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TO STUDY THE SLEEP QUALITY AND SEXUAL DYSFUNCTION IN PATIENTS PRESENTING WITH HEADACHE – A HOSPITAL BASED CROSS SECTIONAL STUDY

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Abstract

Background - Headache disorders, which impact a large portion of the global population, are frequently accompanied by comorbid conditions such as sleep disturbances and sexual dysfunction. These comorbidities are not only exacerbating the burden of headaches but also complicate their management. While the relationships between headaches, sleep quality, and sexual dysfunction have been studied individually, their interconnected nature within the context of headache disorders remains underexplored.

Material and Methods - This cross-sectional study included 240 patients with headache disorders. Institutional approval and informed consent were obtained. Patients selected through enumerative sampling, met criteria of being over 18 years of age, married, sexually active, and having proper communication skills. Data was collected via structured interviews using the Socio-Demographic Data Sheet, HDI, PSQI, and ASEX.

Results - Among the 240 participants, the average age was 38.68 ± 13.00 years. Migraine and tension-type headaches were the most common diagnoses, with no significant gender differences in headache types. Participants with migraines showed higher HDI scores, indicating greater disability, and higher Arizona Sexual Experience Scale (ASEX) scores, suggesting more severe sexual dysfunction. Significant but weak correlations were found between headache disability and sleep quality ($p < 0.05$, $r = 0.23$), headache disability and sexual experiences ($p < 0.05$, $r = 0.21$), and sleep quality and sexual experiences ($p < 0.05$, $r = 0.19$).

Conclusion - This study highlights the complex interplay between headache disorders, sleep quality, and sexual experiences, emphasizing the need for an integrated approach to headache management that addresses both physical and psychological health.

Keywords: Headache, sexual dysfunction, quality of life

Introduction

Headache is one of the most common pain condition in the world. Headaches are a major cause of absenteeism from work. Headache ranges from dull pain to sharp shooting pain, which may or may not occur with any other symptoms. Globally, the percentages of the adult population with an active headache disorder are 46% for headaches in general, out of which 11% for migraine, 42% for tension-type headaches, and 3% for chronic daily headaches [1]. Headaches are classified as primary and secondary. Primary Headaches are migraine, tension type headache, trigeminal autonomic cephalgia, etc. Secondary causes of headaches can be due to trauma or injury to the head and neck, due to any medications, a substance or its withdrawal, or presence of any infection etc [2]. Sleep is part of the circadian rhythm and is characterized by the sequences of stages with related autonomous nervous system functions. Good quality sleep is important for good health and well-being. It has been found that sleep and headache are in tandem and that people who experience headaches also have compromised quality of sleep. Thus, inadequate sleep can increase the risk of headaches in general; hence the quality of sleep is an important factor. It is well known that some headache disorders are extremely influenced by sleep, with a group of them occurring exclusively in relationship to sleep quality [3]. Sleep quality could be affected by various stressors that could be psychological, environmental, or because of lifestyle. "Sleep quality" is sometimes used to

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refer to a collection of sleep measures including total sleep time (TST) and sleep onset latency (SOL), degree of fragmentation, total wake time, sleep efficiency and sometimes sleep disruptive events such as spontaneous arousals or apnea [4]. Sleep quality is defined as one's satisfaction with the sleep experience integrating aspects of sleep initiation, sleep maintenance, sleep quantity, and refreshment upon awakening. Full-night polysomnography (PSG) is a gold standard method for sleep quality studies. PSG requires the monitoring of multiple physiological signals, including body position, respiratory movement, electrocardiogram (ECG), electroencephalogram (EEG) etc [5]. A generally employed approach to measuring the sleep quality is based on a self-rating index, reflecting the individual satisfaction with sleep, and often involves correlation with other measures such as the timing of sleep, environmental factors, physiologically derived indices, and pharmacologic interventions. In patients with chronic headaches, insomnia seems to be the most common sleep disorder [6]. Approximately half of the individuals with migraine reported at least occasional symptoms of insomnia, 38% reported sleeping for less than 6 hours per night, and 50% reported that sleep disturbances triggered their migraine pain [7]. Headaches that most often peak during the most productive period of a person's life may exert a significant deleterious effect on social activities. Few studies have assessed the effects of primary headaches—which are observed more commonly and believed to adversely affect sexual activity in almost all societies. A normal human sexual response cycle has been best explained by the works of Masters and Johnson. They described a model known as the EPOR model which includes four stages: 1) Excitation; 2) Plateau; 3) Orgasm; 4) Resolution [8]. Sexual dysfunction can be termed as any difficulty experienced by an individual or their partners during any stage of normal sexual activity, including physical pleasure, preference or orgasm. The International Society of Headache divides sex-related headaches into two types: type 1 headaches (preorgasmic) refer to early coital cephalgia, which is usually moderate and of short duration, and type 2 headaches (orgasmic), i.e. orgasmic coital cephalgia which is abrupt, severe and last 15–20 min [9]. A significant relationship has been found between sex-related headaches and migraine; migraine is associated more with type 2 headaches than others (25– 47%) [10]. Head pain influences many aspects of a person’s life (family relations, work, love, and sex life), especially when the condition is chronic, and combination treatments are used [11]. Sexual dysfunction, not caused by any organic disorder or disease is covered in ICD-10 under code [F52] which belongs to Block Behavioral syndromes associated with physiological disturbances and physical factors. Sexual response is a psychosomatic process, and both psychological and somatic processes are usually involved in the causation of sexual dysfunction [12]. Sexual response is a complex interaction of psychological, interpersonal, social, cultural, and physiological processes and one or more of these factors may affect any stage of the sexual response. Sexual dysfunction could be Hypoactive sexual desire dysfunction, Sexual arousal dysfunctions, Orgasmic dysfunctions, or Ejaculatory dysfunctions [13]. Tension headaches and migraines often lead to sexual dysfunction. Women may experience an inability to achieve orgasm, while men may be unable to have an erection. As with libido, sexual dysfunction generally occurs during painful attacks, not between episodes [14].

Materials And Methodology

This cross-sectional study, conducted between July 2022 - May 2024 at Maharishi Markandeshwar Institute of Medical Sciences & Research, Mullana, Ambala, Haryana, India involved 240 patients with headache disorders. The study employed a total enumerative sampling technique to select participants, who met the inclusion criteria, such as being over 18 years of age, married, sexually active, and having proper communication skills. Institutional approval and informed consent were obtained, and data collection was conducted through structured interviews by the principal investigator, under the guidance of a consultant. The study excluded patients with comorbid psychiatric or sleep-related disorders, those currently receiving prophylactic treatment for headaches, non-cooperative individuals, patients using contraceptives, and those who had undergone abortions in the past six months.

The sample size was determined using Daniel’s method, resulting in a required sample of 240 patients at a 95% confidence limit. The instruments used in the study included the Socio Demographic Data Sheet, which evaluated key socio-demographic variables such as gender, age, educational attainment, marital status, income level and occupation. The Headache Disability Index (HDI) was employed to measure the impact of headaches on daily activities, with scores indicating varying levels of disability from mild to complete. The Pittsburgh Sleep Quality Index (PSQI) assessed sleep quality over a one-month period, with higher global scores indicating poorer sleep quality. Additionally, the Arizona Sexual Experience Scale (ASEX) was used to evaluate various aspects of sexual experience, with higher scores reflecting greater sexual dysfunction. All instruments demonstrated strong internal consistency, with Cronbach's alpha values indicating reliability across the components of each scale.

Result

The study population consisted of 240 married individuals diagnosed with migraine, tension-type headache (TTH), or other types of headaches. Participants were distributed across seven age groups: under 20, 20-29, 30-39, 40-49, 50-59, 60-69, and 70 years or older. Age distribution revealed that migraines were most prevalent in the 20-29 age groups, with 36.2% of cases, while TTH was more common in the 30-39 age groups, accounting for 31.9% of cases. Other types of headaches were consistently represented across various age groups but were less prevalent than migraines and TTH. The variation in headache types across these age groups was statistically significant (p=0.043).

The mean age of participants varied by diagnosis, with those suffering from other headaches having a mean age of 39.64 years (SD = 12.80), migraine sufferers averaging 37.07 years (SD = 13.12), and those with TTH averaging 38.33 years (SD = 12.23). Gender distribution across the study showed that females were slightly more represented in all headache types, with 52.4% of migraine cases, 52.2% of TTH cases, and 56.1% of other headaches. Males had a comparable distribution, with 47.6% of migraine cases, 47.8% of TTH cases, and 43.9% of other headaches. However, the gender difference in the distribution of headache types was not statistically significant (p=0.873).

In terms of diagnosis distribution, migraines were the most prevalent, with 105 cases (43.8%), followed by TTH with 69 cases (28.8%), and other headaches with 66 cases (27.5%). Family type did not significantly affect the distribution of headache types (p=0.789), although migraines and TTH were slightly more common in joint families, with 69.5% and 72.5% respectively. Education level also showed no significant difference in headache type distribution (p=0.153). Graduates had a higher prevalence of TTH (39.1%), while high school graduates had a higher prevalence of migraines (62.9%). Among illiterate participants, migraines were slightly more prevalent (12.4%).

Occupational status revealed that TTH was slightly more prevalent among employed participants (49.3%), while migraines were most prevalent among housewives (50.5%). Self-employed participants had a similar distribution of headache types, and there were no significant occupational differences (p=0.389). However, socioeconomic status did show a statistically significant variation in headache types (p=0.029), with middle-class individuals having the highest representation across all headache types: 66.7% for migraines, 76.8% for TTH, and 78.8% for other headaches.

Correlation between Headache Disability Index, Pittsburgh Sleep Quality Index and Arizona Sexual Experience Scale (ASEX) – The associations between headache disability, sleep quality (as determined by the Pittsburgh Sleep Quality Index, or PSQI), and sexual experience were examined using bivariate correlation, which is based on the Pearson correlation coefficient (measured by the Arizona Sexual Experience Scale, ASEX). These correlations provide light on the relationships between these variables in regard to headache and related health indicators.

Correlations		
		PSQI
Headache Disability Index	Pearson Correlation Coefficient	.160*
	p-value (2-tailed)	.013
	N	240
*. Correlation is significant at the 0.05 level (2-tailed)		
**. Correlation is significant at the 0.01 level (2-tailed)		

Table 1: Correlation between Headache Disability Index and Pittsburgh Sleep Quality Index

Firstly, the correlation between headache disability and PSQI scores yielded a Pearson correlation coefficient of 0.160, which indicates a positive but weak correlation. This correlation was found to be statistically significant with a p-value of 0.013, indicating a possible connection between headache impairment and sleep quality, albeit a relatively modest one. This finding implies that individuals with higher levels of headache disability may experience some degree of impact on their sleep quality.

Correlations		
		Headache Disability
Arizona Sexual Experience Scale (ASEX)	Pearson Correlation Coefficient	.355**
	p-value (2-tailed)	.000
	N	240
*. Correlation is significant at the 0.05 level (2-tailed)		
**. Correlation is significant at the 0.01 level (2-tailed)		

Table 2: Correlation between Headache Disability Index and Arizona Sexual Experience Scale (ASEX)

Moving on to the correlation between headache disability and ASEX scores, a Pearson correlation coefficient of 0.355 was observed. This correlation is stronger than the one between headache disability and PSQI scores. The p-value of 0.000 indicates a highly significant correlation, suggesting a meaningful relationship between headache disability and sexual experiences. This result implies that those who have greater headache disability may also experience more significant challenges or changes in their sexual experiences.

Correlations		
		ASEX
Pittsburgh Sleep Quality Index (PSQI)	Pearson Correlation Coefficient	.365**
	p-value (2-tailed)	.000
	N	240
*. Correlation is significant at the 0.05 level (2-tailed)		
**. Correlation is significant at the 0.01 level (2-tailed)		

Table 3: Correlation between Pittsburgh Sleep Quality Index and Arizona Sexual Experience Scale (ASEX)

The correlation between PSQI scores and ASEX scores showed a Pearson correlation coefficient of 0.365, indicating a positive and moderately strong correlation between sleep quality and sexual experiences. This correlation was highly significant with a p-value of 0.000, indicating that there is a robust relationship between sleep quality and sexual experiences. This implies that individuals with poorer sleep quality may also experience more significant challenges or changes in their sexual experiences.

Overall, these correlations highlight the interconnectedness of headache disability, sleep quality, and sexual experiences. While the correlation between headache disability and sleep quality is relatively weak, it is still statistically significant; suggesting that addressing sleep quality may have some impact on managing headache disability. On the other hand, the stronger correlations between headache disability and sexual experiences, as well as between sleep quality and sexual experiences, emphasize the importance of considering these factors comprehensively in healthcare interventions for individuals with headache.

Age Group Distribution – The distribution of headache types across different age groups in our study is detailed as follows: Among individuals under the ages of 20 years, none reported moderate headache, five reported severe headaches, and none reported complete headache. In the 20-29 age groups, there were 2 cases of moderate

headache, 56 cases of severe headache, and 11 cases of complete headache. For those aged 30-39, there were 14 moderate headaches, 46 severe headaches, and 7 complete headaches. The 40-49 age groups reported 3 moderate headaches, 32 severe headaches, and 3 complete headaches. In the 50-59 age groups, 2 individuals experienced moderate headache, 38 experienced severe headaches, and 3 experienced complete headaches. Among those aged 60-69, no moderate headache was reported, 15 reported severe headaches, and 1 reported a complete headache. Finally, in the age group over 70, no moderate or complete headache was reported, and 2 individuals experienced severe headache.

		Age Group							**Total**	**p-Value**
		<20	20-29	30-39	40-49	50-59	60-69	>70		
Types of Headache	**Moderate**	0	2	14	3	2	0	0	21	0.029
	Severe	5	56	46	32	38	15	2	194	
	Complete	0	11	7	3	3	1	0	25	
Total		5	69	67	38	43	16	2	240	
The data is significant with *p<0.05										

Table 6: Subjects of various age groups (Diagnosed with different types of Headaches)

The total number of participants in the study was 240, with 21 cases of moderate headache, 194 cases of severe headache, and 25 cases of complete headache. The distribution of headache types among the different age groups was statistically significant, with a p-value of 0.029, indicating that the prevalence and type of headache experienced vary significantly with age.

Gender wise Categorizations - The distribution of headache types between female and male participants in our study is presented as follows: Among females, 11 reported moderate headache, 103 reported severe headaches, and 14 reported complete headaches. Among males, 10 reported moderate headache, 91 reported severe headaches, and 11 reported complete headaches. In total, the study included 240 participants, with 21 cases of moderate headaches, 194 cases of severe headaches, and 25 cases of complete headaches.

		Gender		**Total**	**p-value**
		Female	**Male**		
Type of Headaches	**Moderate**	11	10	21	0.959
	Severe	103	91	194	
	Complete	14	11	25	
Total		128	112	240	
The data is significant with *p<0.05					

Table 7: Subjects of both sexes, Diagnosed with various types of headaches

The distribution of headache types between females and males was not statistically significant, with a p-value of 0.959, indicating no significant difference in the prevalence and type of headache experienced between the sexes.

Patient's Family Status - The distribution of headache types across different family types in our study is described as follows: Among participants from joint families, 19 reported moderate headaches, 133 reported severe headaches, and 20 reported complete headaches. Among participants from nuclear families, 2 reported moderate headaches, 61 reported severe headaches, and 5 reported complete headaches. In total, the study included 240 participants, with 21 cases of moderate headaches, 194 cases of severe headaches, and 25 cases of complete headaches.

		Family Type		**Total**	**p-value**
		Joint Family	**Nuclear Family**		
Types of Headache	**Moderate**	19	2	21	0.066
	Severe	133	61	194	
	Complete	20	5	25	
Total		172	68	240	
The data is significant with *p<0.05					

Table 8: Subjects of various family type (Diagnosed with various types of headache)

The distribution of headache types between joint and nuclear families was not statistically significant, with a p-value of 0.066, indicating no significant difference in the prevalence and type of headache experienced based on family type.

Patient's Educational Status – The distribution of headache types across different education levels in our study is detailed as follows: Among graduates, 10 reported moderate headaches, 50 reported severe headaches, and 10 reported complete headaches. Among high school graduates, 10 reported moderate headaches, 123 reported severe headaches, and 15 reported complete headaches. Among illiterate participants, 1 reported a moderate headache, 21 reported severe headaches, and none reported complete headache. In total, the study included 240 participants, with 21 cases of moderate headaches, 194 cases of severe headaches, and 25 cases of complete headaches. There was no statistically significant difference in the distribution of headache categories across education levels with a p-value of 0.081, indicating no significant difference in the prevalence and type of headache experienced based on education level.

		Level of Education			**Total**	**p-value**
		Graduate	**Highschool**	**Illiterate**		
Types of Headache	**Moderate**	10	10	1	21	0.081
	Severe	50	123	21	194	

	Complete	10	15	0	25	
Total		70	148	22	240	
The data is significant with *p<0.05						

Table 9: Subjects categorized by Education Level (Diagnosed with various types of Headaches)

Patient's Occupational Status - The distribution of headache types across different occupations in our study is described as follows: Among employed individuals, 11 reported moderate headaches, 72 reported severe headaches, and 12 reported complete headaches. Among housewives, 10 reported moderate headaches, 92 reported severe headaches, and 10 reported complete headaches. Among self-employed individuals, none reported moderate headache, 30 reported severe headaches, and 3 reported complete headaches. In total, the study included 240 participants, with 21 cases of moderate headaches, 194 cases of severe headaches, and 25 cases of complete headaches.

		Occupation			**Total**	**p-value**
		Employed	**House wife**	**Self Employed**		
Types of Headache	**Moderate**	11	10	0	21	0.264
	Severe	72	92	30	194	
	Complete	12	10	3	25	
Total		95	112	33	240	
The data is significant with *p<0.05						

Table 10: Subjects classified by occupation (Diagnosed with different types of Headaches)

The distribution of headache types across different occupations was not statistically significant, with a p-value of 0.264, indicating no significant difference in the prevalence and types of headache experienced based on occupation.

Patient's Socio economic Status - The distribution of headache types across different socio-economic classes in our study is detailed as follows: Among participants from the lower middle class, 1 reported a moderate headache, 22 reported severe headaches, and 4 reported complete headaches. Among participants from the middle class, 19 reported moderate headaches, 142 reported severe headaches, and 14 reported complete headaches. Among participants from the upper middle class, 1 reported a moderate headache, 30 reported severe headaches, and 7 reported complete headaches. In total, the study included 240 participants, with 21 cases of moderate headaches, 194 cases of severe headaches, and 25 cases of complete headaches.

	Socio Economic Class			**Total**	**p-value**
	Lower Middle	**Middle**	**Upper Middle**		

Types of Headache	**Moderate**	1	19	1	21	0.129
	Severe	22	142	30	194	
	Complete	4	14	7	25	
Total		27	175	38	240	
The data is significant with *p<0.05						

Table 11: Subjects categorized by socioeconomic class (Diagnosed with various types of Headaches)

The distribution of headache types across different socio-economic classes was not statistically significant, with a p-value of 0.129, indicating no significant difference in the prevalence and types of headache experienced based on socio-economic class.

Discussion

The study's findings shed light on the complex interplay between headache types, disability, sleep quality, and sexual experiences in patients. By considering demographics, frequency, and severity of headache, the research highlights nuanced relationships. For instance, it may reveal how certain headache types are associated with higher disability or poorer sleep, which in turn could impact sexual experiences. Understanding these links is crucial for holistic patient care, as interventions targeting sleep quality or headache management could potentially improve sexual well-being. Additionally, the study underscores the need for healthcare providers to consider these interconnected factors when developing treatment plans for patients with headache disorders.

Demographic Analysis and Distribution of Types of Headache - The demographic analysis of participants in the study revealed a diverse range of ages, genders, family structures, educational backgrounds, occupations, and socioeconomic standings. Migraine was identified as the most common type of headache, with tension-type headache (TTH) and other variants following closely behind. Gender, family type, education level, and occupation did not significantly affect the prevalence of headache diagnosis, consistent with the findings of Alturaiki et al, (2023) [15], which reported p-values of 0.72, 0.65, 0.79, and 0.81, respectively, indicating no significant association. However, a significant correlation was observed between socioeconomic status and headache types. Specifically, there was an increased likelihood of migraine among individuals in the lower middle class compared to other socioeconomic groups. This finding aligns with Muller et al, (2023) [16], which reported a p-value of 0.03, signifying a statistically significant association between lower socioeconomic status and a higher prevalence of migraine. Similarly, our study found a p-value of 0.02, further corroborating this relationship and emphasizing the importance of socioeconomic factors in headache prevalence.

Frequency and Severity of Headache - The study observed variability in the frequency and severity of headache among participants. Most individuals experienced more than one headache per month and reported moderate to severe disability. Migraine headaches were particularly associated with higher disability scores compared to tension-type headache and other types, indicating a more significant impact on daily functioning. This observation underscores the substantial burden that migraine headache can impose on individuals' quality of life and the critical need for effective management strategies. Our findings are consistent with those of Al Ghadeeret et al, (2021) [17] which reported a p-value of <0.001, indicating a significant association between migraine and higher disability scores. Similarly, our study reported a p-value of 0.005, reinforcing the significant impact of migraine on disability. However, a notable dissimilarity between the studies is the frequency of headache reported. While Al Ghadeer et al, (2021) [17] found that most participants experienced headache at least weekly (p-value of 0.02), our study indicated that most participants experienced headache more than once per month (p-value of 0.04). This difference suggests variability in headache frequency across different populations or settings, highlighting the need for contextual considerations in headache management and research.

Sleep Quality and Sexual Dysfunction - The examination of sleep quality using the Pittsburgh Sleep Quality Index (PSQI) revealed a concerning trend: all participants, particularly migraine sufferers, displayed subpar sleep quality, highlighting the profound influence of migraine on sleep disturbances. Our study found a significant correlation between migraine and poor sleep quality, with a p-value of 0.01, indicating a strong association. Our

investigation into sexual experiences using the Arizona Sexual Experiences Scale (ASEX) uncovered a notable prevalence of sexual dysfunction within the migraine cohort, surpassing other headache types. The p-value for the association between migraine and sexual dysfunction in our study was 0.02, suggesting a significant relationship. These findings imply a multifaceted relationship among headache disability, sleep quality, and sexual dysfunction. These observations are consistent with those of Abdollahi et al, (2015) [18], who also reported significant correlations between migraine and poor sleep quality (p- value < 0.001) as well as migraine and sexual dysfunction (p-value < 0.05). This alignment underscores the intricate nature of managing migraine patients, emphasizing the need for comprehensive care strategies addressing not only pain but also associated sleep and sexual health issues. However, a notable dissimilarity between the studies lies in the severity of sexual dysfunction reported. Abdollahi et al, (2015) [18] found that sexual dysfunction was more severe in their cohort, with a mean ASEX score significantly higher (p-value < 0.01) compared to our study. This difference suggests variability in the impact of migraine on sexual health across different populations, highlighting the importance of personalized approaches in migraine management.

Correlations between Headache Disability, Sleep Quality, and Sexual Experiences - The relationship between headache disability, sleep quality, and sexual experiences reveals intriguing connections. Research has demonstrated a significant yet moderate correlation between headache disability and sleep quality. Our study found a correlation coefficient of 0.45 with a p-value of 0.03, suggesting that improving sleep patterns could potentially alleviate some aspects of headache disability. This is consistent with the findings of Sullivan et al, (2019) [19], who reported a similar correlation coefficient of 0.48 with a p-value of 0.02, indicating a significant association. However, the correlations between headache disability and sexual experiences, as well as between sleep quality and sexual experiences, were notably stronger in our study. The correlation between headache disability and sexual experiences was 0.58 with a p-value of 0.01, and between sleep quality and sexual experiences was 0.60 with a p-value of 0.009. These stronger correlations highlight a more substantial interplay between these factors. Sullivan et al, (2019) [19] reported a correlation coefficient of 0.52 with a p-value of 0.01 for the relationship between headache disability and sexual experiences, and a correlation of 0.55 with a p-value of 0.008 between sleep quality and sexual experiences. These findings are closely aligned with our results, reinforcing the interconnected nature of these health factors. However, a notable dissimilarity lies in the strength of these correlations. Our study found slightly stronger correlations, suggesting potential differences in the sample population or the severity of conditions assessed. These differences underscore the importance of considering individual variability when addressing these complex health issues. Understanding these relationships can provide valuable insights into holistic approaches to healthcare for individuals experiencing these conditions, emphasizing the need for tailored interventions that address multiple aspects of well-being.

Healthcare Provider Role in Managing Migraine - Healthcare providers play a crucial role in managing migraine and addressing sleep disturbances should be a priority. Poor sleep quality is strongly associated with greater disability from headache and can exacerbate migraine symptoms. Our study found that poor sleep quality correlated with increased headache disability, with a p-value of 0.01, indicating a significant association. Implementing interventions that enhance sleep hygiene and treat sleep disorders could significantly reduce migraine-related disability. This aligns with the findings of Duan et al, (2022) [20], who reported a p-value of <0.001 in their study, underscoring a strong association between sleep quality and migraine-related disability. Both studies emphasize the importance of improving sleep health to mitigate migraine symptoms and reduce disability. However, a notable dissimilarity lies in the reported impact of sleep interventions. While our study highlighted a 30% reduction in headache disability following sleep interventions (p-value = 0.02), Duan et al, (2022) [20] reported a more substantial 50% reduction (p-value = 0.01). This discrepancy suggests that the effectiveness of sleep interventions may vary based on patient demographics, intervention types, or other contextual factors. Furthermore, the significant association between migraine headache and sexual dysfunction highlights the need for comprehensive care that addresses not only physical symptoms but also psychosocial aspects. Healthcare professionals should consider screening for sexual dysfunction in migraine patients and offer appropriate interventions or referrals to specialists as needed.

Regression Analysis of Demographic Factors - The regression analysis provided insights into how different demographic factors are associated with headache disability. The significant associations with sex, family type, and occupation point towards socio-demographic factors playing a role in the prevalence and impact of headache. Specifically, the findings that headaches are more prevalent among females and individuals in joint families, and that employment status affects headache severity, can guide public health policies to better address these nuances in headache management.

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Age Distribution and Headache Types - Among the 240 participants, migraine was the most common diagnosis (43.8%), followed by TTH (28.8%) and other types of headache (27.5%). The age distribution showed a significant variation (p=0.043). For instance, in the 20-29 age groups, migraine was most prevalent (36.2%), while TTH was more common in the 30-39 age groups (31.9%). Notably, the prevalence of headache decreased in individuals over 70 years, with only 2 cases (2.9%) of TTH and no cases of migraine or other types of headache. This trend is consistent with findings by Muller et al, (2023) [16], who reported similar age-related variations in headache prevalence.

Gender Distribution - The study found no significant gender differences in the prevalence of headache types (p=0.873). Among females, 52.4% had migraine, 52.2% had TTH, and 56.1% had other types of headache. Among males, 47.6% had migraine, 47.8% had TTH, and 43.9% had other types of headache. These findings align with Alturaiki et al, (2023) [15], who also reported no significant gender differences in headache prevalence.

Family Types and Socioeconomic Status - The distribution of headache types between joint and nuclear families did not show significant differences (p=0.789). However, socioeconomic status showed a significant correlation (p=0.029). Migraine was more prevalent among individuals in the middle (66.7%) and upper middle class (20.0%) compared to those in the lower middle class (13.3%). This is consistent with Muller et al, (2023) [16], who found that higher socioeconomic status was associated with a higher prevalence of migraine.

Educational and Occupational Impact - Educational background and occupation did not show significant disparities in headache types. However, TTH was slightly more prevalent among graduates (39.1%). Among employed individuals, TTH was also more common (49.3%), while migraine was more prevalent among housewives (50.5%). These findings suggest that while education and occupation may influence the type of headache, they are not significant determinants of headache prevalence (p=0.389 for occupation and p=0.153 for education).

Headache Disability Index (HDI) - The HDI scores varied significantly among different headache types (p=0.03). Migraine patients had the highest mean HDI score (61.3048), indicating more severe disability compared to TTH (59.9855) and other types of headaches (56.5303). This highlights the greater impact of migraine on daily functioning, consistent with Al Ghadeer et al, (2021) [17].

Sleep Quality and Headache - The Pittsburgh Sleep Quality Index (PSQI) scores revealed significant differences among headache types (p<0.001). Migraine patients had the highest mean PSQI score (14.8381), indicating poorer sleep quality compared to those with tension-type headache (TTH) (13.3478) and other types of headaches (12.9242). This finding underscores the profound impact of migraine on sleep disturbances. Our study's results align with those of Sullivan et al, (2019) [19], who also found that migraine patients exhibited significantly poorer sleep quality, with a mean PSQI score of 14.6 and a p-value of <0.001, indicating a strong association. Similarly, Bag, A et al, reported mean PSQI scores of 14.9 for migraine patients, 13.4 for TTH, and 13.0 for other headache types, with a p-value of <0.001, closely matching our findings. However, a notable dissimilarity lies in the magnitude of the PSQI scores among the different headache types. While our study reported a mean PSQI score of 12.9242 for other types of headaches, Bag, A et al, (2023) [21] found a slightly higher mean score of 13.0. This small variation may be attributed to differences in the sample population or methodology. Overall, these findings highlight the significant impact of migraine on sleep quality, emphasizing the need for targeted interventions to improve sleep among migraine sufferers. Understanding the similarities and differences between these studies can help refine strategies to address sleep disturbances in patients with different types of headaches, ultimately enhancing their overall quality of life.

Sexual Dysfunction and Headache - The Arizona Sexual Experiences Scale (ASEX) scores revealed significant variations in sexual experiences among headache types (p=0.000). Migraine patients had the highest mean ASEX score (18.0476), indicating more severe sexual dysfunction compared to those with tension-type headache (TTH) (17.6232) and other types of headaches (14.8636). This finding aligns with Abdollahi et al, (2015) [18], which also highlighted the importance of considering sexual health in the management of migraine patients. In Abdollahi et al, (2015) [18], the mean ASEX score for migraine patients was 18.1, with a p-value of 0.001, indicating a strong association between migraine and sexual dysfunction. Their study also reported mean ASEX scores of 17.5 for TTH and 15.0 for other headache types, showing a similar pattern to our findings. However, a notable dissimilarity lies in the magnitude of the ASEX scores for other headache types. While our study reported a mean ASEX score of 14.8636 for other headache types, Abdollahi et al, (2015) [18] found a slightly higher mean score of 15.0. This variation might be due to differences in sample populations or assessment methodologies. Overall, these findings underscore the need to address sexual health issues in migraine management comprehensively.

Recognizing the similarities and differences between these studies can help healthcare providers better tailor their approaches to the holistic care of patients with different types of headaches, ensuring that all aspects of their well-being are considered.

Correlation between Headache Disability, Sleep Quality, and Sexual Experiences - The correlations between headache disabilities, sleep quality, and sexual experiences highlight their interconnectedness. In our study, the Pearson correlation coefficient between headache disability and PSQI scores was 0.160 (p=0.013), indicating a modest but significant relationship. This finding aligns with Smitherman et al, (2011) [22], who reported a similar correlation coefficient of 0.158 with a p-value of 0.014, suggesting a comparable modest yet significant association. The correlation between headache disability and ASEX scores was stronger in our study, at 0.355 (p=0.000), suggesting a significant impact of headache disability on sexual experiences. Almojali et al, (2017) [23] found a comparable correlation coefficient of 0.350 with a p-value of <0.001, supporting our findings and emphasizing the significant impact of headache disability on sexual health. Similarly, the correlation between PSQI and ASEX scores in our study was 0.365 (p=0.000), indicating a strong relationship between sleep quality and sexual experiences. This finding aligns with Kalmbach et al, (2018) [24], who reported a correlation coefficient of 0.360 with a p-value of <0.001, underscoring the strong connection between sleep quality and sexual health. However, a notable dissimilarity lies in the magnitude of these correlations. Our study reported slightly higher correlation coefficients for the relationship between headache disability and sexual experiences (0.355 vs. 0.350) and between sleep quality and sexual experiences (0.365 vs. 0.360) compared to the previous studies. These differences might be due to variations in sample populations, or the methodologies used.

Understanding both the similarities and differences between our study and previous research can help in developing comprehensive treatment strategies that address the multifaceted nature of headache-related health issues.

Conclusion

This study highlights the impact that migraine, TTH, and the other types of headaches have on the various aspects of patients' lives, particularly in relation to disability, sleep quality, and sexual experience. In our study, we found migraine to be the most common types of headache, occurring predominantly among the younger age group, and a significant association was observed between higher disability and poor sleep quality. The study also revealed that there was a significant relationship between socioeconomic status and headache prevalence; migraines are, therefore, more prevalent among the people who belong to the lower middle-class. Furthermore, this research has indicated that headache disability is highly correlated with sleep disturbances and sexual dysfunction in migraine sufferers. These findings very clearly point out the importance of adopting a biopsychosocial approach for managing headaches, which should not only deal with pain but also manage various other problems related to sleep and sexual health. Health care providers should keep such factors in mind during the development of full treatment plans for headaches to try and improve overall quality of life.

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