Prevalence of Headache and Depression in a Brazilian Medical School: A Cross-Sectional Analysis

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BACKGROUND

Headache is one of the most frequent neurological disorders and a leading cause of disability worldwide.[1] Medical students are especially vulnerable, as stress, irregular sleep, and demanding academic routines increase the risk of headache.[2] Depression often coexists with headache, amplifying its burden and affecting quality of life.[3,4] Exploring this comorbidity is essential to better understand its impact in this high-risk population.[5]
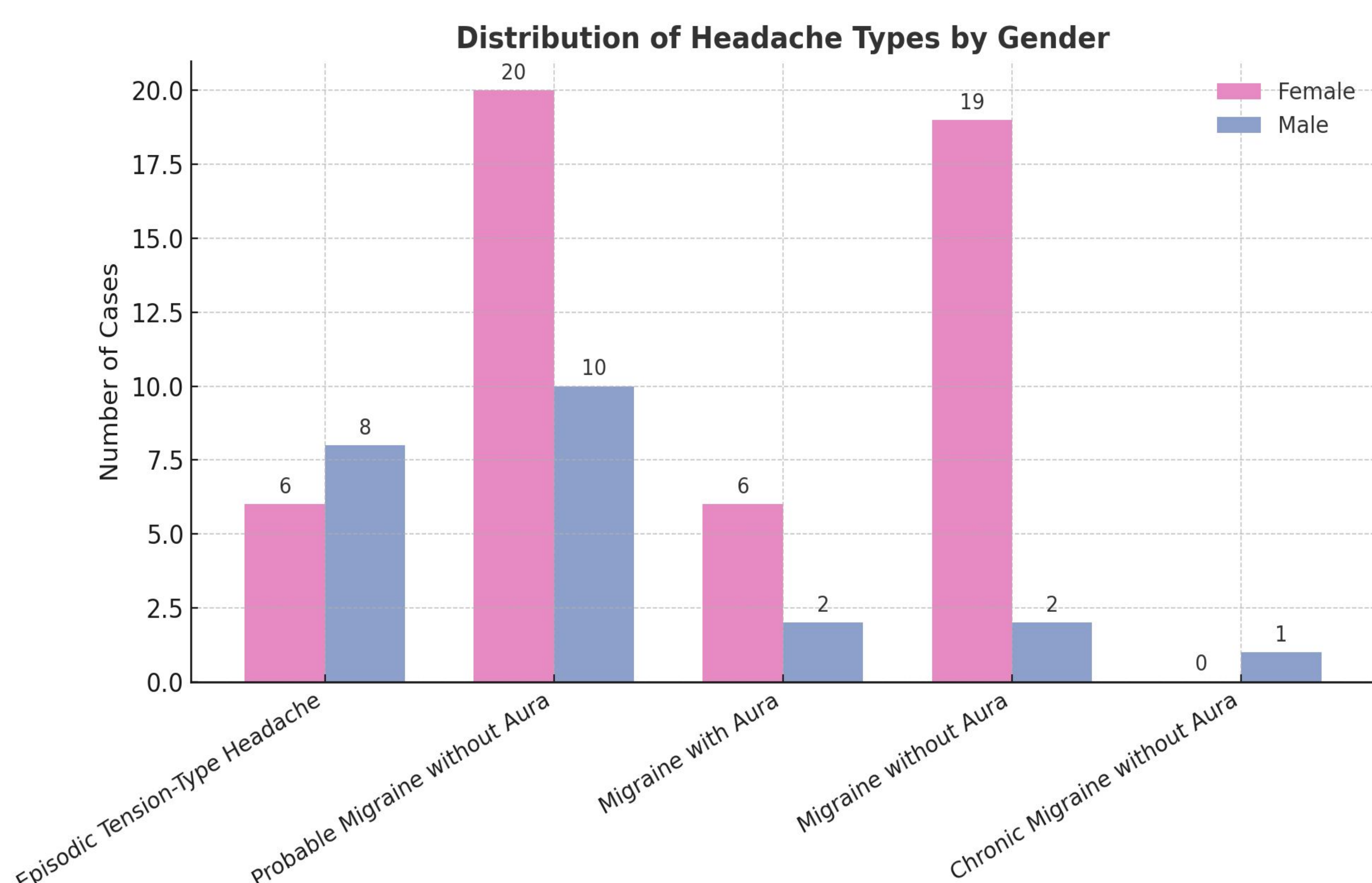
OBJECTIVES

To evaluate the prevalence and impact of headache among Brazilian medical students, with emphasis on migraine subtypes and associated disability, as well as the coexistence of depression and anxiety in this high-risk population.

METHODS

This cross-sectional study followed the STROBE statement and was approved by the local ethics committee. We assessed sociodemographic data, lifestyle, comorbidities, and headache characteristics using an online self-administered questionnaire (125 items), which included the following clinical tools: HIT-6 (6), MIDAS (7), BECK (8,9), and ASC-12(10). The following inclusion criteria were used: medical students aged ≥18 years recruited from the first to last year of graduation. We excluded participants with incomplete answers and obtained a convenience sample. Data were collected between October 15, 2024, and March 29, 2025. Chi-square tests and t-tests were performed using JASP to assess group differences (headache vs. non-headache), and p-values less than 0.05 were considered statistically significant.
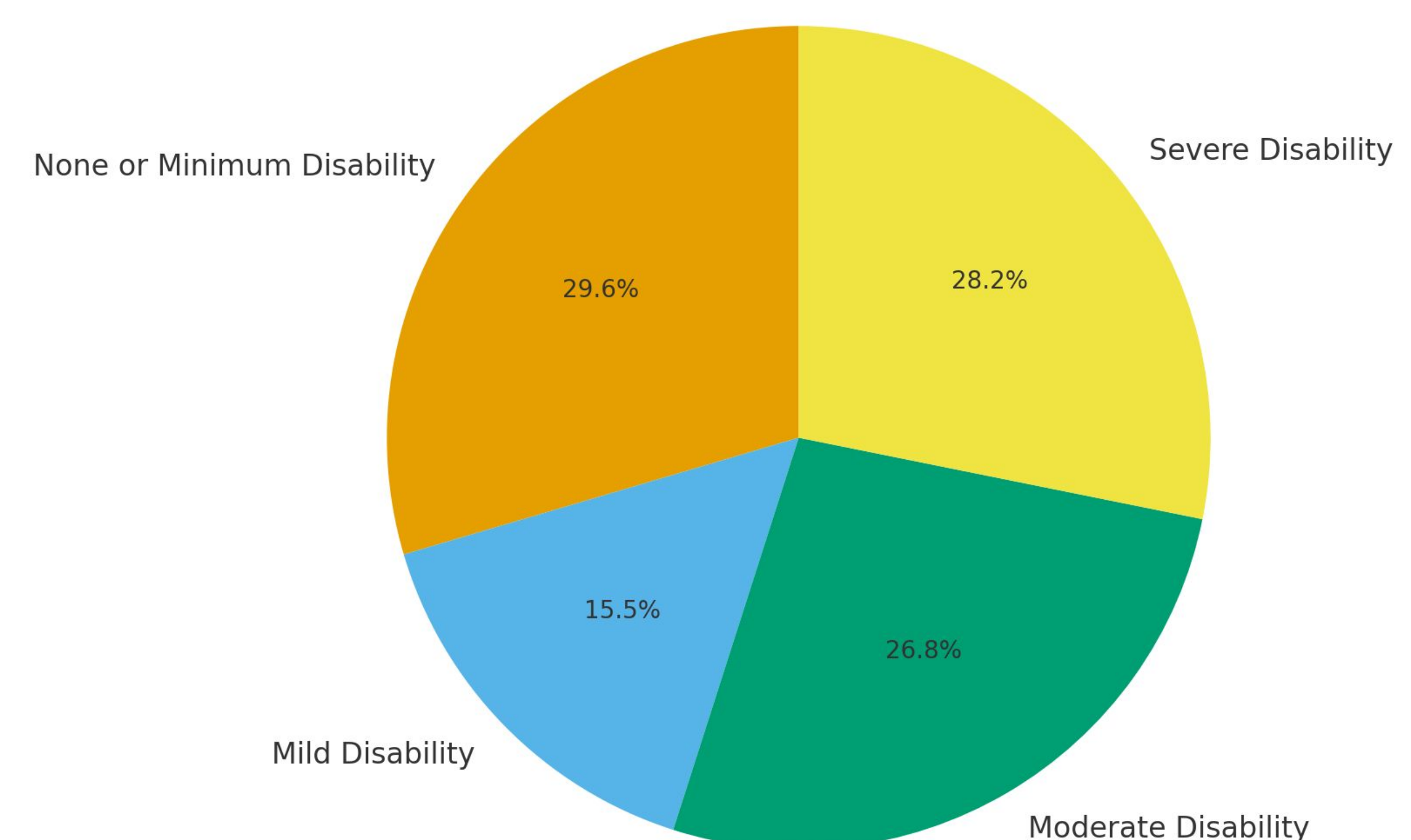
RESULTS

The sample included 134 participantsm with a mean age of 22.1 y/o, including 81 women (60.5%). Prevalence of Headache was 59.7%, and a mean onset headache of 13.9 years.old. Eighty participants reported active headaches, predominantly migraine subtypes: probable migraine without aura (40.5%), migraine without aura (28,4%), and episodic tension-type headaches (18.9%).

Distribution of Headache Types by Gender

Women had a higer frequency of Migraine Without Aura (37,2%) vs 8,6%), while man had a higher relative frequency of Episodic Tension-type Headache (34,7% vs 11,7%) [Qui-square (X²=11.4; gl=4; p=0.022) Fisher's exact test (p=0,014)]. 49% of women reported a relation between their headaches and menstrual periods, 75.5% reported PMT (Premenstrual Tension) and 9,4% of women who use contraceptives also reported Migraine With Aura.

The MIDAS test revealed moderate disability in 26.7% and severe disability in 28.1% of participants with headaches.

Proportion of Disability Levels (MIDAS Test)

The HIT Test revealed a substantial/severe impact in 38.1% of migraines without aura and 37.5% of migraines with aura.

IHS CLASSIFICATION	HIT-Test				
	Some Impact	Grave Impact	Substantial Impact	Low Impact	Total
Episodic Tension-Type Headache	7	0	0	7	14
Probable Migraine Without Aura	8	1	4	17	30
Migraine With Aura	3	3	1	1	8
Migraine Without Aura	9	6	2	4	21
Chronic Migraine Without Aura	0	1	0	0	1
Total	27	11	7	29	74

Individuals with headaches showed higher rates of moderate or severe depression (19% vs. 13.3%, respectively), although the difference was not statistically significant (p > 0.05).

No significant association was observed between the presence of headache and the severity of depression, both in the female group ($\chi^2(3) = 3.82$; p = 0.281) and in the male group ($\chi^2(3) = 5.15$; p = 0.161), as well as in the total sample ($\chi^2(3) = 2.05$; p = 0.563).

Women showed more severe depression and less minimal depression than men ($\chi^2(3) = 9.97$; p = 0.019). Women also had more moderate anxiety and less minimal anxiety ($\chi^2(3) = 17.0$; p < 0.001). They also showed a significant higher frequency of mild allodynia and a lower frequency of absence of allodynia ($\chi^2(3) = 12.6$; p = 0.006).

Longer duration of headache was associated with higher levels of anxiety (Kruskal-Wallis H = 14.2; p = 0.003), suggesting that the longer the history of headache, the greater the risk of anxiety.

Discussion

This study revealed a high prevalence of headaches among medical students, with a predominance of migraine subtypes, especially probable migraines without aura. Notably, moderate and severe depression are common in patients with headaches. The HIT indicated a substantial or severe impact among those with migraine, highlighting the functional burden imposed by this condition. The greater association of depression and anxiety in women is consistent with the literature.[11]

Here, young women are already suffering from comorbidities, showing that implications such as early treatment and lifestyle changes are fundamental.[12] The percentage of menstrual migraine is consistent with the literature[13] which ranges from 30 to 70%. The association with premenstrual tension is a common comorbidity[15] and implies the need for treatment of both conditions. These findings emphasize the impact of headache disorders on this academic population and underscore the need for targeted mental health and disability assessments and treatment strategies.

References: