

## Sexual Dysfunction in Epileptic Men

Mohammadreza Nikoobakht, Mahmood Motamedi, Amirhossein Orandi,  
Alipasha Meysamie, Ala Emamzadeh

**Introduction:** The aim of this study was to evaluate the frequency of sexual dysfunction among epileptic patients.

**Materials and Methods:** Eighty married men between 22 and 50 years with a confirmed diagnosis of epilepsy were enrolled in this study. Patients with other neurological diseases, hypertension, cardiovascular diseases, diabetes mellitus, underlying urogenital diseases, and impaired general health status were excluded. Furthermore, those with mental health problems were identified by the standardized General Health Questionnaire-28 and were excluded. Demographic and clinical characteristics of the disease were evaluated, and sexual function was assessed by the self-administered questionnaire of the International Index of Erectile Function-15 (IIEF-15).

**Results:** Of 80 patients, 34 (42.5%) had erectile dysfunction. There were no differences between the patients in the 3 age groups (> 30 years, 30 to 40 years, and > 40 years) in the IIEF scores. Type of seizure had a significant correlation with erectile function score ( $P = .008$ ). None of the IIEF domains scores were different between the patients with controlled epilepsy and those with uncontrolled epilepsy during the previous 6 months. However, frequency of epileptic seizures (before treatment) correlated with the scores for erectile function ( $r = 0.31$ ;  $P = .005$ ), orgasmic function ( $r = 0.23$ ;  $P = .04$ ), and sexual desire ( $r = 0.24$ ;  $P = .03$ ).

**Conclusion:** It seems that the main aspects of sexual activity such as erectile function, orgasmic function, and sexual desire are frequently impaired in epileptic patients. Our findings were also indicative of a higher risk of sexual dysfunction in patients with partial seizures.

*Keywords: nervous system diseases, epilepsy, sexual activity, erectile dysfunction, partial epilepsy*

*Urol J. 2007;4:111-7.  
www.uj.unrc.ir*

### INTRODUCTION

Sexual function can be altered in patients with different types of neurological disorders, especially those with an underlying undiagnosed neurological disease. Impaired sexual activity affects the quality of life which is a very important indicator of the patient's health status. Thus, it is no longer acceptable to ignore such very important aspects of life.<sup>(1)</sup>

About 40 million people are affected with epilepsy and seizure worldwide,<sup>(2)</sup> and numerous symptoms of sexual dysfunction can be seen in epileptic

patients. The figures vary in different studies but are generally higher than those observed in the general population. Many men with epilepsy suffer from loss of sexual desire, reduced sexual activity, and inhibited sexual arousal.<sup>(3-5)</sup> They also have organic sexual problems including lack of spontaneous morning penile tumescence, anorgasmia, and erectile dysfunction (ED).<sup>(5)</sup> In epileptic women, decreased sexual arousal, vaginismus, and dyspareunia are reported.<sup>(6)</sup> Epileptic patients, especially men, have a lower marriage

*Department of Urology, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran*

*Corresponding Author:  
Mohammadreza Nikoobakht, MD  
Department of Urology, Sina Hospital, Hassanabad Sq, Tehran  
1995345432, Iran  
E-mail: nikoobakht\_m@hotmail.com  
Tel: +98 21 6671 7447  
Fax: +98 21 6671 7447*

*Received November 2006  
Accepted March 2007*

rate compared to the general population, and married women have fewer children than expected.<sup>(4)</sup> Moreover, it should be noticed that anticonvulsant drugs, especially the older types such as phenytoin, phenobarbital, primidone, carbamazepine, and sodium valproate may lead to hormonal changes (increased levels of estradiol and decreased levels of free testosterone in men), as well as decreased sexual desire and performance in both sexes.<sup>(7,8)</sup> On the other hand, sexual activity can provoke a seizure attack through hyperventilation and triggering the genital sensory cortical area. Sexual phenomena may be a part of an epileptic seizure (eg, motor symptoms such as erection, lubrication, ejaculation, orgasm, pelvic sexual movements, or compulsive masturbation). Finally, epileptic patients may display changes in their sexual behavior.<sup>(9-13)</sup> In this study, we evaluated the frequency of sexual dysfunction among epileptic men in Iran and determined factors that affected their sexual function.

## MATERIALS AND METHODS

One hundred married men diagnosed with epilepsy were recruited in this study. The patients provided informed consent and the study was approved by the local ethics committee. They had no history of psychiatric diseases, diabetes mellitus, hypertension, hypothyroidism, hyperthyroidism, evident urogenital diseases, and other known neurological disorders. Their clinical data on epilepsy were collected and controlled epilepsy was defined as no seizure episodes during the previous 6 months.

For evaluating the patients' sexual function, we used standardized self-administered questionnaire of the International Index of Erectile Function-15 (IIEF-15) that addresses the relevant domains of male sexual function (Appendix).<sup>(14)</sup> The IIEF-15 is scored on a Likert scale with greater total numbers indicating better sexual function. The questions are divided into 5 sexual function domains: erectile function (questions 1 to 5 and 15; score, 1 to 30), sexual satisfaction (questions 6, 7, and 8; score, 0 to 15), orgasmic function (questions 9 and 10; score, 0 to 10), sexual desire (questions 11 and 12; score, 2 to 10), and overall satisfaction (questions 13 and 14; score, 2 to 10). Scores greater than 25 for erectile function were classified as normal.<sup>(15)</sup> The patients were asked for having premature ejaculation in a separate subjective question.

For assessment of mental health as a confounding

factor, we used another standardized questionnaire named General Health Questionnaire-28 (GHQ28).<sup>(16)</sup> This questionnaire contains 4 groups of 7 questions that evaluate the symptoms of depression, social function, psychosomatic disorders, anxiety, and sleep disorders. According to the GHQ28, 20 patients had impaired health status and therefore, were excluded from the data analyses.

Statistical analyses were performed using the SPSS software (Statistical Package for the Social Sciences, version 11.0, SPSS Inc, Chicago, Ill, USA). For 1-sample comparison of any type of impairment in different aspects of the sexual function, we used the 95% confidence intervals. For comparison of qualitative variables, we used the chi-square test and the Fisher exact test. Patients in different age groups were compared for the IIEF scores by the Kruskal-Wallis test. A *P* value of less than .05 was considered significant.

## RESULTS

Demographic and clinical characteristics of the patients are depicted in Table 1. The IIEF scores for each dimension of sexual function are outlined in Table 2; there were no differences between the patients in the 3 age groups (> 30 years, 30 to 40

**Table 1.** Demographic and Clinical Characteristics of Patients\*

Characteristics	Patients
Mean age, y	34.2 ± 7.6 (22 to 50)
Mean duration of epilepsy, y	14.2 ± 8.7 (2 to 42)
Seizure type	
Simple partial	3 (3.8)
Complex partial	13 (16.3)
Complex partial with secondary generalization	24 (30.0)
Generalized tonic-clonic	25 (31.2)
Absence	1 (1.2)
Myoclonic	13 (16.3)
Tonic	1 (1.2)
Frequency of Seizures	
Daily	3 (3.8)
Weekly	13 (16.2)
2 per month	3 (3.8)
Monthly	6 (7.5)
6 per year	6 (7.5)
4 per year	7 (8.7)
3 per year	5 (6.3)
2 per year	3 (3.8)
≤ 1 per year	9 (11.2)
Irregular	25 (31.2)
Controlled epilepsy	57 (71.3)

\*Values in parentheses are percents, unless otherwise indicated.

**Table 2.** IIEF Scores in Epileptic Patients\*

IIEF-15	Patients' Age Groups				P†
	All Patients	< 30 (n = 30)	30 to 40 (n = 32)	> 40 (n = 18)	
Erectile function (1 to 30)	23.3 ± 7.4 (1 to 30)	23.6 ± 7.0	23.7 ± 6.7	21.8 ± 9.4	.86
Orgasmic satisfaction (0 to 10)	7.7 ± 2.9 (0 to 10)	7.5 ± 2.8	7.9 ± 2.6	7.7 ± 3.7	.60
Intercourse satisfaction (0 to 15)	9.6 ± 3.8 (0 to 15)	9.8 ± 3.7	9.9 ± 3.2	8.6 ± 4.8	.81
Sexual desire (2 to 10)	7.4 ± 2.2 (2 to 10)	7.3 ± 2.2	7.8 ± 1.7	6.9 ± 2.9	.86
Overall satisfaction (2 to 10)	7.6 ± 2.3 (2 to 10)	7.1 ± 2.5	8.0 ± 1.8	7.5 ± 2.6	.48

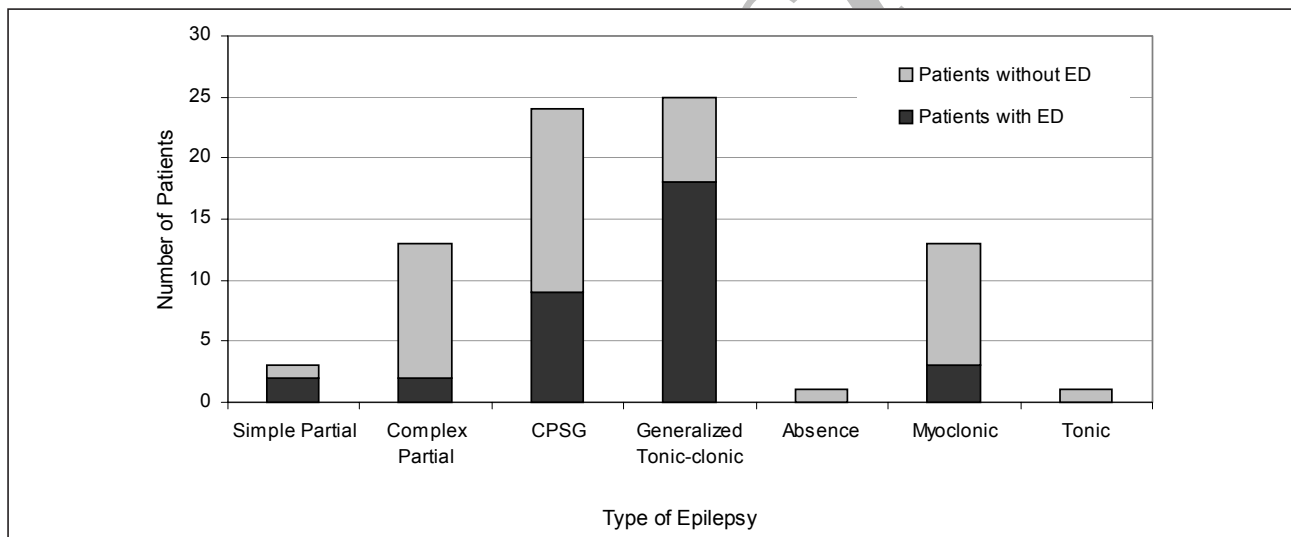
\*Values are demonstrated as mean ± standard deviation. IIEF indicates international index of erectile function.

†Kruskal-Wallis test.

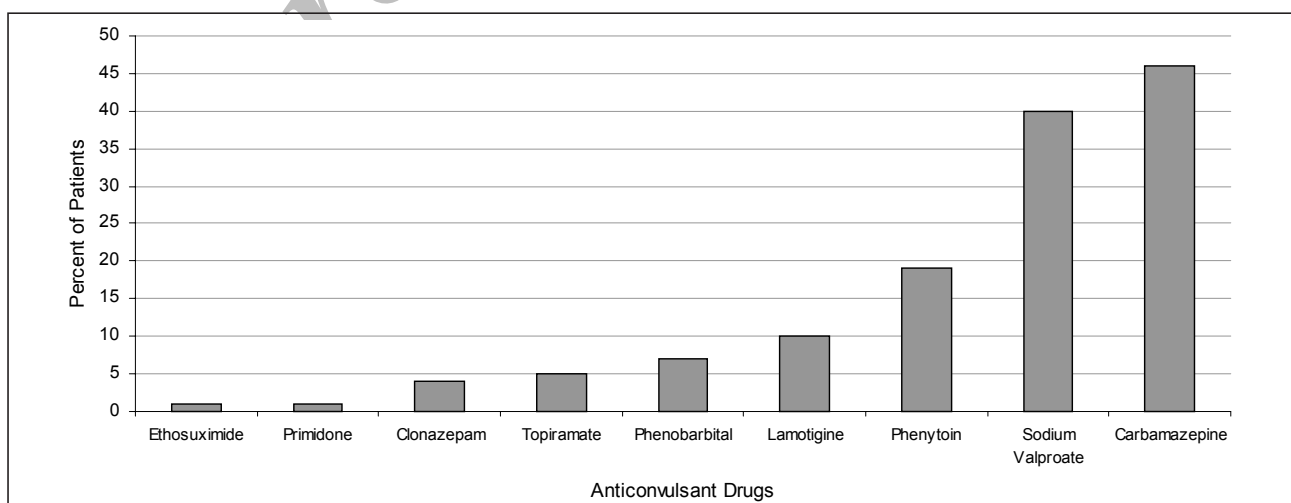
years, and > 40 years) in the IIEF scores. Also, duration of epilepsy was not associated with the IIEF scores. Figure 1 depicts the percentages of the patients with ED for each type of epilepsy. Of 80 epileptic patients with a normal health status (according to the GHQ28), 34 (42.5%; 95%

confidence interval [CI], 31.7 to 53.3) had ED. Type of seizure had a significant correlation with erectile function score ( $P = .008$ ; Figure 1).

Carbamazepine, sodium valproate, and phenytoin were the most common medications used for the treatment of our patients (Figure 2), and epileptic



**Figure 1.** Frequency of erectile dysfunction in patients with different types of epilepsy. CPSG indicates complex partial with secondary generalization.



**Figure 2.** Types of medications prescribed for the patients with epilepsy.

seizures were controlled in 57 patients (71.3%). The relationship between the medications used for control of the seizure and each domain of sexual function is demonstrated in Table 3. None of the IIEF domains scores were different between the patients with controlled epilepsy and those with uncontrolled epilepsy. However, frequency of epileptic seizures (before treatment) correlated with the scores for erectile function ( $r = 0.31$ ;  $P = .005$ ), orgasmic function ( $r = 0.23$ ;  $P = .04$ ), and sexual desire ( $r = 0.24$ ;  $P = .03$ ).

Nine patients (11.3%) reported premature ejaculation during the previous month and there was no correlation between premature ejaculation and seizure type, frequency of epileptic seizures, control of the disease, and the medication used. Also, no correlation was found between the age or duration of epilepsy and any domains of the IIEF-15.

## DISCUSSION

The mean age of our patients showed that they were in their sexually active ages, and therefore, their disease could directly affect their quality of life. Although the frequencies of generalized and partial seizures were equal, generalized tonic-clonic seizure was the most common type of seizure in our patients. Our study revealed a correlation between the partial seizures and ED similar to the literature.<sup>(17)</sup>

Inability to maintain erection, ejaculatory dysfunction, decreased sexual satisfaction, reduced sexual fantasies, and reduced orgasmic capacity are reported in patients with some types of epilepsy.<sup>(17,18)</sup> The prevalence of ED in our patients was 42.5% which is in accordance with the results of the Massachusetts Male Aging Study that was performed on men between 40 and 70 years and showed that 52% of responders had some degrees of ED.<sup>(19)</sup> However, in another study performed by the National Health and Social Life Survey (NHSL) on general population (age range, 18 to 59 years), it was demonstrated that 10.4% of men had mentioned inability to achieve and maintain erection.<sup>(20)</sup> In Iran, Safarinejad has studied 2674 Iranian men aged 20 to 70 years and found that 18.8% of men interviewed reported ED.<sup>(21)</sup> Although the method of detecting ED might have a significant role in the discrepancies of its rate in general population, we can assume that the condition resulted from epilepsy might have caused an increased rate

**Table 3.** Drugs Used for Treatment of Epileptic Patients and Their Relation With Sexual Function Domains\*

Sexual Domains	Carbamazepine		Sodium Valproate		Phenytoin		Lamotrigine		Phenobarbital		Clonazepam	
	Yes (n = 37)	No (n = 43)	Yes (n = 32)	No (n = 48)	Yes (n = 15)	No (n = 65)	Yes (n = 8)	No (n = 72)	Yes (n = 6)	No (n = 74)	Yes (n = 3)	No (n = 77)
Erectile dysfunction (n = 34)	13 (35.1)	21 (48.8)	14 (43.8)	20 (41.7)	11 (73.3)†	23 (35.4)†	3 (37.5)	31 (43.1)	2 (33.3)	32 (43.2)	1 (33.3)	33 (42.9)
Intercourse dissatisfaction (n = 35)	17 (45.9)	18 (41.9)	13 (40.6)	22 (45.8)	8 (53.3)	27 (41.5)	1 (12.5)	34 (47.2)	4 (66.7)	31 (41.9)	1 (33.3)	34 (44.2)
Orgasmic dysfunction (n = 16)	8 (21.6)	8 (18.6)	7 (21.9)	9 (18.8)	5 (33.3)	11 (16.9)	0	16 (22.2)	2 (33.3)	14 (18.9)	3 (100.0)‡	13 (16.9)‡
Sexual desire impairment (n = 23)	12 (32.4)	11 (25.6)	8 (25.0)	15 (31.3)	7 (46.7)	16 (24.6)	0	23 (31.7)	2 (33.3)	21 (28.4)	1 (33.3)	22 (28.6)
Overall dissatisfaction (n = 24)	11 (29.7)	13 (30.2)	11 (34.4)	13 (27.1)	7 (46.7)	17 (26.2)	0	24 (33.3)	2 (33.3)	22 (29.7)	1 (33.3)	23 (23.9)
Premature ejaculation (n = 9)	6 (16.2)	3 (7.0)	2 (6.3)	7 (14.6)	2 (13.3)	7 (10.8)	0	9 (12.5)	2 (33.3)	7 (9.5)	0	9 (11.7)

\*Values in parentheses are percents in relation to the numbers of patients who received/do not receive the drug.

† $P = .007$  (chi-square test)

‡ $P = .007$  (Fisher exact test)

of ED in our patients. We found that ED was not associated with age in our epileptic patients, and this can be an indicator of epilepsy being an additional factor other than age that influences erectile function. Impairment in other domains of sexual activity like the overall satisfaction of sexual activity and intercourse satisfaction was higher in our study in comparison with the findings of the NHSLS study in which 8.1% of the respondents had no pleasure for doing sexual activity.<sup>(20)</sup> Sexual desire was impaired in 28.8% of our patients, but in the NHSLS study, only 15.8% had impaired libido during the previous year. Premature ejaculation was the only aspect of the male sexual function that was as frequent or even less common in our series in comparison to its prevalence in the general population of men. In the NHSLS study, for instance, 28.5% of men between 18 and 59 years had reported premature ejaculation.<sup>(20)</sup>

The differences between our patients and general population in the NHSLS study cannot be explained by age differences between the two studies because in our study, age of our patients did not have any correlation with any aspect of sexual dysfunction; however, it seems that with growing older, the process of aging and arteriosclerosis affects erectile function. The relationship between the frequency of epileptic seizures in our study and sexual desire may show that the preoccupation of repeating seizure attacks may interfere with the sexual desire and activity; this idea may be protected by the relationship found between the disease control and sexual desire in our patients. Although in our study duration of the disease had no significant correlation with sexual dysfunction, it seems that in long-term, depression due to a chronic problem may affect sexual function, especially sexual desire and the overall satisfaction. On the other hand, a relationship was found between the control of the disease and the overall satisfaction. Therefore, it seems that mental status and stability in mind may have had an important role in sexual satisfaction of our patients.

Carbamazepine, sodium valproate, and phenytoin were the most common medications used for the treatment of our patients. Although there might be adverse effects on every aspect of sexual activity by medications, only phenytoin and clonazepam showed effects on erectile and orgasmic functions. Overall, the effects of medical treatment in epilepsy

can be important in the management of patients' sexuality.<sup>(7,8)</sup>

## CONCLUSION

Our findings indicate that sexual dysfunction, especially ED, is a frequent problem in epileptic patients. Reduction of the frequency of epileptic seizures is of great importance in improving the quality of life and sexual health in epileptic patients. It may be useful for the patients to be assessed and managed via a complete protocol for sexual disturbances during the seizure management. Patient education and management with a team consisting of a urologist, a psychiatrist, and a neurologist may be useful for improving the quality of life in epileptic patients.

## CONFLICT OF INTEREST

None declared.

## FINANCIAL SUPPORT

This study was supported by the Urology Research Center of Tehran University of Medical Sciences.

## APPENDIX

### International Index of Erectile Function Questionnaire

Over the past four weeks:

1. How often were you able to get an erection during sexual activity?
  - (0) No sexual activity
  - (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always
  
2. When you had erections with sexual stimulation, how often were your erections hard enough for penetration?
  - (0) No sexual activity
  - (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always



3. When you attempted sexual intercourse, how often were you able to penetrate (enter) your partner?
- (0) Did not attempt intercourse
  - (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always
4. During intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?
- (0) Did not attempt intercourse
  - (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always
5. During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?
- (0) Did not attempt intercourse
  - (1) Extremely difficult
  - (2) Very difficult
  - (3) Difficult
  - (4) Slightly difficult
  - (5) Not difficult
6. How many times have you attempted sexual intercourse?
- (0) No attempts
  - (1) One to two attempts
  - (2) Three to four attempts
  - (3) Five to six attempts
  - (4) Seven to ten attempts
  - (5) Eleven or more attempts
7. When you attempted sexual intercourse, how often was it satisfactory for you?
- (0) Did not attempt intercourse
  - (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always
8. How much have you enjoyed sexual intercourse?
- (0) No intercourse
  - (1) No enjoyment
  - (2) Not very enjoyable
  - (3) Fairly enjoyable
  - (4) Highly enjoyable
  - (5) Very highly enjoyable
9. When you had sexual stimulation or intercourse, how often did you ejaculate?
- (0) No sexual stimulation/intercourse
  - (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always
10. When you had sexual stimulation or intercourse, how often did you have the feeling of orgasm or climax?
- (0) No sexual stimulation/intercourse
  - (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always
11. How often have you felt sexual desire?
- (1) Almost never/never
  - (2) A few times (much less than half the time)
  - (3) Sometimes (about half the time)
  - (4) Most times (much more than half the time)
  - (5) Almost always/always
12. How would you rate your sexual desire?
- (1) Very low/none at all
  - (2) Low
  - (3) Moderate
  - (4) High
  - (5) Very high
13. How satisfied have you been with your overall sex life?
- (1) Very dissatisfied
  - (2) Moderately dissatisfied
  - (3) About equally satisfied and dissatisfied
  - (4) Moderately satisfied
  - (5) Very satisfied
14. How satisfied have you been with your sexual relationship with your partner?

- (1) Very dissatisfied
- (2) Moderately dissatisfied
- (3) About equally satisfied and dissatisfied
- (4) Moderately satisfied
- (5) Very satisfied

15. How would you rate your confidence that you could get and keep an erection?

- (1) Very low
- (2) Low
- (3) Moderate
- (4) High
- (5) Very high

## REFERENCES

1. Lundberg PO, Ertekin C, Ghezzi A, Swash M, Vodusek D; European Federation of Neurological Societies Task Force on Neurosexology. Neurosexology: guidelines for neurologists. *Eur J Neurol*. 2001;8 Suppl 3:2-24.
2. Fisher RS, van Emde Boas W, Blume W, et al. Epileptic seizures and epilepsy: definitions proposed by the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE). *Epilepsia*. 2005;46:470-2.
3. Saunders M, Rawson M. Sexuality in male epileptics. *J Neurol Sci*. 1970;10:577-83.
4. Dansky LV, Andermann E, Andermann F. Marriage and fertility in epileptic patients. *Epilepsia*. 1980;21:261-71.
5. Guldner GT, Morrell MJ. Nocturnal penile tumescence and rigidity evaluation in men with epilepsy. *Epilepsia*. 1996;37:1211-4.
6. Demerdash A, Shaalan M, Midani A, Kamel F, Bahri M. Sexual behavior of a sample of females with epilepsy. *Epilepsia*. 1991;32:82-5.
7. Isojarvi JI, Repo M, Pakarinen AJ, Lukkarinen O, Myllyla VV. Carbamazepine, phenytoin, sex hormones, and sexual function in men with epilepsy. *Epilepsia*. 1995;36:366-70.
8. Duncan S, Blacklaw J, Beastall GH, Brodie MJ. Antiepileptic drug therapy and sexual function in men with epilepsy. *Epilepsia*. 1999;40:197-204.
9. Blumer D, Walker AE. Sexual behavior in temporal lobe epilepsy. A study of the effects of temporal lobectomy on sexual behavior. *Arch Neurol*. 1967;16:37-43.
10. Herzog AG, Seibel MM, Schomer DL, Vaitukaitis JL, Geschwind N. Reproductive endocrine disorders in men with partial seizures of temporal lobe origin. *Arch Neurol*. 1986;43:347-50.
11. Jensen P, Jensen SB, Sorensen PS, et al. Sexual dysfunction in male and female patients with epilepsy: a study of 86 outpatients. *Arch Sex Behav*. 1990;19:1-14.
12. Fenwick PB, Mercer S, Grant R, et al. Nocturnal penile tumescence and serum testosterone levels. *Arch Sex Behav*. 1986;15:13-21.
13. Jensen P, Jensen SB, Sorensen PS, et al. Sexual dysfunction in male and female patients with epilepsy: a study of 86 outpatients. *Arch Sex Behav*. 1990;19:1-14.
14. Rosen RC, Cappelleri JC, Gendrano N 3rd. The International Index of Erectile Function (IIEF): a state-of-the-science review. *Int J Impot Res*. 2002;14:226-44.
15. Cappelleri JC, Rosen RC, Smith MD. Some developments on the international index of erectile function (IIEF). *Drug Inf J*. 1999;33:179-90.
16. Goldberg DP, Gater R, Sartorius N, et al. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med*. 1997;27:191-7.
17. Taylor DC. Sexual behavior and temporal lobe epilepsy. *Arch Neurol*. 1969;21:510-6.
18. Shukla GD, Srivastava ON, Katiyar BC. Sexual disturbances in temporal lobe epilepsy: a controlled study. *Br J Psychiatry*. 1979;134:288-92.
19. Feldman HA, Goldstein I, Hatzichristou DG, Krane RJ, McKinlay JB. Impotence and its medical and psychosocial correlates: results of the Massachusetts Male Aging Study. *J Urol*. 1994;151:54-61.
20. Laumann EO, Paik A, Rosen RC. The epidemiology of erectile dysfunction: results from the National Health and Social Life Survey. *Int J Impot Res*. 1999;11 Suppl 1:S60-4.
21. Safarinejad MR. Prevalence and risk factors for erectile dysfunction in a population-based study in Iran. *Int J Impot Res*. 2003;15:246-52.