

A Self-Reported Questionnaire-Based Study of the Quality of Sleep-in people suffering from Migraine.

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ABSTRACT: This is an observational study of the sleep quality in migraine patients using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. The study was conducted in Neurology outpatient clinic. The prevalence of migraine is greater in females, as per all the international data, with most of them suffering from episodic migraines. The patients had poor quality of sleep as per the PSQI. More studies are needed to identify other comorbidities resulting in poor sleep quality.

KEYWORDS: Translational Medical Sciences, Migraine, Sleep study, Sleep quality; PSQI.

■ Introduction

Migraine and sleep disorders are chronic conditions causing disability and poor quality of life. Some studies support the evidence that migraineurs have worse sleep quality than non-migraineurs.¹⁻¹³ Unfortunately, even after extensive investigations, the association remains enigmatic. It's yet unclear if migraines cause poor sleep quality due to a shared underlying pathophysiological mechanism responsible for poor sleep and coexistent migraines.¹⁴ If so, there could be poor sleep quality in migraine patients compared to non-migraineurs. There is also a possibility of worsening quality of sleep with increasing frequency of the severity of attacks. It's also not clear if the quality of sleep improves with the treatment of migraine independent of the sedative effects of the prophylactic medications.

■ Methods and Materials

This study was conducted in the Neurology Outpatient Department at Zulekha Hospital, Dubai, UAE, in July 2022. All the patients were included based on the ICHD-3 criteria for definite migraine. All pediatric migraines (less than 12 years) and pregnant females were excluded. The patients who had comorbid psychiatric illnesses and were on sedative medications were also excluded. The patients were issued and asked to complete a self-reported questionnaire to assess the quality of sleep (PQSI).¹⁷

Pittsburgh Sleep Quality Index (PQSI):

To assess the subject's sleep quality, we have used The Pittsburgh Sleep Quality Index (PSQI). It consists of 19 self-rated questions and five questions rated by the bed partner. The 19 self-rated questions are combined to form seven component scores ranging from 0 to 3 points. In all cases, a score of 0 indicates no difficulty, while a score of 3 indicates severe difficulty in sleep quality.

The seven component scores are then added to yield one global score with a range of 0-21 points, 0 indicating no difficulty and 21 indicating severe challenges.

■ Statistical Analysis

A descriptive analysis was performed to assess the Mean, median, and range of age, the distribution of gender, frequency, prophylaxis, and type of migraine. The Wilcoxon two-sample test analysis was performed to determine if the PQSI scores would vary across the two genders, the Wilcoxon Signed Rank Test analysis was performed to analyze the sleep quality, Shapiro-wilk normality test was used to assess the distribution of PQSI scores. Spearman Correlation analysis was used to determine the correlation between PQSI and Age.

■ Results

Survey:

We included 25 people at random from the outpatient clinic per the defined protocol. The patients recruited were predominantly females and included more episodic than chronic migraines. Most of the patients were not taking any prophylactic medications. The age of the respondents ranged from 26-70 years, with a mean of 40.44 ± 8.67 (Figure 1 and Table 1). There were 16 females and 9 males (Figure 2).

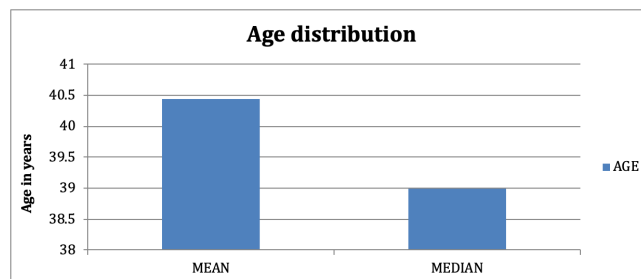


Figure 1: The age distribution of the survey takers

Table 1: The Mean, Median, and Range of the age of the survey-takers

	MEAN	MEDIAN	RANGE
AGE	40.44	39	26-70

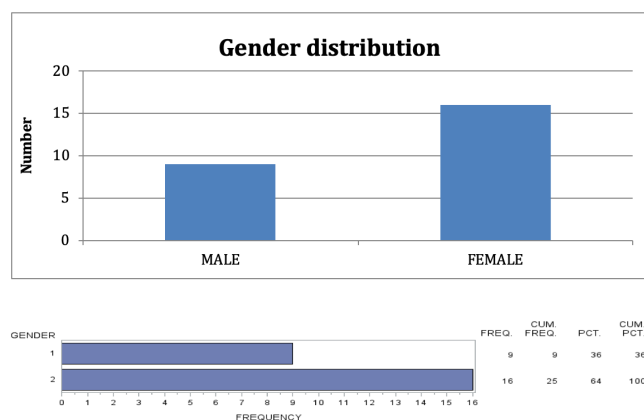


Figure 2: The Gender distribution of the survey takers.

Prevalence of the severity of migraine:

Amongst the 25 subjects included in the study, 21 (84%) of them experienced a low frequency of migraines ranging from 1-4 attacks a month, while 4 (16%) experienced medium frequency of migraines ranging from 5-8 attacks a month (refer Figure 3). In addition, 24/25 subjects (96%) amongst the 25 subjects suffered from episodic migraines, while only 1 (4%) suffered from chronic migraines (Figure 4).

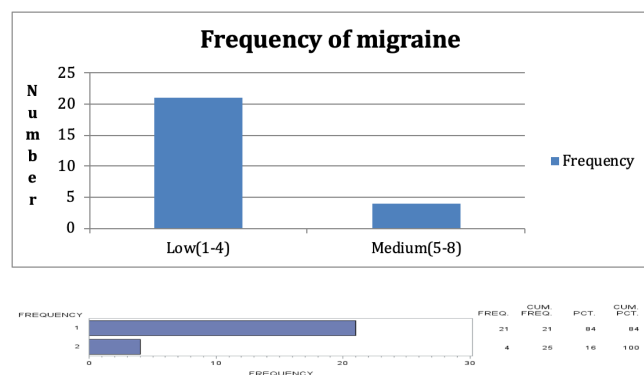


Figure 3: Frequency of migraine among the survey takers.

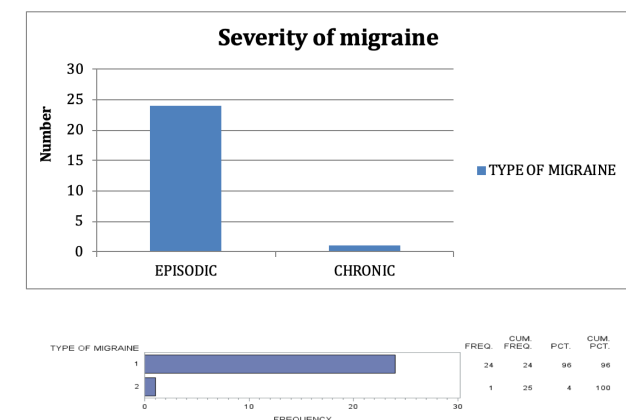


Figure 4: Severity of migraine among survey takers.

PSQI Scores:

The PSQI scores ranged from 2-17 with a mean of 7.68 (7.68±3.96) and a median of 7 (Table 2). More than 75% of

patients had a PSQI score >5 ($p<0.004$), indicating poor sleep quality (Figure 5).

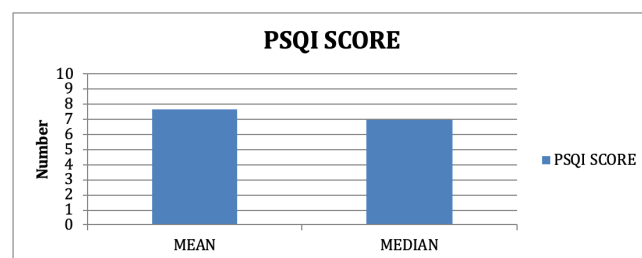


Figure 5: Breakdown of the PSQI scores of survey takers.

Table 2: Mean, Median, and Range of the PSQI score of survey takers.

	MEAN	MEDIAN	RANGE
PSQI SCORE	7.68	7	2-17

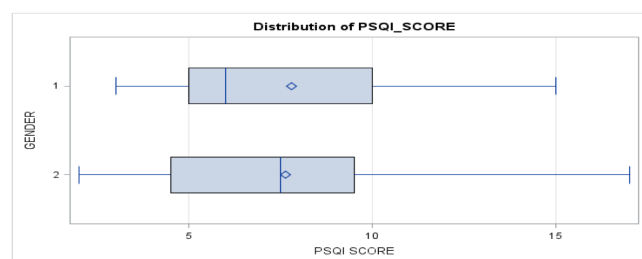


Figure 6: Gender distribution of PSQI Score.

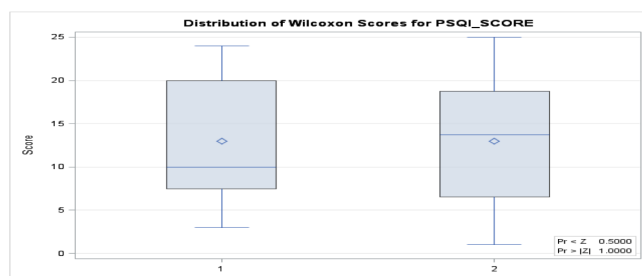


Figure 7: Distribution of Wilcoxon scores for PSQI Score.

Prophylaxis:

Amongst the 25 subjects, only 6 (24%) participants were on prophylaxis, while the rest, 19 (76%), were not taking any prophylaxis (Table 6).

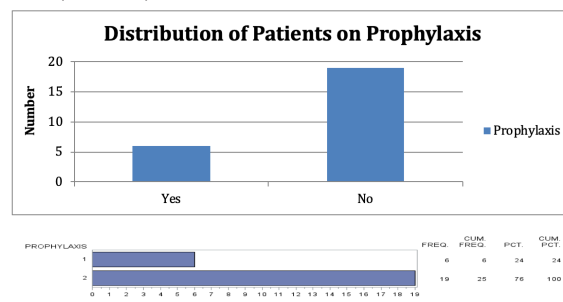


Figure 8: Distribution of patients on Prophylaxis.

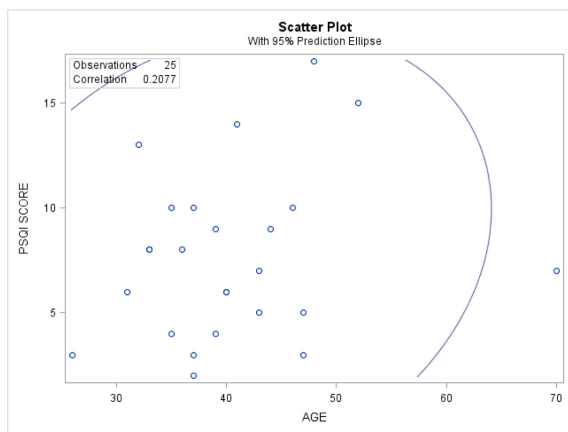


Figure 9: Scatter Plot Age Vs. PSQI Score

■ Discussion

The main findings in this observational study were as follows. There were 9 men (36.0%) and 16 women (64.0%). Most of them suffered from episodic migraine (96.0%), and most of them had poor sleep quality index (68.0%). Since PSQI Scores did not follow a normal distribution, Wilcoxon Signed Rank Test¹⁸ was used to check the hypothesis H_0 =PSQI scores are <5 (Good sleep quality) against H_1 =PSQI scores are >5 (Poor sleep quality). The Analysis resulted in a **p-value of 0.004**, showing that sleep quality is impaired in individuals with migraines. A study from India and China found similar results^{15,16} confirming our findings. The Wilcoxon Two-Sample Test analysis was also performed to determine if these scores would vary across the two genders and were found to be insignificant ($P=1.00$).¹⁷ A Spearman Correlation analysis was performed to determine if there is any correlation between PSQI scores and Age, and it was also found to be insignificant ($p=0.370$). There could be other comorbid factors like anxiety and depression, which could also contribute to poor sleep quality. Our study has some limitations, as follows.

Sleep quality is assessed only by a questionnaire without using polysomnography, which objectively evaluates sleep quality. Secondly, the anxiety and depression scores in these patients were not assessed, which could also contribute to poor sleep quality. Third, the sample size must be bigger for a detailed statistical analysis. Further, there is a need to study the correlation between PSQI scores and the severity of migraine and follow-up scores after prophylactic medications. These observations suggest that the sleep quality in migraines is disrupted, and there is a need for more intense research with a case-control study with a detailed objective sleep study to produce more data into the mechanisms of sleep disruption and further care.

■ Acknowledgments

Dr. Shyam Chandran is a consultant neurologist working at Zulekha Hospital. He is the head of the Department of Neurosciences. His main interests are movement disorders, Interventional headache therapies, and general neurology. He is a member of the International Headache Society, American Headache Society, American Academy of Neurology, and the European Academy of Neurology Fellow.

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