


RESEARCH

Open Access



# Sexual dysfunction in Egyptian patients with migraine

Osama A. Ragab<sup>1\*</sup> , Ehab S. Mohamed<sup>1</sup>, Eman A. Ghazi<sup>2</sup> and Mohamed A. Basiouny<sup>1</sup>

## Abstract

**Background** Migraine is believed to affect over 20% of people at some point in their lives. The presence of sexual dysfunction in migraine sufferers can cause lack of self-confidence and divorces. The aim of this work is to study sexual dysfunction in migraine headache patients.

**Methods** The study was carried out at Tanta University Hospital. The study included married patients who visited our hospital clinic and have had episodic or chronic migraine headaches and another group of age and sex matched healthy subjects will be recruited as a control group. Our interview includes questions for disease duration, severity and frequency of headache attacks and attack duration. questionnaire. the Arabic Version of the Migraine Disability Assessment Scale and Beck depression inventory. Sexual function will be evaluated by an Arabic version of Arizona sexual experience scale.

**Results** The ASEX score showed high significant changes between migraine patients and healthy subjects. These changes were reconfirmed when comparing male patients to healthy subjects or female patients to healthy subjects. Despite there was no significant difference regarding total ASEX score between both male and female patients with migraine there was significant differences in the items of derive, erection/lubrication and satisfaction between them. In patients with migraine the total ASEX score was correlated with the MIDAS, Beck depression inventory, Beck anxiety inventory; but not with the age of patients or headache duration.

**Conclusions** Sexual dysfunction is a common finding in migraine patients which is poorly evaluated in the clinical setting.

**Keywords** Sexual function, Migraine, Egyptians

## Background

Migraine, one of the most common diseases of the primary central nervous system, predominantly manifests as a moderate-to-severe paroxysmal headache but is often accompanied by nausea and vomiting [1].

The morbidity of migraine is relatively high; research has shown that 18% of females and 6% of males suffer from migraine [2]. The World Health Organization

ranks common chronic diseases according to the number of years lived with disability; migraine is in the top ten diseases when ranked in this manner. Moreover, severe migraine is the most disabling of the chronic diseases [3].

Chronic pain can significantly impact the relationships and sexual satisfaction of both patients and their partners. The reasons for this are complex and can affect all aspects of sexual response, including desire, arousal, and activity. This can be due to the direct impact of the illness on the hormonal, vascular, and neural systems of the body and mind, as well as the effects of medication. Emotional factors such as anxiety, fear, loss of self-esteem, grief, and depression are also common in chronic illness and can further impair sexual function [4].

\*Correspondence:

Osama A. Ragab  
osama.ragab@med.tanta.edu.eg

<sup>1</sup> Neurology Department, Tanta University, Tanta, Egypt

<sup>2</sup> Neurology Department, Alexandria University, Alexandria, Egypt

Headaches are a type of chronic condition that can lead to sexual dysfunction through complex mechanisms. Sexual dysfunction (SD) refers to any abnormality in the sexual response cycle or pain during sexual intercourse [5].

Women treated for primary headaches were found to display a high rate of sexual symptoms and distress. Both migraine and tension-type headache were associated with sexual dysfunction [6].

Migraines with chronic pain can negatively impact sexual function. As awareness and treatment options for sexual dysfunction increase, so do diagnosis rates. Erectile dysfunction is the most observed form of sexual dysfunction. The presence of sexual dysfunction can lead to a loss of self-confidence, social withdrawal, and even divorce, affecting the quality of life for both the patient and their partner [7]. Our aim was to evaluate sexual function among Egyptian male and female migraineur patients.

## Methods

The study was carried out at Neuropsychiatry Department, and Center of the Neurology, Psychiatry and Neurosurgery, from the first of November 2022 to the end of January 2023. Informed consent was obtained from all patients after explaining the nature of this study. The study included married patients who visited our hospital clinic and have had episodic or chronic migraine headaches. A group of age and sex matched healthy subjects were recruited as a control group. We designed a prospective study to assess the sexual dysfunction among migraineurs, and to identify the associated factors of sexual dysfunction. All patients were subjected to:

Thorough history taking including headaches characteristics, the patients enrolled in this study met the International Classification of Headache Disorders criteria for migraine and had a sexual partner for a minimum period of last 1 year [8]. Detailed history of headache attacks characteristics was obtained in an interview of an expert neurologist with patients. Our interview includes questions about disease duration, severity and frequency of headache attacks and attack duration. questionnaire. the Arabic Version of the Migraine Disability Assessment Scale (MIDAS) [9]. Migraine-Specific Quality of Life Questionnaire version 2.1 (MSQ v2.1) [10]. Arabic versions of Beck depression inventory (BDI) [11] and anxiety inventory (BAI) [12]. Sexual function was evaluated by an Arabic version of Arizona sexual experience scale (ASEX) [13]. Patients with medical and urological disorders that affect sexual function were excluded from the current study.

The study proposal was approved by the Research Ethics Committee and Quality Assurance Unit of the Faculty

of Medicine, under number (36001/10/22). Participation was voluntary, and informed written consent was obtained from all participants to clarify any possible risks.

Statistical analyses were conducted using SPSS version 20, 2013 (created by IBM, Armonk, NY, USA). Statistical differences between the studied groups were tested using independent sample t test for numerical variables and Statistical significance was set at  $P < 0.05$ . Correlation analysis was performed using Pearson's correlation test.

## Results

The present study included 120 migraine patients (70 females and 50 males) and 100 healthy subjects (50 females and 50 males), their age was ( $35.06 \pm 6.70$ ) and ( $34.28 \pm 8.88$ ) without significant difference between them regarding age or sex ( $p < 0.05$ ).

Our results showed significant difference in all items of ASEX score between migraine patients and healthy subjects. In addition, the patients' groups scores were higher than healthy subjects in both Beck depression inventory and beck anxiety inventory, as described in Table 1

A sub-analysis between male patients and healthy male subjects revealed significant higher ASEX scores in patients' group than healthy subjects. In addition, the patients' groups scores were higher than healthy subjects in both Beck depression inventory and beck anxiety inventory, as described in Table 2. These results were the same when comparing female patients with healthy female subjects, as illustrated in Table 3.

**Table 1** Comparison between the migraine patients and control group

	Group	Mean	Std. Dev	p
Sexual drive	Migraine patients	3.45	1.78	0.002*
	Healthy subjects	2.13	4.145	
Sexual arousal	Migraine patients	3.87	1.76	0.001*
	Healthy subjects	1.71	0.71	
Erection/lubrication	Migraine patients	2.95	1.50	0.001*
	Healthy subjects	1.84	0.73	
Orgasm	Migraine patients	2.90	0.95	0.005*
	Healthy subjects	1.71	0.79	
Satisfaction	Migraine patients	2.94	0.76	0.005*
	Healthy subjects	1.75	0.79	
ASEX total score	Migraine patients	13.83	4.54	0.001*
	Healthy subjects	9.14	4.23	
Beck depression inventory	Migraine patients	12.89	9.08	0.001*
	Healthy subjects	6.59	3.42	
Beck anxiety inventory	Migraine patients	11.31	9.68	0.001*
	Healthy subjects	4.69	2.68	

\*Significant as  $p$  value  $< 0.05$

**Table 2** Comparison between the migraine male patients and healthy male group

	Male groups	Mean	Std. Deviation	p
Sexual drive	Migraine patients	4.12	1.59	0.017*
	Healthy subjects	2.78	1.77	
Sexual arousal	Migraine patients	4.32	1.42	0.001*
	Healthy subjects	1.74	0.66	
Erection	Migraine patients	2.50	1.07	0.019*
	Healthy subjects	2.06	0.073	
Orgasm	Migraine patients	2.82	0.92	0.048*
	Healthy subjects	1.70	0.70	
Satisfaction	Migraine patients	1.46	0.64	0.03*
	Healthy subjects	1.14	0.35	
ASEX total score	Migraine patients	14.32	3.38	0.001*
	Healthy subjects	9.42	5.83	
Beck depression inventory	Migraine patients	12.30	8.59	0.001*
	Healthy subjects	6.24	3.75	
Beck anxiety inventory	Migraine patients	9.42	6.90	0.01*
	Healthy subjects	5.16	3.21	

\*Significant as  $p$  value < 0.05

**Table 3** Comparison between the migraine female patients and healthy female group

	Female groups	Mean	Std. Dev	p
Sexual drive	Migraine patients	2.98	1.77	0.001*
	Healthy subjects	1.48	0.70	
Sexual arousal	Migraine patients	3.55	1.92	0.001*
	Healthy subjects	1.68	0.76	
Lubrication	Migraine patients	3.27	1.68	0.001*
	Healthy subjects	1.62	0.66	
Orgasm	Migraine patients	2.90	0.98	0.003*
	Healthy subjects	1.72	0.88	
Satisfaction	Migraine patients	1.77	0.81	0.001*
	Healthy subjects	2.36	0.63	
ASEX total score	Migraine patients	13.48	5.2	0.001*
	Healthy subjects	8.86	1.42	
Beck depression inventory	Migraine patients	15.60	9.46	0.001*
	Healthy subjects	6.94	3.06	
Beck anxiety inventory	Migraine patients	13.9	6.14	0.001*
	Healthy subjects	4.22	1.93	

\*: Significant as  $p$  value < 0.05

A further comparison between male and female migraine patients revealed that female patients showed worse ASEX scores than male patients. Female patients suffer low quality of life as evaluated by MSQ v21. In addition, female patients showed higher scores in depression and anxiety as shown in Table 4.

In the current study ASEX scores were positively correlated with patients' age, headache duration in years,

MIDAS scores, BDI and BAI. On the other hand, ASEX scores were in inverse correlation with MSQ v21, as illustrated in Table 5.

## Discussion

Sexual function is an important issue that may cause disturbance in emotional relationship between both genders and has an impact on their quality of life. Migraine attacks can have a significant impact on an individual's ability to engage in sexual activity. In one study, researchers found that the frequency and quality of sexual relationships were affected in 86% of migraine sufferers, with 26% of cases resulting in divorce [14]. So, we had planned to study the sexual dysfunction among Egyptian migraineurs, that may help in early prediction and management of factors that may increase its probabilities.

In this study, the sexual function assessed by Arabic version of Arizona sexual experience scale ASEX between migraine patients and healthy subjects showed significant high scores in migraineurs than healthy subject, this is matching with Abdollahi et al. [15] who found about 68.4% of female migraine patients suffer sexual dysfunction mainly desire and arousal. Aksoy et al. [16] found that 6.66% of male patients with migraine had sexual dysfunction and the values were below 10, 60% of the patient values were between 11 and 22. 3.22% of patients.

While Torres-Ferrus et al. [17] reported that women had more abnormal scores in sex drive, arousal, and orgasmic dysfunction when compared to migraineur men. Frequent sexual desire (more than 2 weeks) was statistically associated with demographic, and migraine

**Table 4** Comparison between male and female migraine patients

	Mean	Std. Dev	p
Age			
Male	36.46	6.63	0.54
Female	34.07	6.61	
Years of headache			
Male	1.75	0.88	0.018*
Female	2.33	1.54	
MIDAS			
Male	14.56	6.81	0.001*
Female	22.11	14.71	
Sexual drive			
Male	4.12	1.59	0.001*
Female	2.98	1.77	
Sexual arousal			
Male	4.32	1.42	0.039*
Female	5.55	1.92	
Erection/lubrication			
Male	2.50	1.07	0.005*
Female	3.27	1.68	
Orgasm			
Male	1.92	0.92	0.047*
Female	2.90	0.98	
Satisfaction			
Male	1.460	0.645	0.05
Female	1.77	0.819	
ASEX total score			
Male	14.32	3.389	0.049*
Female	16.48	5.216	
Beck depression inventory			
Male	12.30	8.595	0.037*
Female	15.60	9.469	
Beck anxiety inventory			
Male	9.42	6.901	0.02*
Female	13.9	6.140	
MSQ			
Male	88.6	7.89	0.003*
Female	76	9.87	

\*Significant as p value &lt; 0.05

features as male gender, younger age, episodic migraine patients, without medication overuse and without depression.

**Table 5** Correlations between total patients ASEX total scores and other studied variable

ASEX total score	MIDAS	BDI	BAI	Patient age	Headache duration	MSQ
r	0.510	0.435	0.240	0.138	0.139	-0.927
p	0.000*	0.000*	0.008*	0.045*	0.049*	0.000*

\*Significant as p value &lt; 0.05

Several studies have suggested that migraine patients may have alterations in their serotonin system, which could contribute to the development of sexual dysfunction. For example, some research has hypothesized that shared serotonin mechanisms, such as 5HT<sub>2</sub> and 5HT<sub>3</sub> receptor agonists, may be involved in the aetiology of both migraine and sexual dysfunction [15, 18]. This connection between serotonin and sexual dysfunction in migraine patients warrants further investigation, as it could have important implications for the development of effective treatments for both conditions.

There was a significant higher score of depression and anxiety in migraineurs than healthy subjects. female patients showed higher scores in depression and anxiety. This is matching with Eraslan et al. [19] study who found that migraine patients' mean BDI score was 13.6, and mean BAI score was 16.3 (0.8). This is going with Aksoy et al. [16] who support that Beck Depression Scores and Beck Anxiety Scores were significantly more in migraine patients.

The MIGREX study [17] results found that the presence of sexual dysfunction was significantly higher in the female gender, older age, and presence of comorbidities as dyslipidaemia, cardiovascular disease, fibromyalgia, anxiety, and depression. These results add more support to our results.

The high prevalence of sexual dysfunction in migraine patients, along with the potential connections between migraine characteristics, serotonin mechanisms, and comorbidities, highlights the importance of addressing sexual health in the management of migraine.

In the current study comparison between male and female migraine patients revealed that female patients had worse ASEX scores than male patients especially in sexual arousal and lubrication/erection items. Female patients suffer low quality of life as evaluated by MSQ v21. The ASEX scores were positively correlated with patients' age, headache duration in years, MIDAS scores, BDI and BAI. On the other hand, ASEX scores were in inverse correlation with MSQ v21. This is matching with Pradeep et al. [20], where the mean MIDAS was  $7.58 \pm 10.94$ , and 90% had moderate to severe disability, and the ASEX score was least in those with severe disability.

## Conclusion

Sexual dysfunction is a prevalent and significant issue for many migraine patients, with potential connections to migraine characteristics, serotonin mechanisms, and comorbid conditions. As our understanding of these relationships continues to grow, it is essential for healthcare providers to consider the sexual health of their migraine patients and to develop comprehensive treatment plans that address both the pain and the sexual dysfunction associated with migraines.

## Study limitations

The effect of prophylactic medications effect on sexual function of our patients is considered a limitation of the current study. The sample included a wide range of variations, including monotherapy or combination therapy of tricyclic antidepressants, serotonin reuptake inhibitors, anticonvulsants, and calcium channel blockers, with variable doses. In addition, a few patients received botulinum toxin and the calcitonin gene-related peptide antagonists' injections. Therefore, it was challenging to incorporate these elements into the statistical analysis and draw a clear conclusion regarding the effect of these medications on the sexual function of our cohort.

## Abbreviations

ASEX	Arizona sexual experience scale
BAI	Beck anxiety inventory
BDI	Beck depression inventory
ED	Erectile dysfunction
MIDAS	Migraine Disability Assessment Scale
MSQ v2.1	Migraine-Specific Quality of Life Questionnaire version 2.1
SD	Sexual dysfunction

## Acknowledgements

We wish to express our great appreciation to our patients and their family for supporting us during this work.

## Author contributions

All authors have participated in designing of the study, acquisition of data, data interpretation and revising. OR recruited the patient and carried out clinical, neurological evaluation, participated in interpretation of the study results and editing the manuscript. EM recruited the patient and carried out clinical, neurological evaluation, participated in interpretation of the study results and editing the manuscript. EG recruited patient and carried out clinical, neurological evaluation and participated in interpretation of the study results. MB recruited patient and carried out clinical, neurological evaluation and participated in interpretation of the study results. All authors have read and approved the manuscript.

## Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Availability of data and materials

All raw data will be available on the editor request.

## Declarations

### Ethical approval and consent for participation

The study protocol was approved by the ethical committee in Tanta University, Egypt, under the code number (36001/10/22). Participation was voluntary and all contributors received detailed information about the aims of this research work and an informed written consent was obtained prior to the commencement of the study.

### Consent for publication

Not applicable.

### Competing interests

The authors have no competing interests to disclose.

Received: 8 June 2023 Accepted: 15 July 2023

Published online: 28 July 2023

## References

- Khan J, Al Asoom LI, Al Sunni A, Rafique N, Latif R, Al Saif S, Almandil NB, Almohazey D, AbdulAzeez S, Borgio JF. Genetics, pathophysiology, diagnosis, treatment, management, and prevention of migraine. *Biomedicine*. 2021;1(139): 111557.
- Wang JS, Deng S, Zhao Q, Zhang KG, Bao BH, Feng JL, Meng FC, Dai HH, Li X, Li HS, Wang B. A bioinformatic investigation of the mechanism underlying migraine-induced erectile dysfunction. *Biomed Res Int*. 2021;4:2021.
- Stovner LJ, Hagen K, Jensen R, Katsarava Z, Lipton RB, Scher AI, Steiner TJ, Zwart JA. The global burden of headache: a documentation of headache prevalence and disability worldwide. *Cephalalgia*. 2007;27(3):193–210.
- Ifergane G, Ben-Zion IZ, Plakht Y, Regev K, Wirguin I. Not only headache: higher degree of sexual pain symptoms among migraine sufferers. *J Headache Pain*. 2008;9:113–7.
- Ahmed HE, GamalEl Din SF, Oraby MI, Elhameed HM, Ahmed AR. Drug-naïve Egyptian females with migraine are more prone to sexual dysfunction than those with tension-type headache: a cross-sectional comparative study. *Acta Neurol Belg*. 2021;121:1745–53.
- Nappi RE, Terreno E, Tassorelli C, Sances G, Allena M, Guaschino E, Antonaci F, Albani F, Polatti F. Sexual function and distress in women treated for primary headaches in a tertiary university center. *J Sex Med*. 2012;9(3):761–9.
- Nemichandra SC, Pradeep R, Harsha S, Radhika K, Iqbal R. Erectile dysfunction in migraine in Indian patients. *Ann Indian Acad Neurol*. 2020;23(6):792.
- Headache Classification Committee of the International Headache Society. The international classification of headache disorders. *Cephalalgia*. 2013;33(9):629–808.
- Mourad D, Hajj A, Hallit S, Ghossoub M, Khabbaz LR. Validation of the Arabic version of the migraine disability assessment scale among Lebanese patients with migraine. *J Oral Facial Pain Headache*. 2019;33(1):47.
- AlHarbi FG, AlAteeq MA. Quality of life of migraine patients followed in neurology clinics in Riyadh, Saudi Arabia. *J Family Community Med*. 2020;27(1):37.
- Naja S, Al-Kubaisi N, Chehab M, Al-Dahshan A, Abuhashem N, Bougmiza I. Psychometric properties of the Arabic version of EPDS and BDI-II as a screening tool for antenatal depression: evidence from Qatar. *BMJ Open*. 2019;9(9): e030365.
- Kareemi S, Alansari B. A confirmatory factor structure of beck anxiety inventory in secondary school students among Kuwaitis and Non-Kuwaitis. *Eur Psychiatry*. 2015;28(30):537.
- Nakhli J, El Kissi Y, Bouhlel S, Amamou B, Nabli TA, Nasr SB, Ali BB. Reliability and validity of the Arizona sexual experiences scale-Arabic version in Tunisian patients with schizophrenia. *Compr Psychiatry*. 2014;55(6):1473–7.
- Smith R. Impact of migraine on the family. *Headache*. 1998;38(6):423–6.
- Abdollahi M, Toghae M, Raisi F, Saffar E. The prevalence of female sexual dysfunction among migraine patients. *Iran J Neurol*. 2015;14(1):8–11.

16. Aksoy D, Solmaz V, Cevik B, Gencten Y, Erdemir F, Gulsum KS. The evaluation of sexual dysfunction in male patients with migraine and tension type headache. *J Headache Pain*. 2013;14:46.
17. Torres-Ferrus M, López-Veloso AC, Gonzalez-Quintanilla V, González-García N, Díaz de Teran J, Gago-Veiga A, et al. The MIGREX study: prevalence and risk factors of sexual dysfunction among migraine patients. *Neurologia*. 2021;22:S0213-4853.
18. Atmaca M, Korkmaz S, Topuz M, Mermi O. Mirtazapine augmentation for selective serotonin reuptake inhibitor-induced sexual dysfunction: a retrospective investigation. *Psychiatry Investig*. 2011;8(1):55–7.
19. Eraslan D, Dikmen PY, Aydınlar El, Incesu C. The relation of sexual function to migraine-related disability, depression and anxiety in patients with migraine. *J Headache Pain*. 2014;15:32.
20. Pradeep R, Sundarmurthy H, Karan V, Kulkarni P. Prevalence and predictors of female sexual dysfunction in migraine. *Ann Indian Acad Neurol*. 2019;3:291–4.

### Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Submit your manuscript to a SpringerOpen<sup>®</sup> journal and benefit from:**

- ▶ Convenient online submission
- ▶ Rigorous peer review
- ▶ Open access: articles freely available online
- ▶ High visibility within the field
- ▶ Retaining the copyright to your article

---

Submit your next manuscript at ▶ [springeropen.com](https://www.springeropen.com)

---