

Arq Neuropsiquiatr 2000;58(2-A):214-220

## SEXUAL DYSFUNCTION IN EPILEPSY IDENTIFYING THE PSYCHOLOGICAL VARIABLES

*ELISABETE ABIB P. DE SOUZA\**, *DAYSE M. B. KEIRALLA\*\**,  
*DIOSELY C. SILVEIRA\*\*\**, *CARLOS A. M. GUERREIRO\**

---

**ABSTRACT** - In order to evaluate the psychological variables that affect sexual dysfunction (SD) in epilepsy, where compared 60 epileptics (Group 1) with 60 healthy individuals (Group 2), through the State-Trait Anxiety Inventory (Spielberger et al., 1970), Beck Depression Inventory (Beck, 1974) and Sexual Behavior Interview (Souza, 1995). Sexual dysfunction (SD), anxiety and depression were found more frequently in Group 1 than in Group 2 and were not related to sex. Variables such as the onset duration and frequency of seizures as well as the use to medication were not associated with SD. Temporal lobe epilepsy was related to SD ( $p = 0.035$ ) but not to anxiety or depression. Anxiety and depression were related to SD in both groups. Perception in controlling the seizures was closely related to anxiety ( $p = 0$ ) and depression ( $p = 0.009$ ). We conclude that psychological factors play an important role in the alteration of sexual behavior in epileptics and that suitable attention must be given to the control of these variables.

**KEY WORDS** : sexual dysfunction, anxiety, depression, psychological variables, epilepsy.

### **Disfunção sexual na epilepsia: identificando variáveis psicológicas**

**RESUMO** - Com o objetivo de avaliar variáveis psicológicas que afetam a disfunção sexual (DS) na epilepsia comparou-se, 60 epiléticos (Grupo 1) com 60 indivíduos saudáveis (Grupo 2), usando o Inventário de Ansiedade - Traço e Estado (Spielberger e al. 1970), o Inventário de Depressão Beck (Beck, 1974) e Entrevista de Comportamento Sexual (Souza, 1995). Disfunção sexual, ansiedade e depressão foram mais frequentes no Grupo 1 que no Grupo 2 e não foram relacionadas à variável sexo. Variáveis como início, duração, frequência de crises e medicação não foram associadas a DS. Epilepsia de lobo temporal foi relacionada a DS ( $p=0,035$ ) mas não com ansiedade e depressão. DS foi associada com ansiedade e depressão em ambos os grupos. Percepção de controle das crises foi significativamente relacionada com ansiedade ( $p=0$ ) e depressão ( $p=0,009$ ). Concluímos que fatores psicológicos têm importante papel na alteração do comportamento sexual em epiléticos e merece especial consideração.

**PALAVRAS-CHAVE**: disfunção sexual, ansiedade, depressão, variáveis psicológicas, epilepsia.

---

Hyposexuality (a reduction and/or absence of sexual desire, and/or excitement or potency, and/or sexual pleasure) has been related to an interictal alteration of sexual function which is more frequent in epileptics<sup>1-5</sup>. Since sexuality involves complex behavior, it is often difficult to evaluate the changes in sexual function<sup>6</sup>. There are various factors that affect sexual function and restrict

---

Department of Neurology at the University Hospital (UNICAMP), Campinas, São Paulo, Brasil:  
\*Professor Assistente Doutor, Departamento de Neurologia da Faculdade de Ciências Médicas (FCM) de Universidade Estadual de Campinas (UNICAMP); \*\*Professor Assistente Doutor, Departamento de Pediatria, FCM/UNICAMP; \*\*\*Médica, Institute of Neurology, Beth Israel Hospital, Boston/MA/USA.  
Aceite: 21-janeiro-2000.

Dra. Elizabete Abib P. de Sousa - Departamento de Neurologia FCM/UNICAMP - Caixa Postal 6111 - 13083-970 Campinas SP - Brasil. E-mail: assouza@bestway.com.br

social development. These include psychological variables such as low self-esteem, anxiety and depression, alterations in neuronal function due to epileptic discharges or cerebral lesion, ictal or interictal neuroendocrine deficits and antiepileptical drugs<sup>7</sup>. Although several variables associated with the disease have been identified, some studies have raised the question of a possible influence of psychological factors in defining or maintaining sexual difficulties in epilepsy. However, the subjective components that affect sexuality in epileptics, and their psychological effects, have not been investigated.

This study examined the occurrence of sexual dysfunction (SD), anxiety and depression in epileptics and compared them with healthy individuals. The relationship between SD and the variables involved in epilepsy (the onset, frequency and type of seizures and the medication used), as well as the relationship between SD and psychological variables (anxiety, depression and self-esteem) were also studied.

## METHOD

### *Subjects*

The epileptic subjects (Group 1) consisted of 28 men and 32 women randomly selected from patients who had epilepsy for more than two years and who were attended at the Epilepsy Outpatient Department at the University Hospital (UNICAMP).

The control group (Group 2) was made up of 20 men and 40 women randomly selected from individuals accompanying the patients.

The subjects in both groups were 25-45 years old, married or living together for more than six months, and did not suffer from psychiatric diseases, evident mental retardation, diabetes mellitus, systemic arterial hypertension or renal or hepatic insufficiency. No medication or alcohol consumption was allowed during the study except for the administration of epileptic drugs required by Group 1 subjects.

Since the subjects had to answer a questionnaire on sexual behavior, their informed consent as well as that of their partners was required in order to participate in the study.

### *Instruments*

All of the subjects completed an identification card in which they provided demographic data (age, marital status, number of children, education, and socio-economic level) and information related to the illness (type of seizures, as well as the onset, duration, and frequency, perception of control, and medication used).

The information on the perceived control of the seizures was obtained through reports by the patients who evaluated whether the crises were controlled or not. These data were subjective and may refer to alterations in the intensity and/or frequency of the seizures. The latter was expressed in days, months or years.

The interview about sexual behavior was elaborated from the works by Thorne<sup>8</sup>, Cavalieri et al.<sup>9</sup> and Fenwick et al.<sup>10</sup>, it is composed of 46 questions being 41 open. It approaches 3 themes in each one of the three parts – psychosocial impact of the epilepsy, identification of personal problems and aspects related to affective sexual life of the subjects.

Part 1 – Theme 1 has permitted to recognize the meaning of the seizures through the identification of feelings and personal reactions linked to the fact of having seizures.

Part 2 – Theme 2 has questioned in both groups the presence of personal problems during the life history and made it possible the identification of a personal image of the subject.

Part 3 – Theme 3 has permitted to gather data about interpersonal relationship, performance, satisfaction and sexual interest, sexual dysfunctions and their psychosocial contingencies (values, myths, beliefs, religion, models of familiar affectivity, personal sexual experiences and perception of the partner<sup>11</sup>).

The State Trait Anxiety Inventory<sup>12</sup> (validated by Biaggio et al.<sup>13</sup>) evaluated sensitivity for anxiety (A-state) and the over level of anxiety (A-trace). The A-state can change in intensity over time. The A-trace refers to the individual's stable predisposition towards developing the A-state.

The Beck Depression Inventory<sup>14</sup> (validated by Ferreira<sup>15</sup>) evaluated the intensity of the behavior depression. It emphasizes the manifest behaviors, without preoccupation of approaching the etiology of the disease. The application of the instrument in non-clinical samples has revealed the psychometric qualities of the scale<sup>15</sup>.

The interview with the partner was aimed for obtaining data that would permit evaluation of the couple's perception of their sexual relationship.

#### Procedure

Following selection and a neurological evaluation, the subjects were sent to the Psychology Sector. Where they underwent detailed anamnestic examination, general physical and neurological examination and also an interview on sexual behavior. The epileptic patients underwent an electroencephalogram (EEG), computerized cranial tomography (CCT) and a post-fasting glycemia test. This was followed by three psychological interviews with the patients and one interview with the corresponding partner.

SD was defined if all the criteria of DSM IV<sup>16</sup> were fulfilled and if there was agreement between the two interviews (a neurologist and a psychologist). This work has focused on the study of the hyposexuality.

#### Statistical Analysis

The statistical analysis was effected aiming the inter and intragroups comparison of the variables-anxiety, depression, SD, perception of the control and variables-linked to epilepsy. To the intergroups comparison, it was used the CATMOD (categorical model) procedure from the SAS Statistical System and applied the LogLinear model for categorical variables. To the intragroups comparison, it was used the Exact Fisher Test of the Freq procedure (frequency) from the SAS Statistical System installed in the Laboratory of Statistics of the Institut of Mathematics Statistics and Computer Science (IMECC/UNICAMP). For the categorization of the continuous variables it was used the descriptive statistics (mean, standard deviation, maximum and minimum value per groups).

## RESULTS

The average age of the epileptics was 32.4 years (std dev = 6.62) and that of the control group was 34.1 years (std dev = 8.25). Group 2 individuals generally had a better education, although in both groups most individuals had not completed secondary school. Most of the epileptics had not professional activities outside the home, unless one considers the great number of women who dedicated their time to unpaid domestic duties (Table 1).

Within the epileptics (Group 1) in males, the seizures began between 1 and 37 years of age (mean=18.5, std dev = 9.6) and lasted from 2 to 36 years (mean=14.8, std dev = 9.9). In women,

Table 1. Demographic characteristics of epileptic (Group 1) and non-epileptic (Group 2) individuals by group and sex.

	Group 1		Group 2	
	Male Freq - (%)	Female Freq - (%)	Male Freq - (%)	Female Freq - (%)
- Education				
Illiterate	2 (7.1)	2 (6.3)	2 (10)	1 (2.5)
Elementary school (incomplete)	22 (78.6)	28 (87.5)	10 (50)	24 (60)
Elementary school (complete)	2 (7.1)	—	2 (10)	7 (17.5)
High school (incomplete)	—	1 (3.1)	2 (10)	4 (10)
High school (complete)	2 (7.1)	1 (3.1)	3 (15)	3 (7.5)
University (incomplete)	—	—	1 (5)	1 (2.5)
-Professional Activity				
Paid	24 (85.1)	11 (34.3)	10 (100)	25 (62.5)
Unpaid	1 (3.6)	19 (59.4)	—	15 (37.5)
Laid off	3 (10.7)	2 ( 6.3)	—	—

Table 2. Characteristics of the seizures in epileptic (Group 1) individuals by sex.

	Male Freq - (%)	Female Freq - (%)
Frequency of seizures(days).		
180 or more	14 (50)	9 (28.1)
90	2 (7.1)	—
30	3 (10.7)	10 (3.3)
15	2 (7.1)	—
7	4 (14.3)	8 (25)
3-4	2 (7.1)	5 (15.6)
Type of seizures		
Generalized (GTC)	6 (21.4)	3 (9.4)
Partial	22 (78.6)	29 (90.6)
TLE	13 (59.1)	22 (75.9)
Others	9 (40.9)	7 (14.8)
Partial generalized	15 (53.9)	19 (59.4)

GTC, generalized tonic-clonic, TLE, temporal lobe epilepsy.

began between 1 and 34 years (mean 16.1, std dev 9.5) and the average duration of the illness was 15.5, std dev 8.7 (from 2 to 3 years). No significant difference was observed between the two sexes.

Fifty percent of the males had no seizures for more than six months. In females, the distribution of seizures during this period was more dispensed (Table 2). With regard to the type of seizures, 78.5% of males and 90% of females had partial seizures; temporal lobe epilepsy (TLE) was predominant in both males (59.1%) and females (75.9%). Secondary generalization was seen in 56.7% of the epileptics; 68.3% of the patients were characterized as having localized, symptomatic epilepsy and 31.7% had cryptogenic epilepsy. Fifty-eight patients were under monotherapy and two were using two drugs. The drugs most used were carbamazepine, phenytoin, sodium valproate and phenobarbital.

SD was diagnosed in 30 patients (50%) in Group 1 and in 15 individuals (25%) in Group 2. Anxiety has appeared in 36% (22 patients of the GI) and 11% (7 subjects of the GII). Depression has appeared in 19 patients (31,6% GI) and 7 subjects (11,6% - GII).

SD ( $p=0.008$ ), anxiety ( $p=0.002$ ) and depression ( $p=0.014$ ) were significantly higher in the epileptics than in normal subjects values determined by the exact Fisher test. Significant differences of sex were not found for the variables anxiety ( $p = 0.287$ , GI;  $p = 1.000$  GII), depression ( $p = 0.165$ , GI;  $p = 0.208$  GII) and SD ( $p = 0.438$ , GI;  $p = 0.343$ , GII) according to the exact Fisher test.

Analysis of the relationship between SD and the disease variables showed that SD was associated with TLE. Twenty-two dysfunctional epileptics showed TLE ( $p = 0.035$ ) although the frequency of seizures ( $p = 0.367$ ) and the medication used ( $p = 0.223$ ) were not associated with SD. SD and psychological variables were related in both groups (anxiety and SD,  $p=0.03$  for G1 and  $p=0.001$  for G2; depression and SD,  $p=0.04$  for G1 and  $p=0.05$  for G2).

TLE was not related to anxiety ( $p = 0.108$ ) or depression ( $p = 0.159$ ). In contrast perceived seizure control highly related to anxiety ( $p = 0$ ) and depression ( $p=0.009$ ).

An analysis of the Sexual Behavior Interview helped to identify the significance of sexual activity for the individuals in the two groups (Table 3), and the significance of disease for the epileptic

Table 3. Significance of sexual activity by group, sex and sexual dysfunction.

	Group 1				Group 2			
	Male		Female		Male		Female	
	SD -	SD +	SD -	SD +	SD -	SD +	SD -	SD +
	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)
Source of satisfaction and pleasure	15 (93.8)	-	14 (100)	-	17 (100)	-	28 (100)	-
No response to health problems	-	5 (41.7)	-	6 (33.3)	-	-	-	1 (8.3)
No response to low self esteem	-	1 (8.3)	-	5 (27.8)	-	-	-	1 (8.3)
No response to difficulties in relationships	-	-	-	-	-	-	-	10 (83.3)

SD, absence of the sexual dysfunction; SD +, presence of the sexual dysfunction.

patients (Table 4). This study did not have as objective to describe the report of the partners regarding the sexual activity.

## DISCUSSION

Groups 1 and 2 differed somewhat with respect to their academic training and professional activities which seems to reflect the specific difficulties encountered by epileptics, as already identified by Fiordelli et al.<sup>17</sup>, Dodrill et al.<sup>18</sup>, Souza<sup>11,19</sup>. In keeping with the findings of Mattson & Cramer<sup>20</sup>, Toone<sup>21</sup>, Demerdash et al.<sup>22</sup>, and Silveira<sup>4</sup>, SD was more frequent in the epileptic group.

The etiology of SD in epilepsy involves various aspects related to biological, iatrogenic and psychosocial factors. In our subjects, SD was not related to the age of seizure onset or to the frequency and type of epilepsy or to the medication being used. Research on the duration of the illness in males and females suggests that a long history of illness could result in sexual alterations<sup>22</sup>. The patients involved in our study were all chronic epileptics and further considerations regarding the duration of epilepsy would require a comparison with a group(s) of recent epileptic.

Epileptic individuals with TLE were more susceptible to SD. This reinforces the importance of limbic structures (temporo-medial) in regulating sexual behavior<sup>1,2,7,22</sup>.

Table 4. Significance of seizures by sex and sexual dysfunction.

	Males		Females	
	SD -	SD +	SD -	SD +
	Freq - (%)	Freq - (%)	Freq - (%)	Freq - (%)
General psychosocial difficulties	10 (62.5)	11 (91.7)	12 (85.7)	11 (61.1)
Losses (job, health, family)	6 (37.5)	5 (41.7)	7 (50.0)	3 (16.7)
Feelings (insecurity, preoccupation, low esteem, etc.)	5 (30.3)	8 (66.7)	7 (50.0)	11 (61.1)
Significance of disease and abnormality	8 (50.0)	7 (58.3)	9 (64.3)	9 (50.0)

SD - absence of the sexual dysfunction; SD +, presence of the sexual dysfunction.

Psychological and social factors very probably help to bring about sexual alterations in patients suffering from a chronic disease such as epilepsy<sup>6,23</sup>. In this case, anxiety and depression were the most significant factors. The trace-anxiety measurement determines the state of anxiety felt in the face of threatening situations<sup>12</sup>. Epileptics faced with unexpected seizures<sup>24,25</sup>, the consequences of the disease and the use of drugs, which they see as a stigma, and the feeling of what they can or cannot do, tend to develop feelings of fear, insecurity, and dependence<sup>26</sup>. This condition may be responsible for the high trace profile found in this group.

On the other hand, psychosocial difficulties such as social exclusion, job difficulties and difficult sexual relationships could contribute to forming a negative self-concept. This in turn could reinforce the isolation, which would worsen self-rejection and self-criticism.

To the epileptic, epilepsy signifies a series of losses in health and employment also, feelings of insecurity, low self-esteem, as well as dependence and rejection by others. Epilepsy also signifies illness and abnormality which reinforce the feelings of being different and of self-depreciation. There is a prevalence of the depression in the cases in which the seizures are secondarily generalized, mainly when correlated to the duration of the disease, intractability and poly medication. The perception of the lack of control over the disease is the variable that explains that even low frequencies of seizures are followed by emotional alterations and psychosocial deficits<sup>27</sup>. Baker et al.<sup>25</sup> also identified the perception of the subject of the seizures severity to understand the relation between epilepsy and psychosocial functioning.

The anxiety and depression were not related to TLE shows that these symptoms seem to be reactive and are related to the significance the individual gives to his illness. The relationship found in this study between the perception of seizures and the emotional state, strengthens the argument that internal contingencies arising from negative affective-cognitive evaluations control these emotional responses in chronic diseases. Anxiety and depression appeared together with sexual alterations and seem to have an influence on this condition. Anxiety, depression, low self-esteem, dependence and immaturity as a result of the seizures could lead to some individuals avoiding situations that call for affective-sexual involvement<sup>6,7</sup>.

Epileptics who have experienced situations that were accompanied by emotional discomfort and who have attributed these feelings to their own inability to adjust because they are "ill" probably feel incapable of playing relational roles and, as a result, they avoid affective-social and sexual involvement. These individuals often find themselves in a conjugal relationship where they create a non-functional sexual system because they see themselves as incapable.

In this study, the dysfunctional individuals showed more negative affective responses than did functional subjects and more dissatisfaction with sexual activities. Morrel<sup>23</sup> reported a study where women with epilepsy showed significant dissatisfaction that impaired the quality of their relationship. In contrast, non epileptic patients report overall satisfaction with their sexual functioning. Abrahamson et al.<sup>28</sup> and Barlow<sup>29</sup> state that an inadequate self-perception, an inadequate perception of the partner, or furthermore inadequate responses brought about by anxiety and depression could result in a vicious cycle whereby a sexual difficulty is created and maintained. We know how much psychological mechanisms affect physiological reactions by limbic structures, concept reinforced by Morrel<sup>23</sup>.

All of the psychological elements that can interfere in a sexual response can behave in an indiscriminate manner in individuals with or without epilepsy, but in the case of epileptics, it appears that the negative-subjective attribution related to "being sick" produces certain behavioral problems that interfere with the sexual response. Satisfaction and sexuality were better in operated epileptics free of the seizures<sup>30</sup>.

In this study, dysfunctional epileptics related their lack of response to a health problem and to negative self-esteem. For those without this pathology, SD was associated with relationship problems. If the physical effects of epilepsy or of the drugs used to treat it are considered together with the

psychological effects resulting from personality characteristics, or with the individual's sexual history and the partner's reactions, we may be better able to explain SD.

Our data suggest that an interaction between organic variables, personality traits and personal experiences make the individual predisposed to alterations in sexuality. Further studies are required in order to verify the magnitude of these functional relations, above all with a bigger number of subjects sample where the sexual behavior of men and women could be better assessed.

**Acknowledgment** - We gratefully acknowledge the help of Helymar da Costa Machado – Post-Graduate in Statistics (IMECC-UNICAMP).

## REFERENCES

- Herzog AG, Seibel MM, Schomer DL, Vaitukaitis JL, Geschwind N. Reproductive endocrine disorders in women with partial seizures of temporal lobe origin. *Arch Neurol*, 1986;43:341-346.
- 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;43:347-350.
- 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.
- Silveira DC. Hipossexualidade interictal em homens epilépticos. Tese de Doutorado, UNICAMP, Campinas, 1994.
- Morell MJ, Guldner GT. Self-reported sexual function and sexual arousability in women with epilepsy. *Epilepsia* 1996;37:1204-1210.
- Morrell MJ, Sperling, MR, Stecker M, Dichter MA. Sexual dysfunction in partial epilepsy. *Neurology* 1994;44:243-247.
- Morrell MJ. Sexual dysfunction in epilepsy. *Epilepsia* 1991;32(Suppl 6):S38-S45.
- Thorne FC. Scales for rating sexual experiences. *J Clin Psychol* 1966;22:404-407.
- Cavallieri A, Gikovate F, Okawara H, et al.. Hábitos e atitudes sexuais dos brasileiros. São Paulo: Cultrix, 1983.
- Fenwick PBC, Toone BK, Weller MS. Sexual behaviour in a centre for epilepsy. *Acta Neurol Scand*, 1985;71:428-435.
- Souza EAP. Ansiedade na disfunção sexual em epilépticos. Tese de Doutorado; UNICAMP, Campinas, 1995.
- Spielberger CD, Gorsuch RL, Lushene RE. Manual for the state-trait anxiety inventory. Palo Alto, California: Consulting Psychologist Press, 1970.
- Biaggio AM, Natalício D, Spielberger CD. Desenvolvimento da forma experimental em português do Inventário de ansiedade-traço-Estado (IDATE). *Arq Bras Psic Apl*, 1977;29:31-44.
- Beck AT. Assessment of depression: the depression inventory. Psychological measurement in Psychopharmacology. *Med Probl Pharmac Psychiatry*, 1974;7:151-169.
- Ferreira MC. Inventário de depressão Beck, adaptação brasileira. *Boletim Cepa* 1995; 25-32.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4Ed. Washington DC: American Psychiatry Association, 1994.
- Fiordelli E, Beghi E, Bogliun G, Crespi V. Epilepsy and psychiatry disturbance. *Br J Psychiatry* 1993;163:446-450.
- Dodrill CB, Breyer DN, Diamond MB, Dubinsky BL, Geary BB. Psychosocial problems among adult with epilepsy. *Epilepsia*, 1984;25:168-175.
- Souza EAP. Incidência de stress no período pré-menstrual em mulheres epilépticas. Dissertação de Mestrado, PUCAMP, Campinas, 1988.
- Mattson RH, Cramer JA. Epilepsy, Sex hormones and epileptic drug. *Epilepsia*, 1985;26(Suppl.1):S40-S51.
- Toone BK. Sexual disorders in epilepsy. In: Pedley TA, Meldrum BS (eds). *Recent Advances in Epilepsy*. Edinburg: Churchill Livingstone, 1986:233-259.
- Demerdash A, Shaalan M, Midani A, Kamel F, Bahri M. Sexual behavior of a sample of females with epilepsy. *Epilepsia*, 1991;32:82-85.
- Morrell MJ. Effects of epilepsy in women's reproductive health. *Epilepsia* 1998; 39(Suppl 8):S32-S37.
- Smith DF, Baker GA, Dewey M, Jacoby A, Chadwick DW. Seizure frequency, patient-perceived seizure severity and the psychosocial consequences of intractable epilepsy. *Epilepsy Res*, 1991;9:231-241.
- Baker GA, Smith DF, Dewey M, Jacoby A, Chadwick DW. The initial development of a health related quality of life model as an outcome measure in epilepsy. *Epilepsy Res* 1993;16:65-81.
- Albuquerque M, Campos CJR. Epilepsy and anxiety. *Arq Neuropsiquiatr*, 1993;51:313-318.
- O'Donoghue MF, Goodridge DM, Redhead K, Sander JW, Duncan JS. Assessing the psychosocial consequences of epilepsy: a community-based study. *Br J Gen Pract* 1999; 49:211-214.
- Abrahamson DJ, Barlow DH, Sakheim DK, Beck JC, Athanasian R. Effects of distraction on sexual responding in sexual functional and sexually dysfunctional men. *Arch Sex Behav*, 1985;14:361-371.
- Barlow DH - Causes of sexual dysfunction the role of anxiety and cognitive interference. *J Consult Clin Psychol*, 1986;54:140-148.
- Christianson AS, Silfevenius H, Saisa J, Nilson M. Life satisfaction and sexuality in patients operated for epilepsy. *Acta Neurol Scand* 1995; 92:1-6.