiency in the treatment of pain and diseases has led to its growing popularity in modern medicine (Zhao, 2018; Vickers et al., 2018).

Acupuncture has not only received recognition from international health agencies but also found validation as a complementary medicine. According to the WHO, acupuncture serves as a viable medical intervention for different disorders such as chronic headaches, migraines, nausea and vomiting, dysmenorrhea, allergic rhinitis, and stress-related diseases (WHO, 2019). Acupuncture has grown significantly throughout South Asia over the last couple of decades with an increase in interest in complementary and integrative medicine. For example, countries like China, India, Iran, and Pakistan have been incorporating acupuncture in their medical practices for dealing with chronic diseases such as pain syndromes. This practice has been encouraged by the rising

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scientific evidence on the efficacy of acupuncture in treating chronic pain, migraine, musculoskeletal diseases, and stress disorders (Fan et al., 2021; World Health Organization, 2019).

Patient satisfaction with the acupuncture therapy session refers to the degree to which the patient is satisfied with his/her experience of using this technique. Satisfaction of patients is an integral aspect of assessing the quality of health services since it affects treatment adherence and its efficacy (Bishop, Yardley & Lewith, 2015). Young adults with migraines can have different perspectives on health care experiences than older patients. In particular, many young people tend to favor therapies that are drug-free, minimally invasive, and holistic. It means that young people can feel satisfied not only when their symptoms are relieved but also when the therapy matches their views and lifestyles. Communication flexibility, the trust in a practitioner, and the feeling of understanding from a therapist can also contribute to higher satisfaction levels.

Conceptual Framework

This research explored the association between psychosocial factors such as migraine interictal burden, pain perception, perceived stress, and doctor-patient relationship in Individuals with Migraine undergoing medication and acupuncture treatment satisfaction. Based on the Health Belief Model (Rosenstock et al., 1950), the greater patients' vulnerability, severity awareness, knowledge about the benefits, and lack of barriers to using medication and acupuncture, the more involved they will be in treatment sessions for their migraines (Schmidt et al., 2022). Perceived pain and stress increase the vulnerability and barriers perception of patients, while variables like sickness perception and interictal burden associated with migraines are responsible for perceived severity (Ali et al., 2025; Li et al., 2024). The establishment of mutual trust and motivation through communication helps increase patients' perceived advantages and can serve as a cue to action (Wang et al., 2023). Moreover, Expectancy Value Theory (Atkinson, 1957), patients tend to be more engaged in the treatment process and experience positive results when they believe that the treatment will be effective. For instance, regarding acupuncture and medication, individuals who focus on improving their health and expect successful pain and stress relief tend to be satisfied (Zieger et al., 2022). Consequently, patient satisfaction with acupuncture and medication treatments can be highly dependent on positive treatment expectations and the importance attached to outcomes.

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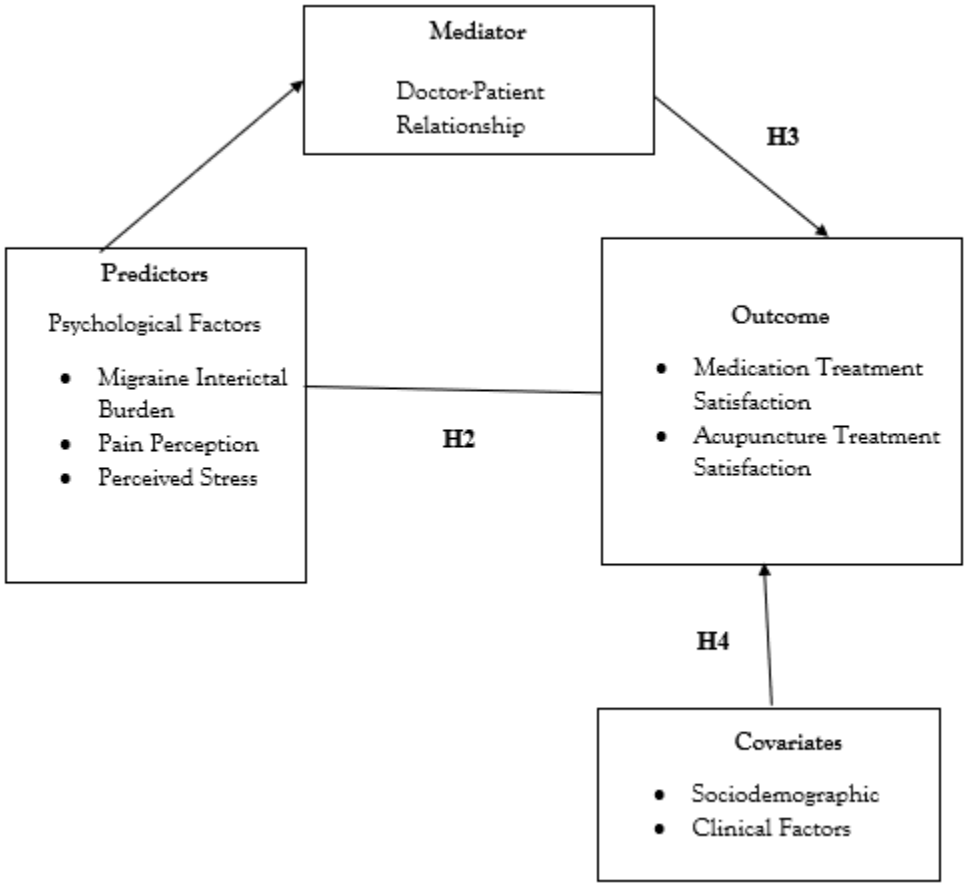

Conceptual Framework for Psychosocial Factors of Treatment Satisfaction: A Comparative Study of Medication and Acupuncture Treatment

Objective

The broader aim of the study was to investigate the extent to which psychosocial factors (migraine interictal burden, pain perception, perceived stress, doctor-patient relationship) tend to differ on the level of treatment satisfaction in individuals with Migraine undergoing acupuncture or medication treatment. The study also examined how these individuals tend to differ in the level of treatment satisfaction across diverse sociodemographic groups.

Hypotheses

- Individuals receiving Medication and Acupuncture treatment are likely to differ in their levels of Treatment Satisfaction.
- Psychosocial factors are likely to be associated with medication and acupuncture treatment satisfaction in individuals with migraine.
- The doctor-patient relationship is likely to mediate the relationship between psychological factors and treatment satisfaction.
- Individuals with diverse sociodemographic and clinical factors are likely to differ in their level of treatment satisfaction.

Method

Sample and Sampling Strategy

The sample comprised (N= 60) young adults, diagnosed with Migraine, with 30 in the

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medication treatment group and 30 in the Acupuncture treatment group. Participants were purposively sampled from public and private hospitals and acupuncture clinics in Lahore as referrals. The inclusion criteria involved a formal diagnosis of Migraine (confirmed through medical records with a minimum duration of diagnosis of 2 or more years, currently using or not using medication for Migraine. (Acupuncture Treatment), currently using medication for Migraine (Medication Treatment), basic formal education, with an ability to understand, read and write English and Urdu, Whereas exclusion criteria involved with other types of headaches (cluster, and tension-type headache), on any other medication for a major/chronic condition, having a headache as a side effect, on any psychotropic medication, have severe complications as a result of prolonged migraine, e.g., seizures, comorbid neurological condition (epilepsy), pregnant or expected to be pregnant. The design employed was a correlational cross-sectional design.

Assessment Measures

The following assessment measures will be used in the study to assess psychosocial factors of acupuncture and medication treatment satisfaction in individuals with migraine.

Demographic Information Sheet

A self-developed demographic information sheet was used to obtain background information, including personal, familial, educational, and occupational details.

Clinical Information Sheet

A clinical information sheet was collected from individuals with migraine, which included basic clinical information about the BMI, approximate onset of migraine, family history of migraine, start of acupuncture therapy, and sessions of acupuncture per week.

General Health Indicator Sheet

A general health indicators sheet was used to collect basic information about an individual's dietary habits, water intake, sleep schedule, and other basic lifestyle information.

Migraine Interictal Burden Scale (MIBS-4) (Lipton et al., 2007)

The Migraine Interictal Burden Scale was designed to assess the burden of migraine between attacks in 4 domains: impairment in work, social activities, difficulty making plans and emotional distress. It is a 4-item questionnaire. Responses are rated on four levels. Higher scores indicate a greater interictal burden, with a total score ranging from 0 to 12 (Sánchez-Huertas et al., 2025). The internal consistency of the scale is $\alpha = .84$.

Pain Belief and Perception Inventory (PBPI) (Williams & Thorn, 1989)

It is a questionnaire used to assess a person's beliefs about their pain. It is a 16-item questionnaire that comprises four domains of pain, i.e., beliefs, mystery, permanence, constancy, and self-blame. From -2 (fully disagree) to 2 (fully agree), items are scored with a 4-point scale. (Blanch, 2023) Four of the items are reverse-scored. The internal consistency of the scale is between $\alpha = .60$-$.84$

Perceived Stress Scale (PSS-10) (Cohen & Williamson, 1988)

The Perceived Stress Scale is a widely used psychological instrument for assessing the degree to which situations in one's life are perceived as stressful. The PSS consists of 10 items that measure the frequency of stress-related feelings and thoughts over the past month. It has shown good internal reliability and validity in diverse populations. Responses are rated on a 5-point Likert scale (0 = Never, 4 = Very often). Higher scores indicate greater perceived stress. (Li et al., 2024). The internal consistency of the scale is between $\alpha = .79$-$.82$.

Patient Doctor Relationship Questionnaire (PDRQ-9) (Feltz-Cornelis et al., 2004)

This questionnaire is used to assess the patient's perceived quality of the doctor–patient relationship. It focuses on the patient's experience of trust, understanding, and communication with the healthcare provider. It consists of nine items, each rated on a 5-point Likert scale, measuring aspects such as the physician's helpfulness, availability, and empathy. (Wang et al., 2023). The

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internal consistency of the scale is between α = .94-.97.

Functional Assessment of Chronic Illness Therapy – Treatment Satisfaction- General (FACIT-TS-G) (Peipert et al., 2014)

The Functional Assessment of Chronic Illness Therapy – Treatment Satisfaction- General (FACIT-TS-G) was developed to evaluate chronic illness patients 18 years and older undergoing treatment. The FACIT-TS-G includes eight items, assessing dimensions such as the effectiveness of the treatment and its side effects. The items are rated on a 5-point Likert scale, providing a simple yet comprehensive measure of general treatment satisfaction. (Markovic al., 2023). The internal consistency of the scale is α = .83.

Procedure

Prior permission from all relevant units of hospitals or clinics was taken, and after the permission, participants were approached in person during their acupuncture visit in clinics and OPD visits in hospitals. Moreover, with the help of doctors, the data was collected online as well. After interested individuals were identified, they were provided with a detailed Informed Consent Form. Participants were ensured complete confidentiality and their right to withdraw anytime from the study. This was an individual research study. The study was completed in the duration of almost seven months. Almost 45 forms for the acupuncture group were shared, out of which the response rate was 31 forms. After screening, one form was discarded because of incomplete information. For the medication group, 35 forms were shared, and the response rate was 34; however, four forms were discarded. Once the data were collected, the answers were tabulated and analyzed on SPSS software.

Results

This chapter deals with the statistical analysis of the current study. The study intended to explore how psychological factors (migraine interictal burden, pain perception, and perceived stress) tend to influence the level of treatment satisfaction in individuals with Migraine undergoing medication and acupuncture treatment. Moreover, the study examined the mediating role of the doctor-patient relationship in influencing treatment satisfaction in the two cohorts. The study further examined the distribution of these variables across a range of demographic and clinical factors. The analyses include descriptive statistics, reliabilities of scales, correlations, hierarchical regression, mediation analyses, and comparison of group differences using independent sample t-test and one-way ANOVA.

Reliability Estimates and Descriptive Analysis of Measures

The reliability and descriptive statistics were assessed for all the study variables. As presented in Table 1, the internal consistency (Cronbach's α) ranged from .77 to .97 in MTG, whereas 61 to .95 in ATG, indicating acceptable to excellent reliability for all the scales used. Skewness and kurtosis values fell within acceptable ranges (±1), supporting the assumptions of normality.

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Table 1: Descriptive Statistics and Psychometric Properties of the Study Variables (N=60)

		Medication Treatment Group (n=30)					Acupuncture Treatment Group (n=30)				
Variable	k	M	SD	α	Range Potential	Actual	M	SD	α	Range Potential	Actual
Functional Assessment of Chronic Illness Therapy-Treatment Satisfaction-General (FACIT-TS-G)	8	19.10	5.82	.91	8-33	8-27	24.9	5.01	.85	8-33	9-31
Migraine Interictal Burden Scale (MIBS-4)	4	7.46	3.79	.80	0-12	0-12	6.55	3.57	.83	0-12	0-12
Pain Belief and Perception Inventory (PBPI) Myst	4	9.73	2.69	.87	-8-8	-7-8	9.50	2.89	.80	-8-8	-8-7
Pain Belief and Perception Inventory (PBPI) Permanance	5	11.97	8.52	.82	-10-10	-10-10	14.2	2.71	.82	-10-10	-10-9
Pain Belief and Perception Inventory (PBPI) Constancy	4	8.97	6.17	.77	-8-8	-8-6	9.97	2.81	.68	-8-8	-8-7
Pain Belief and Perception Inventory (PBPI) Self-blame	3	6.30	2.17	.88	-6-6	-6-5	6.27	2.33	.85	-6-6	-6-6
Perceived Stress Scale (PSS-10)	10	32.30	7.65	.85	10-50	10-50	29.70	7.42	.61	10-50	20-43
Patient-Doctor Relationship Questionnaire (PDRQ-9)	9	27.27	10.48	.97	9-45	9-45	32.07	8	.95	9-45	9-45

Note. k = no. of items; M = Mean; SD = Standard Deviation; value; a = Cronbach's alpha

Mean Comparison between Medication and Acupuncture Treatment Groups on Study Variables

The t-test was used to evaluate the mean differences between the Medication and Acupuncture Treatment Groups in study variables, i.e., Migraine Interictal Burden, Pain Perception, Perceived Stress, Doctor-Patient Relationship, and Treatment Satisfaction. The presented in Table 2 revealed that the Acupuncture Treatment Group scored higher on treatment satisfaction (M= 3.11, SD = .63) as compared to the Medication Treatment Group (M= 2.39, SD= .73). The mean difference was statistically significant as $t(58) = -4.11$, $p < 0.05$, $d = 1.06$, indicating a large effect size as Cohen's D value is more than 0.8.

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Table 2

Mean Comparison on Study Variables between Medication and Acupuncture Treatment Groups (N= 60)

Variables	Medication (n=30)		Acupuncture (n=30)		t (58)	p	Cohen's d
	M	SD	M	SD			
MIBS-4	1.73	.97	1.44	.89	1.21	.23	0.31
PBPI-Myst	-.11	1.05	-.19	1.07	.30	.76	0.08
PBPI-Permanance	-.49	.92	-.34	1.05	-.60	.55	-0.15
PBPI-Constancy	-.43	.90	-.41	.89	-.11	.92	-0.02
PBPI-Self-blame	-.60	1.09	-.62	1.08	.08	.94	0.02
PSS-10	3.24	.53	2.97	.74	1.62	.11	0.42
PDRQ-9	3.03	1.16	3.56	.92	-1.96	.054	-0.51
FACIT-TS-G	2.39	.73	3.11	.63	-4.11	.00	-1.06

Note. MIBS = Migraine Interictal Burden Scale, PBPI = Pain Belief and Perception Inventory, PSS = Perceived Stress Scale, PDRQ = Patient-Doctor Relationship Questionnaire, FACIT-TS-G = Functional Assessment of Chronic Illness Therapy- Treatment Satisfaction- General, M = mean, SD = Standard Deviation, p = significance value.

Correlations among Demographics, Clinical Characteristics, Psychosocial Factors, and Treatment Satisfaction

Pearson product-moment correlation was computed to evaluate the relationship between demographic, clinical variables, and study variables, i.e., Migraine Interictal Burden, Pain Perception, Perceived Stress, Doctor-Patient Relationship, and Treatment Satisfaction in medication and acupuncture treatment groups. The results revealed through analysis in Table 3 are that time since current medication was found to have a significant negative correlation with, pain perception-mystery ($r = -.44$, $p < .05$), and pain perception-constancy ($r = -.42$, $p< .05$). The frequency of migraine attacks was found to have a significantly positive correlation with migraine interictal burden ($r = .39$, $p < .05$), pain perception-mystery ($r = .61$, $p < .01$), pain perception-permanence ($r = .38$, $p < .05$) and pain perception-constancy ($r = .63$, $p < .01$). The migraine interictal burden showed a significant positive correlation with pain perception-mystery ($r = .43$, $p < .05$) and pain perception-permanence ($r = .39$, $p < .05$). Pain perception-mystery had a positive correlation with pain perception-permanence ($r = .63$, $p < .01$) and pain perception-constancy ($r = .77$, $p < .01$). Pain perception-Permanence was found to have a significant positive correlation with pain perception-constancy ($r = .67$, $p < .01$), whereas a significant negative correlation with treatment satisfaction ($r = -.53$, $P< .01$). Pain perception-constancy reported a significant negative correlation with treatment satisfaction ($r = -.43$, $P < .01$). The doctor-patient relationship ($r = .38$, $p < .05$) was significantly and positively correlated with treatment satisfaction. The findings presented in Table 4 are that the frequency of migraine attacks was found to have a significant positive correlation with pain perception-constancy ($r = .43$, $p < .05$). Time since acupuncture started reported a significant negative

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correlation with treatment satisfaction (r = -.40, p < .05) The total number of acupuncture sessions completed showed a significant negative correlation with pain perception-mystery (r = -.37, p < .05). The migraine interictal burden showed a significant positive correlation with pain perception-permanence (r = .71, p < .01) and pain perception-constancy (r = .51, p < .01), Pain perception-mystery was found to have a positive correlation with pain perception-permanence (r = .48, p < .01), pain perception-constancy (r = .62, p < .01), pain perception-self-blame (r= .43, p < .05) and perceived stress (r = .61, p < .01). Pain perception-permanence was found to have a significant positive correlation with pain perception-constancy (r = .72, p < .01) and perceived stress (r = .41, p < .05). Pain perception-constancy reported a significant positive correlation with perceived stress (r = -.58, p < .01). The doctor-patient relationship (r = .75, p < .01) was significantly positively correlated with treatment satisfaction.

Table 3 Pearson Product Correlation between demographic, clinical factors and all Study Variables in MTG (n=30)

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Age	-	.51**	-.27	.02	.26	-.01	-.01	-.11	.15	.05	.02	-.17	.03
2	Age at onset of Migraine		-	-.69**	.08	.07	.26	.18	-.06	.12	.02	-.05	-.18	-.18
3	Time since current Medication			-	-.32	-.10	-.27	-.44*	-.16	-.42*	-.30	.09	.14	.33
4	Frequency of Migraine Attack				-	.16	.39*	.61**	.38*	.63**	-.11	-.13	-.28	-.23
5	Average Duration of each Attack					-	.13	.13	.33	.29	-.13	.29	-.00	-.33
6	MIB						-	.43*	.39*	.29	.04	-.07	-.16	-.32
7	PP Myst							-	.63**	.77**	.19	-.07	-.34	-.27
8	PP Permanance								-	.67**	.08	.04	-.28	-.53**
9	PP Constancy									-	.24	.07	-.32	-.43*
10	PP Self-blame										-	.15	-.12	-.07
11	PS											-	-.12	-.23
12	DPR												-	.38*
13	TS													-

Note. *p<.05, **p<.01, ***p<.001, MTG= Medication Treatment Group, MIB= Migraine Interictal Burden, PP= Pain Perception, PS= Perceived Stress, DPR= Doctor-Patient Relationship, TS= Treatment Satisfaction

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Table 4 Pearson Product Correlation between demographic, clinical factors and all Study Variables in ATG (n=30)

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Age	-	.29	.04	.03	.15	.31	.01	-.16	-.02	-.17	-.17	-.29	.06	.05
2	Age at onset of Migraine		-	-.42*	.07	-.20	-.22	-.02	.11	-.01	-.07	.18	-.12	-.14	-.11
3	Frequency of Migraine Attack			-	.09	-.24	-.08	.29	.16	.30	.43*	-.14	.13	.05	.20
4	Average Duration of each Attack				-	.03	-.09	.27	.32	.33	.33	.07	.23	-.18	-.27
5	Time since Acupuncture Started					-	.83**	.08	-.17	-.09	-.25	-.17	-.16	-.22	-.40*
6	Total no. of Acupuncture sessions						-	.04	-.37*	-.18	-.31	-.28	-.28	-.08	-.13
7	MIB							-	.23	.71**	.51**	.18	.22	-.18	-.18
8	PP Myst								-	.48**	.62**	.43*	.61**	-.16	-.23
9	PP Permanance									-	.72**	.16	.41*	-.21	-.31
10	PP Constancy										-	.29	.58**	-.06	-.14
11	PP Self-blame											-	.23	-.09	-.18
12	PS												-	-.06	-.19
13	DPR													-	.75**
14	TS														-

Note. *p<.05, **p<.01, ***p<.001, ATG= Acupuncture Treatment Group, MIB= Migraine Interictal Burden, PP= Pain Perception, PS= Perceived Stress, DPR= Doctor-Patient Relationship, TS= Treatment Satisfaction**Psychosocial**

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Predictors of Treatment Satisfaction

A hierarchical regression analysis was conducted to examine the predictive role of Migraine Interictal Burden, Pain Perception along its subscales (Myst, Permanance, Constancy, and Self-blame), Perceived Stress, and Doctor-Patient Relationship, on Treatment Satisfaction.

In block 1, covariates such as age and type of migraine didn't significantly contribute to the regression model. However, gender (β= .41, p < .05) was found to be a significant predictor, indicating that women reported higher treatment satisfaction than men. Overall, ΔR^2 was not significant (F (3,26) = 2.65, p = .07) in MTG. Moreover, age, gender, and type of migraine didn't significantly contribute to the regression model in ATG. Overall, ΔR^2 was not significant (F (3,26) = .16, p = .92) as well. Adding psychological predictors in block 2, migraine interictal burden, pain perception (myst), pain perception (constancy), pain perception (self-blame), and perceived stress didn't significantly contribute to the regression model. However, pain perception (permanence) (β= -.52, p < .01) was found to be a significant predictor. Overall, the change in R^2 was not significant (F (6,20) = 2.05, p = .11) in MTG. Moreover, migraine interictal burden, pain perception (myst), pain perception (permanence), pain perception (constancy), pain perception (self-blame), and perceived stress also showed that change in R^2 was not significant, (F (9,20) = .69, p = .65) in ATG as well. Finally, the addition of the doctor-patient relationship to the regression model explained that the change in R^2 was not significant, F (1,19) = 2.58, p = .13 in MTG. However, in ATG, it explained the variance of 44% (β=.70, p<.00), indicating that a healthy doctor-patient relationship is associated with increased treatment satisfaction, and overall change in R^2 was significant, F (10,19) = 3.22, p = .014.

Table 5: Hierarchical Multiple Regression Analysis for Predicting Treatment Satisfaction (N= 60)

	Treatment Satisfaction			
	Medication Treatment Group (n=30)		Acupuncture Treatment Group (n=30)	
Predictors	ΔR^2	β	ΔR^2	β
Step 1	.23		.02	
Age		-.00		-.02
Gender		.41*		-.00
Type of Migraine		.27		.14
Step 2	.29		.17	
MIB		-.21		.02
PP-Myst		.21		-.19
PP-Permanance		-.52**		-.45
PBPI-Constancy		-.08		.45
PP-Self-blame		-.01		-.11
PS		-.23		-.14
Step 3	.06		.44*	
DPR		.26		.70***
Total ΔR^2	.58		.63*	

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Note. *p<.05, **p<.01, ***p<.001., Gender: 0 = Men, 1 = Women; Type of Migraine: 0 = With Aura, 1 = Without Aura, β = Beta Coefficient. MIB = Migraine Interictal Burden, PP = Pain Perception, PS = Perceived Stress, DPR = Doctor-Patient,

Mediation Analysis

Mediation analysis was used to analyze the mediating role of the Doctor-patient relationship between the psychological factors, i.e., Migraine interictal burden, Pain perception, perceived stress and Treatment satisfaction in both Medication and Acupuncture treatment groups via Barron and Kenny's approach. The results of Table 6 revealed that the doctor-patient relationship was not found to be a significant mediator in MTG. Moreover, the results of Table 7 revealed that the doctor-patient relationship was also not found to be a significant mediator in ATG; however, a direct path between DPR and Treatment satisfaction was found to be significant in all psychological variables in ATG.

Table 6

Indirect effect of Psychosocial Factors on Treatment Satisfaction through the Mediator (Patient-Doctor Relationship) Mediation Analysis via Baron & Kenny in MTG (n = 30)

Predictor Variable	Outcome Variable	B	p	95% CI	
				LL	UL
Migraine Interictal Burden Total Effect					
Migraine Interictal Burden Direct Effect	Treatment Satisfaction	-.24	.09	-.51	.04
Migraine Interictal Burden	Treatment Satisfaction	-.19	.14	-.46	.07
Migraine Interictal Burden	DPR	-.19	.40	-.67	.27
DPR	Treatment Satisfaction	.21	.06	-.01	.43
Indirect Effect					
Migraine Interictal Burden	Treatment Satisfaction through DPR	-.04	0.43		
Pain Perception Total Effect					
Pain Perception Direct Effect	Treatment Satisfaction	-.43	.01	-.76	-.09
Pain Perception	Treatment Satisfaction	-.34	.054	-.69	.01
Pain Perception	DPR	-.54	.06	-1.09	.02
DPR	Treatment Satisfaction	.16	.17	-.07	.38
Indirect Effect					
Pain Perception	Treatment Satisfaction through DPR	-.09	0.23		
Perceived Stress Total Effect					
Perceived Stress Direct Effect	Treatment Satisfaction	-.31	.23	-.83	.21
Perceived Stress	Treatment Satisfaction	-.25	.30	-.75	.24
Perceived Stress	DPR	-.25	.55	-1.09	.59
DPR	Treatment Satisfaction	.22	.05	-.004	.45
Indirect Effect					
Perceived Stress	Treatment Satisfaction through PDR	-.05	0.55		

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Note. B = Unstandardized Coefficient, CI = Confidence Interval, UL = Upper Limit, LL = Lower Limit, DPR = Doctor-patient Relationship

Table 7
Indirect effect of Psychosocial Factors on Treatment Satisfaction through the Mediator (Patient-Doctor Relationship) Mediation Analysis via Baron & Kenny in ATG (n = 30)

Predictor Variable	Outcome Variable	B	p	95% CI	
				LL	UL
Migraine Interictal Burden Total Effect					
Migraine Interictal Burden	Treatment Satisfaction	-.13	.33	-.39	.14
Direct Effect					
Migraine Interictal Burden	Treatment Satisfaction	-.04	.70	-.22	.15
Migraine Interictal Burden	DPR	-.19	.39	-.58	.21
DPR	Treatment Satisfaction	.51	.00	.33	.69
Indirect Effect					
Migraine Interictal Burden	Treatment Satisfaction through DPR	-.096	0.32		
Pain Perception Total Effect					
Pain Perception	Treatment Satisfaction	-.22	.12	-.52	.07
Direct Effect					
Pain Perception	Treatment Satisfaction	-.12	.22	-.33	.08
Pain Perception	DPR	-.21	.39	-.65	.23
DPR	Treatment Satisfaction	.49	.00	.32	.67
Indirect Effect					
Pain Perception	Treatment Satisfaction through DPR	-.10	0.35		
Perceived Stress Total Effect					
Perceived Stress	Treatment Satisfaction	-.16	.32	-.48	.16
Direct Effect					
Perceived Stress	Treatment Satisfaction	-.12	.25	-.34	.09
Perceived Stress	DPR	-.07	.76	-.55	.41
DPR	Treatment Satisfaction	.51	.00	.33	.68
Indirect Effect					
Perceived Stress	Treatment Satisfaction through DPR	-.04	0.76		

Note. SE = Standard Error, B = Unstandardized Coefficient, CI = Confidence Interval, UL = Upper Limit, LL = Lower Limit, DPR = Doctor-patient Relationship

Group Differences in Psychosocial Factors and Treatment Satisfaction Across Demographic and Clinical Factors via Independent Sample T-tests

To assess differences in demographic variables (i.e., gender) and clinical factors (i.e., types of migraine, prior acupuncture experience, family history of migraine) on the Migraine interictal burden, Pain perception, Doctor-patient relationship, and Treatment satisfaction, an independent-samples t-test was conducted. As shown in Table 8, there is a significant difference in the scores of treatment satisfaction for men (M= 1.75, SD= .72) and women (M=2.51, SD= .67), t (28) = -.29, p< 0.05, with a large effect size (d =

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1.09) in MTG. Moreover, gender is significantly associated only with pain perception (permanance) in ATG for men (M= -.67, SD= 1.11) and women (M=1.58, SD= .93), t (28) =-2.09, p<0.05, with a large effect size (d= -0.78). There is a significant difference in the scores of pain perception (permanance) for migraine with aura (M= .00, SD= .97) and migraine without aura (M=-.87, SD= .68), t (28) = 2.88, p<0.05, with a large effect size (d = 1.06) in MTG. Moreover, it shows the significant difference in the scores of pain perception (constancy) for migraine with aura (M= .04, SD= .82) and migraine without aura (M=-.78, SD= .82), t (28) = 2.88, p<0.05, with a large effect size (d = 1.00) in MTG. There is a significant difference in the scores of the doctor-patient relationship for family history of migraine (M= 3.79, SD= 1.01) and no family history (M= 2.59, SD= 1.03), t (28) =3.09, p<0.05, with a large effect size (d = 1.18) in MTG, while family history of migraine is non-significant on all study variables in ATG. Table 9 indicates that there is a significant difference in prior acupuncture experience in the scores of pain perception (myst), t (28) =-2.47, p < 0.05, with a large effect size (d = -1.04). Moreover, it shows a significant difference in the scores of pain perception (constancy), t (28) =-2.19, p<0.05, with a large effect size (d = -1.18). Furthermore, it shows a significant difference in the scores of treatment satisfaction, t (28) =2.45, p< 0.05, with a large effect size (d = 1.28)

Table 8: Mean Comparison of Gender and Type of Migraine on Study Variables (N= 60)

	Medication Treatment Group (n=30)							Acupuncture Treatment Group (n=30)						
	Men (n= 5)		Women (n=25)					Men (n= 12)		Women (n= 18)				
Variables	M	SD	M	SD	t (28)	p	Cohen's d	M	SD	M	SD	t (28)	p	Cohen's d
Migraine Interictal Burden	1.65	1.17	1.75	.96	-.21	.84	0.09	1.22	.84	1.58	.93	-1.06	.29	-0.41
Pain perception-Myst	.05	1.22	-.14	1.04	.36	.72	0.17	-.67	1.11	.13	.94	-2.09	.04	-0.78
Pain perception-Permanence	-.40	.85	-.51	.95	.25	.81	0.13	-.65	.93	-.13	1.09	-1.34	.19	-0.51
Pain perception-Constancy	.00	1.05	-.52	.87	1.18	.25	0.55	-.73	.63	-.19	.99	-1.64	.11	-0.65
Pain perception-Self-blame	-.60	.89	-.60	1.15	.00	1	0.00	-.53	1.23	-.69	.99	.39	.70	0.14
Perceived Stress	3.16	.52	3.26	.54	.37	.71	0.19	2.78	.79	3.10	.69	-1.18	.25	-0.43
Doctor-patient relationship	3.04	1.42	3.02	1.14	.03	.98	0.02	3.54	.85	3.58	.99	-.12	.90	-0.04
Treatment Satisfaction	1.75	.72	2.51	.67	-.29	.02	1.09	3.11	.47	3.10	.73	.04	.97	0.02
	With Aura (13)		Without Aura (17)					With Aura (16)		Without Aura (14)				
Migraine Interictal Burden	1.88	.95	1.62	1.00	.74	.47	0.27	1.72	.85	1.13	.87	1.89	.07	0.69
Pain perception-Myst	.21	1.11	-.35	.97	1.48	.14	0.54	-.16	1.06	-.23	1.13	.19	.85	0.06
Pain perception-Permanence	.00	.97	-.87	.68	2.88	.01	1.06	-.17	1.09	-.54	.99	.99	.33	0.36

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Pain perception-Constancy	.04	.82	-.78	.82	2.77	.01	1.00	-.14	.95	-.71	.75	1.81	.08	0.66
Pain perception-Self-blame	-.18	1.27	-.92	.85	1.92	.07	0.66	-.56	1.09	-.69	1.11	.32	.75	0.12
Perceived Stress	3.32	.53	3.18	.54	.68	.50	0.26	3.04	.71	2.89	.79	.58	.57	0.20
Doctor-patient relationship	2.79	.99	3.22	1.28	-1.00	.33	-0.39	3.51	.96	3.63	.89	-.35	.73	-0.13
Treatment Satisfaction	2.17	.77	2.55	.67	-1.44	.16	-0.56	3.03	.63	3.19	.64	-.75	.48	-0.25
	Yes (11)		No (19)					Yes (15)		No (15)				
Migraine Interictal Burden	1.72	1.06	1.74	.95	-.03	.98	-0.03	1.37	.96	1.52	.85	-.45	.66	-0.17
Pain perception-Myst	-.27	1.14	-.01	1.02	-.64	.52	-0.58	1.33	.91	-.52	1.15	1.72	.09	1.75
Pain perception-Permanence	-.58	.90	-.44	.95	-.39	.69	-0.45	-.17	1.08	-.01	1.02	.87	.39	-0.15
Pain perception-Constancy	-.28	.87	-.91	1.06	-1.3	.22	0.61	-15	1.02	-.67	.69	1.62	.12	0.60
Pain perception-Self-blame	-.42	1.05	-.42	1.10	-1.19	.25	0.00	-.58	1.05	-.67	1.14	.22	.83	0.08
Perceived Stress	3.12	.69	3.31	.41	-.96	.35	0.18	3.14	.73	2.80	.74	1.27	.22	0.46
Doctor-patient relationship	3.79	1.01	2.59	1.03	3.09	.00	1.18	3.76	.80	3.36	1.00	1.20	.24	0.51
Treatment Satisfaction	2.72	.55	2.19	.76	1.97	.06	0.80	3.23	.56	2.98	.68	1.09	.28	0.40

Note. M = mean, SD = standard deviation, p = significance value.

Table 9

Mean Comparison of Prior Acupuncture Experience on Study Variables for ATG (n= 30)

Variables	Yes (n= 6)		No (24)		t (28)	p	Cohen's d
	M	SD	M	SD			
Migraine Interictal Burden	1.25	1.04	1.49	.88	-.58	.57	-0.25
Pain perception-Myst	-1.08	1.19	.03	.94	-2.47	.02	-1.04
Pain perception-Permanence	-.67	.77	-.26	1.11	-.85	.40	-0.43
Pain perception-Constancy	-1.08	.41	-.24	.91	-2.19	.04	-1.18
Pain perception-Self-blame	-1.22	.96	-.47	1.07	-1.56	.13	-0.74
Perceived Stress	2.58	.75	3.07	.72	-1.45	.16	-0.66
Doctor-patient relationship	4.06	.81	3.43	.92	1.49	.15	0.72

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Treatment Satisfaction	3.63	.36	2.98	.62	2.45	.02	1.28

Note. M = mean, SD = Standard Deviation, p = significance value.

Group Differences in Psychosocial Factors and Treatment Satisfaction Across Demographic and Clinical Factors via One-Way ANOVA

To assess differences in demographic variables, i.e., education, monthly family income, and clinical factors, i.e., causes of migraine on the Migraine interictal burden, Pain perception, Doctor-patient relationship, and Treatment satisfaction, one-way ANOVA was done. Analysis produces results in Table 11, showing that level of education and monthly family income are non-significant on all the study variables in both cohorts. The causes of migraine are significant only in Pain perception (myst), $F(3, 18.45) = 17.06$, $p < 0.05$ and pain perception (permanance) in MTG, $F(3, 26) = 6.23$, $p < 0.05$, while all other variables remain non-significant. Post hoc Games- Howell test was conducted to examine the difference in mystery score across causes of migraine. It revealed that participants who reported an unknown cause of migraine had significantly higher pain perception (myst), perceived their pain as confusing and unclear, as compared to those attributing their migraine to stress and lifestyle factors. Post hoc Hochberg's GT2 test was conducted to examine differences in constancy scores across causes of migraine. It revealed that participants who reported an unknown cause of migraine had significantly higher pain perception (constancy), perceived their pain as more constant, as compared to those attributing their migraine to stress and lifestyle factors. Causes of migraine are non-significant on all study variables in ATG.

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Table 11: One-Way Analyses of Variance of Education on Study Variable (N=60)

	Medication Treatment Group (n=30)									Acupuncture Treatment Satisfaction (n=30)									
	Undergraduates (n= 6)		Graduates (n=15)		Post Graduates (n=7)		Professional Studies (n=2)			High School (n= 4)		Undergraduates (n=2)		Graduates (n=13)		Post Graduates (n=8)		Professional Studies (n=3)	
Variables	M	SD	M	SD	M	SD	M	SD	η2	M	SD	M	SD	M	SD	M	SD	M	SD	η2
Migraine Interictal Burden	1.83	1.22	1.85	.93	1.57	.83	1.12	1.59	.04	1.69	.31	.25	.35	1.5	1.02	1.59	.82	1.25	1.09	.15
Pain perception-Myst	-.17	1.15	-.18	1.00	-.07	1.19	-.50	1.41	.03	.13	1.59	-1.00	1.41	.02	1.02	-.31	.74	-.67	1.46	.09
Pain perception-P	-.60	.87	-.41	.99	-.60	.98	-.40	.85	.01	.55	.41	-1.59	.71	-.14	1.08	-.55	.94	-1.07	1.10	.26
Pain perception-Constancy	-.71	1.12	-.43	.83	-.46	.87	.50	1.06	.09	-.06	.94	-1.00	1.41	-.31	1.07	-.50	.57	-.67	.76	.07
Pain perception-Selfblame	-1.33	.52	-.27	1.29	-.67	.90	-.67	.47	.14	.00	1.66	1.17	1.18	-.87	.84	-.83	.67	-1.00	1.20	.28
Perceived Stress	3.30	.57	3.13	.45	3.07	.73	3.10	.42	.04	3.25	.67	2.800	1.83	3.13	.73	2.75	.59	2.60	.70	.09
Doctor-patient relationship	3.31	1.44	2.78	1.04	3.35	1.39	2.94	.39	.06	4.00	.35	3.28	.39	3.47	1.12	3.39	.97	4.04	.39	.08
Treatment Satisfaction	2.50	.79	2.24	.82	2.59	.49	2.44	.79	.05	3.75	.34	2.75	.35	3.15	.74	2.94	.71	3.25	.13	.08
	50K-100K (n=6)		100-300K (n=15)		300-500K (n=7)		Above 500K (n=2)			<50K (n= 4)		50K-100K (n=2)		100K-300K (n=13)		300500K (n=8)		Above500K (n=3)	
Migraine Interictal Burden	2.08	.89	1.68	1.05	1.73	1.03	1.17	.88	.06	1.25	.71	1.65	.60	1.56	.92	1.72	.95	.60	.84	.20

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Pain perception-Myst	.08	1.23	.14	1.06	-.18	1.09	-.75	.43	.06	-1.25	1.06	.40	.95	-.03	.82	-.33	1.21	-.40	1.31	.14
Pain perception-P	-.77	.76	.11	.86	-.56	.99	-1.07	.23	.17	-.30	.42	.08	.84	-.07	.69	-.44	1.32	-1.08	1.29	.14
Pain perception-Constancy	-.79	.84	.07	.81	-.34	.91	-1.33	.38	.22	-.75	.35	.05	.69	-.17	.90	-.53	1.10	-.95	.67	.15
Pain perception-Selfblame	-.50	1.22	-.48	1.03	-.69	1.11	-.67	1.53	.009	-1.50	.71	.47	1.07	-.74	.57	-1.19	.94	-.13	1.35	.35
Perceived Stress	2.87	.64	3.30	.39	3.35	.51	3.33	.57	.13	3.05	.21	3.02	.97	2.86	.69	3.21	.79	2.67	.74	.07
Doctor-patient relationship	2.68	1.38	3.33	.77	2.95	1.32	3.37	.94	.05	3.61	.71	3.76	.54	3.63	.64	3.19	1.35	3.91	.83	.09
Treatment Satisfaction	2.77	.45	2.18	.68	2.22	.84	2.88	.33	.15	3.75	.18	3.28	.10	3.09	.34	3.03	.88	2.85	.84	.12

	Stress (n= 18)		Lifestyle (n=6)		Biological (n=2)		Unknown (n=4)			Stress (n= 12)		Lifestyle (n=5)		Environmental (n=2)		Biological (n=7)		Unknown (n=4)		
Migraine Interictal Burden	1.72	.95	1.42	1.13	1.13	.88	2.56	.59	.15	1.50	.76	1.15	1.11	2.63	.18	1.39	1.09	1.13	.59	.16
Pain perception-Myst	-.14	1.01	-.83	.38	-.75	.35	1.44	.43	.42	-.42	.92	.00	1.21	.00	1.41	.14	1.13	-.44	1.49	.06
Pain perception-P	-.63	.84	-.80	.40	-.20	.57	.45	1.50	.19	-.28	.83	-.76	1.21	.70	.99	-.34	1.35	-.50	1.05	.10
Pain perception-Constancy	-.51	.77	-1.04	.69	-.63	.88	.94	.43	.42	-.60	.41	-.95	.84	-.38	1.59	.18	1.13	-.19	1.16	.19

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Pain perception-Selfblame	-.37	1.21	-1.00	.92	-1.17	.24	-.75	.99	.08	-.94	.72	-.33	1.47	-1.00	.00	-.33	1.20	-.33	1.61	.09
Perceived Stress	3.23	.63	3.30	.32	3.20	.00	3.20	.49	.004	2.78	.43	2.92	.83	3.60	.99	3.20	.89	2.90	1.12	.10
Doctor-patient relationship	3.35	1.21	2.74	.84	3.00	.16	2.03	1.23	.16	3.66	.55	3.29	1.14	2.67	2.36	3.83	.99	3.61	.78	.11
Treatment Satisfaction	2.47	.70	2.38	.71	2.81	.09	1.78	.90	.13	3.14	.59	2.83	.48	2.50	1.94	3.34	.41	3.28	.21	.14
Migraine Interictal Burden	1.72	.95	1.42	1.13	1.13	.88	2.56	.59	.15	1.50	.76	1.15	1.11	2.63	.18	1.39	1.09	1.13	.59	.16

Note. M = mean, SD = Standard Deviation.

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Discussion

The present study aims to investigate the treatment satisfaction in individuals with migraine using medication or acupuncture treatment and the role of psychological factors in treatment satisfaction. The Acupuncture treatment group reported comparatively higher treatment satisfaction than the Medication treatment group. This is consistent with the literature suggesting that, compared with medication, acupuncture demonstrated higher clinical effectiveness in reducing migraine intensity and frequency. (Xu, Yu, Luo, Wang, Chen & Zhang, 2020). Overall mean scores of the study reflect that most of the individuals from MTG appeared to manifest increased treatment satisfaction with severe migraine interictal burden, negative pain perception, moderate stress, and a healthy doctor-patient relationship. Moreover, most of the individuals from ATG appeared to manifest increased treatment satisfaction with moderate migraine interictal burden, negative pain perception, moderate stress, and a healthy doctor-patient relationship. This is consistent with the literature suggesting that reduced migraine burden and supportive therapeutic interactions contribute to greater treatment satisfaction and better migraine outcomes. (Sullivan, & Risdale, 2016). Migraine interictal burden influenced pain perception, as individuals who reported higher burden between migraine attacks perceived their pain as permanent, as compared to those with lower migraine interictal burden in both cohorts, and it influenced the individuals to believe that the pain is mysterious in MTG, and will remain constant in ATG. As is evident, an increase in pain sensitivity during the interictal phase and altered pain processing have been reported in individuals with migraine. (Vingen, Sand & Stoner, 2017). The subscales of pain perception influence each other, as individuals who believe that their pain is mysterious also believe that pain will remain permanent and constant in both cohorts. Moreover, individuals who believe that their pain is mysterious also blame themselves more for their pain in ATG. Individuals who believe pain is permanent also believe that it's constant in both cohorts. As present in previous literature, individuals who perceive chronic symptoms and find them uncontrollable are likely to report confusion regarding their condition and greater self-blame. (Darnall, Sturgeon, Cook, Taub, Roy, Burns & Makey, 2017). Pain perception influenced perceived stress, as individuals who believe that their pain is mysterious also report higher perceived stress in ATG. Moreover, individuals who believe that pain is permanent and constant reported higher perceived stress in ATG. As reported, negative cognitive appraisal can lead to increased perceived stress, especially in individuals who have chronic conditions. (Crum, Akinola, Martin & Fath, 2017). Individuals of MTG who reported higher pain perception appeared to manifest a decrease in treatment satisfaction, reflecting that the individuals who believe that pain is permanent and constant reported decreased treatment satisfaction in MTG. Maladaptive pain beliefs and coping are associated with decreased treatment satisfaction. (Kerns, Sellinger & Goodin, 2016). The doctor-patient relationship influenced treatment satisfaction, as individuals who reported a healthy doctor-patient relationship reported an increase in treatment satisfaction in both cohorts. As is evident, effective physician-patient interaction can improve patients' evaluation of treatment outcomes. (Street, Makoul, Arora & Epstein, 2019). Doctor-patient relationships was found to be a non-significant mediator between all the predictor variables and treatment satisfaction, both in MTG and ATG. In psychosocial factors, migraine interictal burden, pain perception, and perceived stress appeared to be non-significant predictors of treatment satisfaction in both cohorts. However, the doctor-patient relationship appeared as a significant predictor in ATG, suggesting that having a healthy doctor-patient relationship increases the acupuncture treatment satisfaction in individuals with Migraine. The treatment is more effective when an individual has a healthy relationship with their doctor. (Peterson, Ostroff, DuHamel, D'Agostino & Hernandez 2016). It was hypothesized that individuals with diverse sociodemographic and clinical factors are likely to differ in their level of treatment satisfaction. The longer a patient stayed

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medicated, the lower their levels of pain constancy and mystery. In addition, migraine frequency was highly related to high pain constancy and pain permanence beliefs in the medication group. Pain repetition strengthens the chronic illness identity and contributes to the formation of more maladaptive cognitive schemas, following the models of migraine development (Buse et al., 2019; Steiner et al., 2020). There was also a negative correlation between time since starting acupuncture and treatment satisfaction. As research conducted on acupuncture outcomes indicates, the effects of initial expectations and responses considerably affect treatment satisfaction, while these effects tend to be reduced with prolonged treatment exposure (Linde et al., 2016). Also, the study has revealed a negative correlation between time since acupuncture initiation and PP Myst. Scientific evidence from studies on acupuncture shows that repeated sessions can affect both symptom and cognitive processing of pain, especially in patients with chronic migraines (Cochrane Database of Systematic Reviews, 2016; Linde et al., 2016). In the current research, a significant negative correlation between family history of migraine and the doctor-patient relationship. Interpersonal and cognitive factors have been shown to influence therapy in migraine and other pain conditions substantially (De Ruddere & Craig, 2016). Increasing the frequency of migraine attacks positively affects the burden of migraines' interictal state and negative perceptions related to pain in MTG. Indeed, people who frequently suffer from migraines usually have problems with constant worrying and anxiety regarding potential future headaches, which makes their interictal burden higher and worsens their quality of life even when they do not have any headache (Buse et al., 2019). In the same manner, the Acupuncture Treatment Group (ATG) demonstrated that increasing frequencies of migraine attacks led people to form beliefs about how their pain would constantly persist. Moreover, the outcomes have been reported among the migraine population in the past, where more frequent attacks lead to the development of negative beliefs regarding pain (Ferrari et al., 2020). The gender differences were found to reveal that women were relatively more satisfied with their treatment than men within the medication category. This is supported by substantial evidence, which shows that women are generally more proactive in health care service utilization, better communication of their symptoms, and better treatment adherence, thereby resulting in greater satisfaction with their treatments (Thompson et al., 2016). Gender differences were also noted in terms of pain perception in the acupuncture treatment group, with women experiencing more pain as mysterious. Such results align with the notion that females tend to pay closer attention to bodily experiences and exhibit stronger affective evaluation of pain, hence increasing the cognitive elaboration of symptoms (Fillingim et al., 2016). In the medication group, individuals suffering from migraines with aura demonstrated increased levels of pain permanence and constancy compared to people without aura. Migraine with aura involves more complex neurological symptoms and increased perceived severity, resulting in heightened illness threat perceptions and enhanced pain beliefs of chronicity and recurrence (Buse et al., 2019). Individuals without any previous exposure to acupuncture had a perception of pain being more complex and continuous and were less satisfied with the treatment. Research highlights that expectations and beliefs of patients have a considerable impact on pain perception, treatment outcomes, and patients' satisfaction with the acupuncture treatment process (Zhao et al., 2022). The current results showed that patients who had an unknown cause for their migraine exhibited significantly higher pain constancy and pain mystery compared to those who linked their migraine to stress or lifestyle factors in the medication group. Several empirical findings from pain psychology studies have supported this notion, demonstrating an association between illness uncertainty, negative illness perceptions, heightened symptom monitoring and poor outcome (Nicholas et al., 2019; Buse et al., 2019).

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Limitations

The cross-sectional design restricts causal inferences; therefore, future studies should employ longitudinal designs to track changes in treatment satisfaction over time. This will help in understanding the temporal sequence of events and identifying the causal relationship between variables. The recall or social desirability biases could be present because of self-report measures. Future research should recruit a large sample to better understand the differences across sociodemographic and clinical factors in the medication and acupuncture treatment groups.

Implications of the study and Future recommendations

As a comparative study, this research will help healthcare providers in assessing the extent to which Migraine individuals report differences in treatment satisfaction with medication and acupuncture groups. Although extensive international evidence supports the effectiveness of Acupuncture treatment for chronic conditions, very few acupuncturists are in practice in Pakistan, mainly because of changes in government policies and limited government recognition; therefore, no research study in Pakistan has focused on treatment satisfaction of Acupuncture in individuals with migraine. Thus, for the future, it is recommended to raise awareness about this effective treatment and change policies to allow more practice for better treatment outcomes. Furthermore, standardized training protocols and a proper licensing system should be established to enhance treatment reliability.

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