Original Article

A Profile of Headache Disorders in Pakistan: Prevalence and Psychological Comorbidities

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Abstract

Objective: To explore prevalence of headache disorders and its psychological associations in Pakistan.
Study design: It is a retrospective study.
Place and duration of study: The study was conducted in The Neurocounsel, Islamabad between the year 2017 and 2023.
Material and Methods: 514 participants, who sought treatment at a private clinic in Islamabad from all over Pakistan, participated in this retrospective research. Hit-6 and MIDAS were used for headache severity and extent of disability, HAM-A and HAM-D were applied for anxiety and depression respectively. Athen's sleep questionnaire was administered for insomnia. After these assessments, the frequencies and descriptives were calculated.
Results: Primary headache was reported by 63.7% of the patients, with migraine being the most common (31.9%), followed by chronic daily headache (23.2%). Secondary headache was identified in only 3.1% of the sample. 33.3% people did not meet any criteria so were categorized as Not Otherwise Specified (NOS). Women constituted about 2/3rd of patients in almost all of the headache types.
Conclusion: Primary headache is more common, and within it, migraine is the predominant type. Anxiety, depression and insomnia were also comorbid among the sample, proving that headache is not only a physiological problem but psychological issues also co-occur with it.

Keywords: Headache, Migraine, Chronic daily headache, Secondary headache

1. Introduction

Headache is described as pain or heaviness in head, face, neck or shoulder region. It can be further divided as primary and secondary headache. Primary headaches are, as the name suggests, the primary issue at hand, unrelated to any medical problem and can have multiple causes like tension, stress, or other physiological causes. Primary headache can be divided into further categories; tension-type headache, migraine, hypnic and cluster headache etc.[1] The second type, Secondary headache, is one in which there is some underlying medical illness and headache appears as a symptom of that illness. It is further classified according to said medical problem, it can be vascular, infectious, post-traumatic, medication overuse, allergy or hormone related etc.[2]

Headache is most prevalent problem in outpatient departments. 90% of people report experiencing at least one type of headache during their life. Prevalence studies show, that in approximately 100,000 people, 38% had tension-type headache and 12% had migraine.[3]

A meta-analysis, reviewing articles over 20 years, showed that primary headache has multiple physical and psychological comorbidities as depression, anxiety, body aches and heart problems. A combination of treatment for both headache and comorbidity works best for them.[4]

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According to The Global Burden of Diseases it was reported that, classified according to years lived with disability (YLDs) for both sexes, headache disorders ranked third out of 369 conditions, with migraine coming in second and accounting for 7.3 % of all-cause YLDs. [5]

Some other conditions occurring with headaches are multiple sclerosis, stroke, epilepsy, obesity, hypertension, diabetes, sleep disorders. Along with these, symptoms of some mental problems such as depression and anxiety are also comorbid with headache.[6] Among primary headaches, migraine is seen in 14.4% of population globally Irrespective of gender.[7]

During the Covid-19 pandemic; headaches, anosmia, gastrointestinal complaints and resistance to analgesics was seen in majority of patients.[8] Another problem that arose during these times - COVID-19 itself, the psycho-sociological effects of it or the problems of quarantine - led to an exacerbation of previous severe headaches like migraine, causing more headache burden, points are not yet investigated thoroughly.[9]

In patients suffering from headaches or migraines, a lot suffer from a vitamin D deficiency. It is proven by evidence that they have lower level of vitamin D than people who are healthy.[10]

A study showed that frequency of headaches increases by the continuous use of anti-migraine drugs and analgesics, it may also change the headache from acute to chronic. A type of secondary headache, known as medication overuse headache, also seems to be more prevalent in women and usually coexists with mental conditions as anxiety and depression. Thus, it is treated by a combination of psychotherapy and medications.[11]

Unfortunately, it appears that no one is safe from the grasp of headache, as it is also seen in children and adolescents. Multiple studies showed in student samples from Istanbul and Vienna schools, 89.3% suffered from migraine and 39.9 % had tension-type headache. In a national study in Turkey, results showed that 37.2% of teenage and younger children experienced headache of short duration in their life. [12,13]

Migraine and severe headaches are a serious public health issue in the United States, with the highest impact in women of childbearing age and those of lower socioeconomic status. Also, rate of self-reported headaches and migraines is high among US adults.[14]

A rare headache condition known as New Daily Persistent Headache (NDPH) is one of mostly seen, disabling and treated type of headache. It is characterized by sudden onset that remains continued, usually starts acute and then lasts longer.[15]

A study was conducted on relationship between depression and migraine and it was founded that among 425 peoples; 300 had depression among both categories (with aura and without aura). In this 300, 75 showed mild, 125 showed moderate and 100 cases had severe level of depression.[16]

A study which aimed to determine the most common diseases (ICD-10) in males and females, showed that males had disorders like; mixed anxiety and depression (MAD), generalized anxiety disorder (GAD), bipolar affective disorder (BPAD), social phobia, and obsessive-compulsive disorder (OCD). Women, on the other hand**,** presented more with depression, GAD, mixed anxiety and depression, conversion or dissociative disorder, OCD, and panic attacks. Among both genders, headache was mostly and commonly reported by about 61.9% of participants, manifesting with lethargy, extremity pains, palpitations, loss of appetite, heartburn or acidity, heaviness on the head, shoulder pains, bloating, dizziness, chest pains, hot flashes or shivering, and constipation. Compared to 10% females; ¼ males do not reported any somatic symptoms. On treatment preferences, 73.6% of the participants were in favor of medication and some choose both medication and psychotherapy.[17]

Multiple studies show association between headache and anxiety/depression. A study conducted on adolescents with migraine showed that depression and anxiety is also very common among them.[18] Another longitudinal research study showed having anxiety or frequent negative thoughts may leads to migraine

headache and having depression can also leads to headache.[19]

Studies also show bidirectional relationship between comorbidity of psychological problems and headache. A study showed that the association between headache and psychological problems is more noticeable among clinical patients than patients in population-based researches.[20] Chances of recovery and betterment in tension-type headache depends on frequency and intensity of pain. The triggering factors for headache are stress, anxiety, depression, fatigue, emotional conflicts etc. Literature suggests that tension type headache is frequent in the modern world which significantly lowers individual's (particularly women) quality of life.[21]

2. Materials & Methods

This is a retrospective study involving the evaluation of 555 patient forms. The deletion of incomplete forms left us with a final sample of 514. The data was collected from a private clinic in Islamabad, consisting of patient forms collected between the year 2017 and 2023. Different scales are used to collect information regarding headache and its possible associated features such as anxiety, depression and insomnia. Hit-6 and Migraine Disability Assessment (MIDAS) were used to identify presence and severity of headache, as well as the extent of disability respectively. Hit-6 is an assessment tool for impact of headaches on a person's daily life. It consists of 6 questions that cover different aspects of headache, e.g. pain intensity, social functioning, role functioning, vitality, cognitive functioning, and psychological distress. Each question is scored on a scale of 6 to 13. Higher score indicates higher impact and vice versa. MIDAS assesses disability in last 3 months on basis of number of days that a person has missed work, school, less productivity or missing other activities due to migraines. Scores are then calculated on these criteria and categorized into 4 domains; little or no disability, mild disability, moderate disability, and severe disability. Higher scores indicates greater level of disability and migraine impact.

For anxiety and depression; Hamilton Anxiety Rating Scale (also known as HAM-D) and Hamilton Depression Rating Scale (also known as HAM-D) were used respectively. HAM-A is used to assess anxiety symptom's severity. It consists of 14 items, each representing a different symptom. Each item is scored on range 0 to 4, or 0 to 2. Total score ranges from zero to 56, with higher scores indicating higher severity. HAM-D is used to measure depression severity. It has 17 items, with a score range of zero to 52. Athens Sleep Questionnaire (ASQ) was used for insomnia. Each item is scored on range from zero to 3, with total scores ranging 0 to 24. Higher scores suggest more severe insomnia symptoms.

The statistical software SPSS version 21 was used for the analyses. Diagnosis of the types of headache were not provided in the original medical form. For the purpose of the study, different types were identified in the sample using The International Classification of Headache Disorders 3rd edition (ICHD-3), as shown in table 2. Those cases that did not fit the criteria of any of the diagnosis were put under Not Otherwise Specified (NOS). In statistical analysis, frequencies and descriptives were calculated for gender and province and clinical features of most frequent types of headaches. Correlations were calculated for age, headache severity, anxiety, depression, insomnia.

3. Results

Five hundred and fourteen forms were analyzed in the study: of which 375 (73%) were female and 139 (27%) were male. Mean age plus standard deviation is 34.90±13.5 years. (should mention younger ones). Residential city was mentioned on only 369 forms, but within those, the federal capital had the highest percentage of cases (31.1%). Additionally, 20.2% of cases were from the Punjab province, followed by 15.2% from KPK, 2.5% from Gilgit, 2% from Balochistan and Sindh, and lastly, 0.8 foreigners.

Table 2 summarizes the prevalence of particular headache types identified within the sample, according to the criteria set by ICHD-3. 63.7% of the patients were

identified with primary headache, with migraine being the most common (31.9%), followed by chronic daily headache (23.2%). Secondary headache was identified in only 3.1% of the sample. 33.3% people did not meet the criteria of any particular type, and as such were categorized as Not Otherwise Specified (NOS). Women constituted about 2/3rd of patients in almost all of the headache types. For all types, mean age of the sample lied in the early 30s. Only 16 cases of secondary headache were identified in the sample.

Table 3 shows some correlations carried out on the total sample, with some psychological features that were recorded in the patient form. It showed that the severity of headache and degree of disability was highly correlated with anxiety and depression in the patients. However, there was no significant differences across gender on these variables. Insomnia was also correlated with the degree of disability. Again, no significant differences across gender existed for this variable.

Table 1: Demographic Profile of Participants (n=514)

Baseline characteristics	Frequency (n)	Percentage (%)	M	S.D
Age	-	-	34.90	13.5
Gender	-	-	-	-
Female	375	73	-	-
Male	139	27	-	-
Province				
Islamabad/ Federal	160	31.1	-	-
Punjab	104	20.2	-	-
Sindh	4	0.8	-	-
Balochistan	6	1.2	-	-
KPK	78	15.2	-	-
Gilgit/ Kashmir	13	2.5	-	-
Foreign	4	0.8	-	-

Table 2: The gender and age distribution of headaches (n=514)

Headache Type	Age (mean ± SD)	Gender		
		Women n (%)	Men n (%)	Both n (%)
Primary Headache		237 (63.1)	90 (64.8)	327 (63.7)
Migraine	36.62 (13.8)	120 (32)	44 (31.7)	164 (31.9)
Tension-Type Headache	33.65 (12.3)	27 (7.2)	10 (7.2)	37 (7.2)
Cluster	43.5 (2.1)	2 (0.5)	-	2 (0.4)
Chronic Daily Headache	34.08 (14.2)	83 (22.1)	36 (25.9)	119 (23.2)
Thunderclap Headache	33.8 (17.7)	5 (1.3)	-	5 (1)
Secondary Headache		11 (2.9)	5 (3.6)	16 (3.1)
Due to Illness or Injury	31.6 (16.09)	6 (1.6)	-	6 (1.2)
Due to Psychiatric issue	35.6 (17.1)	5 (1.3)	5 (3.6)	10 (1.9)
NOS	34.11 (12.7)	127 (33.9)	44 (31.7)	171 (33.3)

Table 3: Correlations for Study Variables

Variable	1	2	3	4	5
Hit-6	-				
MIDAS	.11*	-			
Anxiety	.124*	.089*	-		
Depression	.126**	.061	.385**	-	
Insomnia	0.11	.142*	.372**	.247*	-

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

4. Discussion

The prevalence of different type of headache disorders and its relationship with some psychological variables was determined in this study. Headache is one of the most common conditions worldwide (according to GBD). 90% of people experience some type of headache at least once in their life.[3] Pakistan seems to be no exception to this statistic. According to researcher[22], headache prevalence is a wide-spread but understudied issue, owing to the low literacy rate of our developing country.

In our study, women accounted for 2/3rd of the sample of headache patients, both overall and specific to type of headache. This trend appears to be the same across Pakistan and the globe.[23] A study similar to our own conducted in 2009, found that women account for 60-70% of patients for both migraine and tension-type headache. Similarly, in another 2009 study, which studied the clinical features of migraine, TTH and CDH, 60-70 percent of patients were female for each type of headache.[23] This trend also seems to hold true on a global scale (reference). One reason for this might be the hormonal cycles, which is much more fluctuating in women than in men. Men operate on a 24-hr cycle with the primary hormone being testosterone, compared to women's 28-day cycle with varying levels of estrogen and progesterone. Estrogen affects the sensitivity of certain brain receptors,[24] which might lead to a headache. In addition, women are more prone to stress than men are. Therefore, the higher rates of headaches in women might just be the physical manifestation of that stress, to which women are much more prone. Interestingly, 45.9% of our sample indicated that they were going through some stress at the time of examination (though the particular nature of the stressful events were not specified), of which 65.7% were women.

Migraine appeared to be the most common type identified, which is in accordance with previous data available in a Pakistani context.[23] However, results on the most common type of headache seem to vary significantly depending on where the study was conducted. Simply speaking, prevalence of a particular type of headache does not show consistent results throughout. In a 2009 study, tension-type headache came out to be the second most common type of headache among sufferers.[23] However, in our sample, it accounted for only 12.3% of headache types. Chronic Daily Headache was seen in 23.2% of the sample, the second most common type after migraine. Literature suggests that migraine, when left untreated, rises to the level of CDH, which led to the term "transformed migraine" being used to refer to CDH.[25] We also analyzed our overall data, irrespective of type, on certain psychological features included in the questionnaire. It showed, as expected, a high degree of correlation between headache severity and anxiety, depression and insomnia. Worldwide literature also supports these findings.[4,6] In addition, literature has supported the idea that clearly defined personality differences can exist between sufferers of migraine or tension headaches.[26] This suggests that in addition to genetic and physiological factors, particular personality and temperaments are also more prone to suffer from headaches. For example, subjects with migraines showed elevated levels of neuroticism,[27,28] as well as higher levels of psychological distress.[28] Although, the literature supporting these evidences is relatively old, new research can be conducted on this to provide a modern overview of such implications. Although headache severity was highly correlated to anxiety and

depression, it is unclear in which direction the relationship runs. Does ongoing anxiety, which leads to higher levels of stress hormones in the body, cause headaches? Alternatively, do headaches, and the pain and disability associated with them cause anxiety in the human body? A similar issue arises with depression and insomnia as well. Some research suggests that this is a bi-directional relationship, stress leads to pain and pain leads back to stress.[29]

Certain limitations were present in the study, which may affect the generalizability of the result findings. First, it only included data from medical records of people who sought treatment at private clinic with a neurologist. Second, as the data was taken from a private clinic in Islamabad, the majority of the people present in the sample were residents of the twin cities, particularly from the federal capital. Although we did see a substantial amount of people from Punjab and KPK, the three other provinces were largely unrepresented. Third, patients in this study obviously had the physical means and financial resources to access a renowned private clinic in an urban setting. Lastly, the retrospective data may leave out some important contextual information.

Conclusion:

The aim of this study was to find out prevalence of different types of headaches among Pakistani population along with headache's association with anxiety, depression and insomnia. Headache is not merely a physical manifestation but it also appeared to be linked to the mental health landscape of individuals within the study.

The gender-based difference in the impact of headaches is a noteworthy observation as it is explored that women presented a higher susceptibility compared to men. Understanding the co-occurrence of anxiety, depression, and insomnia with headaches opens possibilities for holistic treatment approaches. Moreover, the findings emphasize the need for further research to delve into the specific mechanisms that link headaches with anxiety, depression, and insomnia.

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