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# The relationship between sexual health and personality type in women with epilepsy

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## Abstract:

**BACKGROUND:** Sexual health in the development of the human personality, personal, and social health and in achieving to comfort plays an important role. Women with epilepsy are at high risk of sexual dysfunction, which has a multifactorial etiology. This study is aimed to investigate the correlation between the sexual function of women with epilepsy and personality factors.

**MATERIALS AND METHODS:** this cross-sectional study was conducted on 100 women with epilepsy referred to selected centers in Tehran university of medical sciences by using continuous and availability sampling method between January and March 2014 (Iran) and evaluated with women's sexual function index questionnaire female sexual function index and NEO-five-factor of personality inventory. Data were analyzed using SPSS software version 16 and Pearson correlation test.

**RESULTS:** The mean sexual function overall score in participations was  $23.33 \pm 2.82$  there was a significant negative correlation between neuroticism and sexual function ( $P = 0.00$ ,  $r = -0.03$ ) and was significant positive correlation between personality traits as extraversion ( $P = 0.00$ ,  $r = 0.63$ ), agreeableness ( $P = 0.008$ ,  $r = 0.26$ ) and conscientiousness ( $P = 0.04$ ,  $r = 0.20$ ) and openness to new experiences ( $P = 0.03$ ,  $r = 0.21$ ) and sexual function in women with epilepsy.

**CONCLUSIONS:** Results indicate that the personality traits can affect on sexual health and sexual function of women with epilepsy. Therefore, it is recommended that health-care providers with assess personality factors in women with epilepsy as a prognostic factor, take steps to prevent sexual dysfunction.

## Keywords:

epilepsy, personality factor, sexual function, women

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## Introduction

Sexual health in the development of the human personality, personal and social health and in achieving to comfort plays an important role.<sup>[1]</sup> Women are the core of energy in the family; as a result, women's health is effective in terms of generating energy and dynamism in the family and reflecting it in society. Therefore, it should recognize the factors that cause women's physical and emotional problems and identify ways to prevent them, so that women's health can be promoted. One of the

important factors in women's health is the recognition of normal and abnormal sexual function.<sup>[2-3]</sup> One of the most important factors of sexual dysfunction is chronic illness.<sup>[4]</sup> In general, chronic illness is seen as an unfortunate event in life that can change the way families react and interact. Chronic disease causes emotional and physiological changes that are especially seen in women with chronic disease. Epilepsy is one of the most common disorders of the nervous system with the prevalence of 5–10/1000 people.<sup>[5]</sup> Epilepsy is a significant chronic neurologic disorder characterized by episodes of the seizure (of various types), which

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generally require lifelong management with medication. Sexual dysfunction associated with epilepsy is not yet completely understood and epilepsy is a complex disease-causing several downstream pathological alterations which may need further exploration and treatment. One manifestation of the disease includes endocrine disorders in men and women which influences the reproductive system.<sup>[6]</sup> Women with epilepsy are at higher risk for sexual dysfunction than persons without epilepsy.<sup>[1]</sup>

In numerous studies, the prevalence of sexual dysfunction in women with epilepsy in the range of from 14% to 50% was reported<sup>[6,7]</sup> but its prevalence in Iranian women with epilepsy is unknown. Sexual dysfunction in women with epilepsy including disorder of sexual desire, sexual arousal disorder, orgasmic disorders, and sexual pain.<sup>[8]</sup> The most common of sexual problems in women with epilepsy including vaginismus, dyspareunia, decrease of vaginal lubrication during intercourse.<sup>[9]</sup>

Data on sexual problems in people with epilepsy are limited. Although two studies reported reduced rate of sexual problems, or even better sexual functioning, in people with epilepsy nevertheless, there seems to be agreement that sexual problems occur more frequently in epilepsy patients than in the general population. Two further studies report no significant differences regarding sexual functioning between people with epilepsy and controls. The etiology of sexual dysfunction in epilepsy is multifactorial<sup>[10]</sup> including endocrinological, neurological, psychological, pharmacological, and social factors that can affect women's quality of life because decrease in sexual activity and adversely affect self-esteem and relationships of couples.<sup>[11]</sup> 50%–30% people with epilepsy during their illness suffer from psychological disorders.<sup>[4]</sup> Among the most common factors affecting psychological health, personality is the most important factor.<sup>[12]</sup> The most common behavioral symptom in Epilepsy is personality change.<sup>[4]</sup> Personality change in epilepsy is a chronic syndrome that the onset of behavioral change follows the onset of seizures.<sup>[13]</sup> Personality changes caused by epilepsy can have positive and negative effects on sexual health patients. So that neuroticism personality trait is correlates with negative body image, low sexual satisfaction.<sup>[14]</sup>

On the other hand, the study of Swinkels showed that increased neuroticism in women with epilepsy associated with depression and anxiety.<sup>[15]</sup> Also in other studies, patients with depression and anxiety symptoms frequently suffer from sexual problems.<sup>[16]</sup> In a study that was performed on 49 patients with epilepsy, there was a significant negative correlation between neuroticism and sexual function overall score and domains of desire, vaginal lubrication and

dyspareunia scores. While was observed a significant positive correlation between agreeableness, openness to experiences and conscientiousness, and sexual function overall score.<sup>[17]</sup> By contrast, the results of another study on healthy women showed that three of the characters neuroticism, extraversion, and openness to experiences is associated with sexual dysfunction.<sup>[18]</sup> Human sexuality is considered as one of the most important aspects of reproductive health and quality of life. Sexual health is a part of reproductive health that has been expressed as a need and strategy to achieve the Millennium Development Goals. Good sexual health is important for individuals and therefore for society. Sexual health is a situation in which couples have a healthy, appropriate relationship and benefit from sexual carpentry, so that their physical, mental and behavioral condition is desirable and indicates a kind of harmony, love and affection in married life<sup>[19]</sup> and Sexual dysfunction is defined as a permanent or recurrent decrease in sexual desire, a persistent or recurrent decrease in sexual arousal, pain during intercourse, and the presence or difficulty or inability to reach orgasm. The American Psychiatric Association Diagnostic and Statistical Manual define sexual dysfunction as a sexual dysfunction or psychophysiological change in the sexual response cycle that causes distress and personal problems.<sup>[20-23]</sup> Considering that sexual health and sexual function have an important role in the quality of life and since no study has been conducted about sexual function of women with epilepsy and association it with personality traits in Iran. This study aimed to investigate the correlation between the sexual function of women with epilepsy and personality factors.

## Materials and Methods

This cross-correlation study was conducted on 100 women with epilepsy referred to selected centers in Tehran university of medical sciences including Imam Khomeini hospital, Rasool Akram Hospital and Iran epilepsy foundation by using continuous and availability sampling method between January and March 2014 (Iran). Inclusion criteria were women with epilepsy within the range of 45–18 years, married, having at least read and write, at least 1 year has passed from the onset of epilepsy, good physical and mental condition, having sexual activity in the last 6 months, were not pregnant or lactating, lack of drugs effect on the sexual function, the lack of alcohol and smoking, not having other chronic diseases and partner without sexual dysfunction. The study was approved by the Tehran University of Medical Sciences Ethics Committees and all subjects gave their informed consent for participation. The subjects were free to participate in the study.

## Instrument

Data were collected using the demographic information questionnaire, female sexual function index (FSFI), and NEO five-factor inventory (NEO-FFI). Questionnaires were completed by subjects at the time specified.

Demographic information questionnaire consisted of 6 items about demographic data (age patient, number of children, length of the marriage, education level, job, economic state) and 5 items about clinical data (type of epilepsy, duration of illness, frequency of seizure during last month, the type and number of the antiepileptic drug).

FSFI is a brief self-reporting instrument to evaluate key domains of female sexual function. This standardized questionnaire is divided into six parts separately for evaluating six different domains of the female sexual function using 19 questions: two focused on sexual desire, four on sexual arousal, four on vaginal lubrication, three on orgasm, three on dyspareunia, and three screening satisfaction with sexual life. The minimum and maximum total scores are 1.2 and 36 points. Higher scores indicate better sexual function. The reliability of this scale has been reported 0.70 in Iran<sup>[21]</sup> and 0.89 in foreign study.<sup>[22]</sup>

The NEO FFI was used to measure five main personality traits including neuroticism, extraversion, agreeableness, openness to new experiences, and conscientiousness that was designed by Costa and McCrae. In this questionnaire, the answers are scored based on Likert from strongly disagree (0) Disagree (1), no idea (2) agree (3), strongly agree (4). The range of scores for each factor is between 0 and 48.

The validity of NEO FFI in the study of Costa and McCrae for five factors of neuroticism, extraversion, agreeableness, openness to new experiences and conscientiousness has been reported 0.85, 0.78, 0.90, 0.87, and 0.83.<sup>[19,24]</sup> Cronbach alpha coefficients for five factors of N, E, O, A and C has been reported 0.83, 0.92, 0.88, 0.94, and 0.79 in Iran.<sup>[13]</sup> To assess the validity of questionnaires was used the method of content validity. The data were processed using SPSS software version 16 (IBM, SPSS Inc., Chicago, Illinois, USA) and analyzed via statistical test Pearson's correlation coefficient. The value of  $P < 0.05$  was considered as significant.

## Results

### Demographic and clinical characteristics

In this study, 100 women with epilepsy married ranging from 23 to 48 years in age (Average =  $35.58 \pm 0.63$  years). About half of subjects had one child (37%), most subjects were housewives (92%), Diploma or middle

school graduates (51%) and had moderate economic situation (75%). Of these patients, 75% had generalized epilepsy and 25% had focal epilepsy. The average duration of epilepsy was  $17.56 \pm 9.21$  years. The seizure frequency 58% of subjects had no seizure during the last month. The most subjects treated with drugs inducing hepatic cytochrome P450 enzyme (49%) and 43% of subjects received 2 antiepileptic drugs [Table 1].

### Sexual function

The average FSFI score for all women was  $23.33 \pm 2.82$  points that According to the ranging of sexual function overall score (from 2 to 36), sexual function of participation was moderate. When the subscores for particular phases of sexual function were compared, the lowest average score was obtained for desire ( $3.36 \pm 0.09$ ) and sexual satisfaction ( $2.84 \pm 0.89$ ). The average of FSFI overall

**Table 1: Frequency of demographic and clinical characteristics**

Variables	Frequency (%)
Length of marriage (year)	
<12	50 (50)
12-22	40 (40)
>22	10 (10)
Education level	
Read and write	11 (11)
Elementary	25 (25)
Diploma	51 (51)
Student at the university	13 (13)
Job	
Employed	8 (8)
Housewife	92 (92)
Epilepsy type	
Focal	25 (25)
Generalized	75 (75)
Duration of illness	
<10	27 (27)
10-25	52 (52)
>25	21 (21)
Frequency of seizure during last month	
0	58 (58)
1	23 (23)
2	5 (5)
$\geq 3$	14 (14)
Type of antiepileptic drug	
Induced cytochrome p450	49 (50)
Inhibitor cytochrome p450	20 (20)
Without affecting cytochrome p450	11 (11)
Induced and inhibitor cytochrome p450	17 (17)
None drug	3 (3)
Number of antiepileptic drug	
0	3 (3)
1	37 (37)
2	43 (43)
$\geq 3$	17 (17)
Total	100 (100)

scores for women with FE ( $23.72 \pm 2.11$ ) was higher IGE ( $23.20 \pm 3.01$ ) but found no statistically significant differences between patients with FE and those with IGE ( $P = 0.14$ ) [Table 2].

### Personality traits

Comparison of mean scores of personality traits showed the lowest and highest average score in women with epilepsy was obtained for neuroticism trait ( $24.5 \pm 1.60$ ) and conscientiousness trait ( $37.4 \pm 0.70$ ) [Table 3].

Association between five factors of NEO-FFI personality and subject sexual function calculated [Table 4]. Results this table according to the Pearson correlation coefficient showed that there is a significant correlation between FSFI and personality traits scores. So that, was observed significant negative correlation between Neuroticism trait and overall score of sexual function ( $P = 0.00$ ,  $r = -0.03$ ) and significant positive correlation between personality traits as extraversion ( $P = 0.00$ ,  $r = 0.63$ ), agreeableness ( $P = 0.008$ ,  $r = 0.26$ ), and conscientiousness ( $P = 0.04$ ,  $r = 0.20$ ) and Openness to new experiences ( $P = 0.03$ ,  $r = 0.21$ ) with overall score of sexual function in women with epilepsy [Table 4]. Furthermore, the present study tested correlations between the five personality factors and sexual satisfaction in participation. The results are presented in Table 5.

## Discussion

The aim of this study was to determine the sexual function in women with epilepsy and correlation it's with personality traits. This study based on FSFI showed the mean of sexual function in subjects was  $23.33 \pm 2.82$ . So that, according to the range of sexual function overall

score (2–36), sexual function of subjects was moderate. The mean of FSFI overall score in this study is consistent with Zelena Study in Czech ( $28.2 \pm 6.2$ ) and is more than Herzog study ( $17.5 \pm 5.5$ ).<sup>[2,4]</sup> In our study, the lowest average score was obtained for sexual desire and sexual satisfaction. Probably is correlated to the age of subjects. Because most of the subjects were older than 40 years. In Morrell's study in Columbia reported that the lowest score was related to sexual arousal.<sup>[16]</sup> In contrast to the Molleken study, we observed that the highest score in subjects was obtained for conscientiousness trait. While in early study in Germany found low openness to new experiences and high neuroticism in epilepsy patients.<sup>[17]</sup> Future studies should design with more sample size for assessment of personality traits in epilepsy women. In this study, we observed a significant negative correlation between neuroticism trait and sexual function. In other words, neuroticism personality was associated with reduced FSFI overall score in women with epilepsy. While there was a significant positive correlation between another factor and FSFI overall score. As a result, these factors (neuroticism personality) are associated with a better sexual function that is consistent with the Molleken study.<sup>[17]</sup> In a study on patients but without epilepsy, extraversion personality was related to positive body image, increased drive, more sexual experience and better relation to sexuality. Furthermore, there was no correlation between the sexual quality of life and neuroticism and openness to new experiences factors.<sup>[14]</sup> In another study on healthy women, three factors of personality neuroticism, extraversion, and openness to new experiences were associated with sexual dysfunction.<sup>[18]</sup> The reason for this contrast is probably the differences and complexity of personality features.

**Table 2: Descriptive analysis for sexual function women with epilepsy**

Domains of Sexual function	Mean±SD	Range of scores
Desire	3.36±0.09	1.2-6
Arousal	4.05±0.08	0-6
Vaginal lubrication	4.51±0.11	0-6
Orgasm	3.64±1.18	0-6
Dyspareunia	4.87±0.11	0-6
Sexual satisfaction	2.84±0.89	0.8-6
Total sexual function	23.33±2.82	2-36

SD=Standard deviation

**Table 3: Descriptive analysis for personality traits**

Personality traits	Mean±SD
Neuroticism	24.5±1.60
Extraversion	29.7±0.71
Agreeableness	26.5±0.60
Openness to new experiences	32.6±0.76
Conscientiousness	37.4±0.70

SD=Standard deviation

**Table 4: The correlation between personality traits and overall score of sexual function**

Sexual function personality traits	Correlation coefficient (r)	Significant (P)
Neuroticism	-0.036	<0.001
Extraversion	0.364	<0.001
Agreeableness	0.263	<0.001
Openness to new experiences	0.212	0.03
Conscientiousness	0.203	0.04

Correlation is significant at the  $P<0.05$  level

**Table 5: The correlation between personality traits and sexual satisfaction**

Sexual satisfaction personality traits	Correlation coefficient (r)	Significant (P)
Neuroticism	-0.205	0.04*
Extraversion	0.245	0.01*
Agreeableness	0.208	0.03*
Openness to new experiences	0.110	0.27
Conscientiousness	0.122	0.22

\*Correlation is significant at the  $P<0.05$  level

We observed a significant negative correlation between Neuroticism trait and sexual satisfaction and a significant positive correlation between extraversion, agreeableness. Molleken showed that the neuroticism had negative influence ( $P < 0.001$ ) and agreeableness ( $P = 0.04$ ), extraversion ( $P < 0.001$ ) and conscientiousness ( $P = 0.04$ ) had positive influence on sexual satisfaction<sup>[17]</sup> that is consistent with our study results. Since the character of neuroticism or aggression is associated with features such as sad, angry and feel guilty in sexual relation, as a result this factor can lead to sexual dissatisfaction.<sup>[24-27]</sup> Personality traits may cause depression and anxiety in epilepsy patients.<sup>[15]</sup> On the other hand, anxiety and depression are usually associated with reduced sexual quality of life.<sup>[16]</sup> We assayed the direct effect of personality factor on sexual function in women with epilepsy by excluding patients with a history of psychological disorder.

On the other hand, the results of the study of Firoozi et al., which was conducted under the title of "The relationship between personality traits and sexual self-esteem and its components," showed a significant relationship between neuroticism personality dimension, extroversion, agreeableness, and conscientiousness with sexual self-esteem. The relationship between openness with sexual self-esteem was not significant. In addition, based on the results of the stepwise regression model, three dimensions of agreeableness, neuroticism, and extraversion could predict 27% of the women's sexual self-esteem variance. As a result, individuals' sexual behaviors and sexual function can be affected by personality traits, and since epilepsy alters individuals' sexual function, both the epileptic component and personality traits affect individuals' sexual function.<sup>[28]</sup>

The large numbers of epilepsy women suffer from low sexual quality of life. Furthermore, personality changes in these patients may have negative effects on their sexual life.<sup>[2,29,30]</sup> This study found that women with epilepsy have low score in neuroticism trait and since higher score in this factor is associated with decrease in sexual quality of life. Furthermore, the moderate score of sexual function subjects can be caused by a low score in neuroticism. The findings of our study show the importance and influence of personality traits on sexual function in women with epilepsy which indicates that personality traits are good predicting factors for sexual dysfunction. The health personnel should pay attention to sexual problems women epilepsy and personality traits as a factor effecting on sexual function.

In this study, the effect of neo-personality factors as one of the psychological factors affecting sexual function in women with epilepsy was investigated. Therefore, it is suggested that a study be performed to investigate the

relationship between other psychological factors such as depression, anxiety, and sexual function in patients with epilepsy.

## Conclusions

The findings of this study showed that neurotic personality factors can predispose women with epilepsy to sexual dysfunction. While the four personality factors of openness to experiences, extraversion, agreement, and conscience can be associated with better sexual performance in women with epilepsy. Therefore, health-care providers are recommended to determine the necessary strategies for screening, counseling, and timely referral of individuals to relevant specialists to prevent sexual dysfunction by identifying personality factors as a predictive factor.

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## Conflicts of interest

There are no conflicts of interest.

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