

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

185,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Marriage of Epileptic Patients

Azra Alajbegovic, Jasminka Djelilović-Vranić,
Salem Alajbegović and Lejla Alajbegović

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/58635>

1. Introduction

Epilepsy is a common syndrome. It occurs equally in all countries and in all nations represents a significant social and medical problem [1].

Human beings and their environment are constantly affecting each other, while under the term environment we include social, physical and economic milieu. The main need of people in general, as well as patients with epilepsy is to lead a normal life. The patient must be accepted as a whole person with the inevitable limitations imposed by the disease. Epileptic patients during their life are exposed to a series of related specific social relations from early childhood including relationships with parents, relationships during education, relation to vocational rehabilitation, the ability to drive, and for a variety of activities throughout life. Yet the oldest and biggest handicap is the dilemma of patients with epilepsy related to marriage and parenthood [1,2].

The existence of the disease always results in response of the patients to disease, most often with non-psychotic character such as: mood disorders, certain personality changes that are closely related to relationship patient-society through the following parameters: public attitudes toward epilepsy, social situation of patients outside hospitals, rehabilitation of patients with epilepsy, education of patients and the immediate environment, the problems of vocational guidance, aspects of military doctrine, the ability to drive, ability to be involved in some sports, etc. Therefore, patients with epilepsy, to which is imposed the need “to live with epilepsy”, often react with depression. Dominian et al (1963) found that depression is the most common psychiatric symptom in patients with epilepsy [3].

Depressive reactions are usually of reactive nature and more often present in patients with temporal lobe epilepsy than in patients with other types of seizures. In addition to depression, in response to the disease, also are seen neurotic syndromes and anxiety disorders.

These physiological changes in patients are the result of the complexity of psychosocial factors in relationship patient-environment, while is more significant relationship between the environment to disease and patient than relationship of patients to the disease [4,5].

In addition to responses to the disease that is of reactive character in patients with epilepsy, there is often "accompanying personality disorder" which is usually seen in patients with temporal lobe epilepsy. Changes which are encountered in this group of patients are: reduced ability to adapt, some "stickiness" in behavior, slowed thinking, redundancy in speech, formalism and pedantry, hypertrophic modesty, lability of mood and frequent hypochondria. In emergence of this specific personality profile are associated many factors: the occasional temporal lobe lesions, antiepileptic therapy, social and psychological impacts.

The specificity of the social status of people with epilepsy and attitude of the environment to the epilepsy can be best seen in the context of the attitude of the environment to some other, more serious and severe diseases with significantly greater disability than epilepsy and their better social acceptance than the acceptance of epilepsy. Such patients can, and sometimes do, discover the secret of their illness and from the knowledge of the disease have a certain social, material and other benefits [2,3].

On the other side the patient with epilepsy keeps the disease as "a shameful secret". Fear of seizures in public places restrains their freedom of thought and behavior which leads to avoidance of many life activities with suspicion in regard to marriage and parenthood. Family as a primary community is where the attitude of patients towards themselves, their illness and society is determined [6]. If the family accept the disease and makes an emotional basis for all life activities with frequent monitoring and the possibility of seizure control by medications a patient with epilepsy have a chance to lead a normal life with all its amenities [7]. Kocijan-Hercegonja et al. examined the association between adverse psychosocial factors and variations in the behavior of patients with epilepsy and found that the social status of the family is one of the most important factors in the forming of the personality, as well as the emergence of mental aberrations. Results showed that children with mental aberrations significantly more frequent originate from families from the countryside, from parents farmers and parents of low economic status [8].

The analysis showed that demographic factors: employment and education, as well as treatment with antiepileptic drugs, with accompanying depressive disorder are variables that are significantly associated with QOLIE-31 total score ($p < 0.01$) which makes 64.8% of the variance in QOLIE-31 overall evaluation including seizure severity, comorbid depression and seizure frequency [5,6].

An important factor is the relationship of psychosocial environment and seizures. Reduction in the frequency of seizures can lead to better social adjustment, on the other hand better social opportunities can lead to a reduction in frequency of seizures [9,10,11]. Fear of the consequences of seizures can by itself lead to lowering of the threshold for seizures [12,13].

In relation to marriage and parenthood better psychosocial adjustment in many ways increases the possibility of a patient suffering from epilepsy to get married and make the decision about the offspring [14].

Alstrom (1950) showed that eugenic laws which prohibited a patient suffering from epilepsy to marry and have children did not discouraged mentally healthy patients to marry and have children. Alstrom's study showed that the following parameters significantly reduce the possibility of marriage and fertility:

1. Early onset of the seizures, seizures which began before the age of ten;
2. Mental disorders related to the illness or incurred as a reaction to the disease in terms of organic deterioration of mental function.

In the U.S., Lennox and Mchram in 1963 found that the specific nuptiality in patients with epilepsy is lower than in the general population, especially in patients whose seizures began before the age of ten. In Germany, the eugenic law was declared in 1935. Essen and Moler (1955) determined that the establishment of eugenic laws in Germany prevented patients to establish marital community, but did not significantly influence the fertility of women with epilepsy [7].

Andersen (1972) proved that for most patients with epilepsy hereditary factor is not higher than hereditary factor for other diseases that have a variety of factors in their emergence, such as diabetes considering that it in the same way predetermines marriage and parenthood in patients with epilepsy as for those suffering from diabetes. In Quebec, where there were no eugenic laws that would affect the patients with epilepsy, there are few reports on the social conditions of people with epilepsy. Tomasi and Davidson (1949) found a low rate of married men (33%) among 160 patients. Pond and Gudmston (1966) found that the reduced rate of marriages of male patients compared to women with epilepsy in comparison with the general population. At the Clinic of Neurology at Montreal Dansky Linda, Eva Andermann and Frederic Andermann (1978) found a reduced specific nuptiality in patients with epilepsy. Social handicap of men with epilepsy is higher because woman can stay in the house, living with their illness separated from the environment. A man has to deal with the problems of employment, to obtain the material basis for himself and his family. Therefore, the ability of men suffering from epilepsy to devise the marriage and to get married are significantly lower than in women with epilepsy as it is more unlikely that men with epilepsy will have offspring [14].

It's common cohabitation of women with epilepsy, as well as the readiness of having children in these communities. The diversity of male and female pattern is partly conditioned by psychosocial factors, in part probably this has a background in often found and described disturbed sexuality of patients with epilepsy. After discontinuation of bromide therapy it was observed that many patients with temporal lobe epilepsy continue to have reduced sex drive in terms of hypopotence and impotence, as well that in patients with temporal lobe epilepsy after temporal lobectomy sexual activity and sexual interest is restored. In some patients is also described hyper sexuality, with other changes in the quality of sex drive like transsexualism, fetishism and homosexuality [15,16,17].

2. Goal

The goals of this research were:

- 1. Determine the marital status in the random sample of patients with epilepsy with special reference to the marriage in relation to the age when the illness started and determine how the future spouses were informed about the disease in cases when the disease occurred before marriage.
- 2. Determine the difference in relation to marriage status between men and women with epilepsy.
- 3. Determine correlations between significant social parameters of marriage and epilepsy as well as patient’s profession, marital status, level of education, also marital status according to EEG findings, marital status according to the therapeutic responsiveness, marriage duration according to the type of epileptic events, marriage duration according to therapeutic responsiveness, duration of marriage according to the psychological changes.

3. Material and methodology

Material for our work represented a group of 98 patients suffering from idiopathic epilepsy with different epileptic manifestations that were treated on outpatient basis at the Neurology Clinic, Clinical Center of the University of Sarajevo. The diagnosis of epilepsy was certain, previously confirmed during clinical treatment. Patients were followed as outpatients for years through Dispensery for epilepsies. For each patient was made a special questionnaire with 40 questions to obtain targeted information about epilepsy, marriage and parenting.

3.1. Marriage of epileptic patients

i. Basic patient data

1. Last name, father’s name, name

2. Place of birth

3. Place of residence (ZIP code and address)

1. Sex: Male (1), Female (2)

2. Year of birth

3. Education: without formal education (1), grammar school (2), high school (3), higher (4), college (5), unknown (6)

4. Profession: workman (1), craftsman (2), clerk (3), farmer (4), pupil (5), student (6), retired (7), housewife (8), unknown (9)

5. Employed: in profession (1), other workplace (2), unknown (3)

6. Employment duration

ii. Basic data on epilepsy

7. Type of seizures: primary generalized seizures (1), partial seizures
with or without generalization (2), seizures with
complex symptomatology (3), combined
seizures (4), unknown (5) ☐
8. Specific heredity: mother (1), father (2), father's relatives (3),
mother's relatives (4), unknown (6) ☐
9. Etiology: idiopathic (1), reliable data on birth trauma
(2), CNS infectious diseases (3), data on head
injury with or without loss of consciences (4),
existence of so called "macro factors" (5), unknown
(6) ☐
10. First epileptic manifestation: at age of ☐
11. Last epileptic manifestation: at age of ☐
12. Constitution: leptos (1), dysplastic (2), athletic (3), picnic (4),
combined (5) ☐
13. Neurology findings: with focal disturbances (1), without focal distur-
bances (2), unknown (3) ☐
14. Mental changes: personality changes (1), signs of organic
psychosyndrome (2), neurotic disturbances (3),
oligophrenic (4), psychoses (5), without mental
disturbances (6), unknown (7) ☐
15. EEG finding: not recorded (1), focal specific changes (2),
generalized specific changes (3),
normal (4), unknown finding (5), unknown whether it was
recorded (6) ☐
16. Frequency of epi manifestation: daily (1), weekly (2), monthly
(3), every couple months (4), annually (5), in several
years (6), unknown (7) ☐
17. Treatment: on regular basis (1), inordinately (2), not treated (3), unknown
(4) ☐
18. Therapy: barbiturates (1), hydantoins (2), barbiturates and
hydantoins combined (3), diones (4),
ethosuximid (5), Primidon (6), Tegretol (7),
Hydanphen and Tegretol combined (8),
unknown (9) ☐
19. Therapeutic reactivity: good – without seizures (1), average –
rare crises (2), poor – crises frequent as without therapy
(3) ☐
20. Family attitude: interested (1), not interested (2), denial
(3), unknown (4) ☐

iii. Marriage

21. Marital status: married (1), single (2),
divorced (3), widowed (4),
extramarital community (5), unknown
(6)

22. Previous marriages: one (1), two (2), three (3), extramarital
community (4), unknown (5)

23. Age of marriage:

24. Marriage: before illness is diagnosed (1), after the illness was diagnosed
(2)

25. Spouse knew about the disease: yes (1), no (2), unknown
(3)

26. Spouse: health (1), have epilepsy (2), organic somatic or
neurology patient (3), suffers from some other
mental disorder (4), unknown
(5)

27. Did the spouse mothers or fathers relatives or parents
have epilepsy: yes (1),
no (2), unknown (3)

28. Duration of marriage: in years:

29. Emotional relationships in marriage: harmonious (1), average (2), poor (3),
unknown (4)

30. Household members: only married couple (1), with children (2),
with parents (3), single (4), unknown
(5)

After data collection we performed the statistical analysis.

4. Results

The results are presented in tabular form.

AGE OF FIRST EPI EVENT	Average age when patient got married	Standard deviation (S.D.)
Under 20 years	21.2 yrs.	2.95
20 – 29 years	22.5 yrs.	3.70
30 – 39 years	23.0 yrs.	3.69
40 and older	25.0 yrs.	7.36

Table 1. Average age when patient got married according to age of the first epi event

FREQUENCY OF EPI EVENTS	TOTAL ALL PATIENTS		MARITAL STATUS					
			MARRIED		SINGLE		OTHER	
TOTAL	100	100%	65	100%	24	100%	11	100%
1. Daily	10	100%	6	92%	1	42%	3	273%
2. Weekly	14	140%	5	77%	7	292%	2	182%
3. Monthly	21	210%	19	292%	1	41%	1	91%
4. Every couple months	19	190%	12	185%	5	208%	2	182%
5. Annual	8	80%	5	77%	3	125%	-	-
6. Several years	27	270%	17	262%	7	292%	3	272%
7. Unknown	1	10%	1	15%	-	-	-	-

Table 2. Frequency epi events and marital status

MARITAL STATUS	Gender	No. of patients	Average age of first EPI	Standard deviation
			event, years	(S.D.)
TOTAL	Total	98	25.1	12.98
	Male	52	26.9	13.77
	Female	46	23.1	11.71
MARRIED	Total	63	27.7	11.63
	Male	37	28.2	11.80
	Female	26	27.0	11.56
SINGLE	Total	24	14.0	6.38
	Male	11	13.7	6.31
	Female	13	14.2	6.69
OTHER	Total	11	34.1	15.81
	Male	4	50.3	7.95
	Female	7	24.9	11.05

Table 3. Average age of patients when they had first epi event

AGE OF FIRST EPI EVENT	TOTAL		MARITAL STATUS					
			MARRIED		SINGLE		OTHER	
TOTAL	100	100%	65	100%	24	100%	11	100%
1. 0 – 9 yrs.	11	11.0%	2	3.1%	8	33.3%	1	9.1%
2. 10 – 19 yrs.	31	31.0%	17	26.2%	12	50.0%	2	18.2%
3. 20 – 29 yrs.	25	25.0%	19	29.2%	4	16.7%	2	18.2%
4. 30 – 39 yrs.	11	11.0%	10	15.4%	-	-	1	9.1%
5. over 40 yrs.	20	20.0%	15	23.1%	-	-	5	45.4%
6. Unknown	2	2.0%	2	3.0%	-	-	-	-

Table 4. Age of first epi event and patient marital status

MARITAL STATUS	TOTAL		Male		Female	
	N	%	N	%	N	%
TOTAL	100	100	53	100	47	100
1. MARRIED	65	65.0	38	71.7	27	57.5
2. SINGLE	24	24.0	11	20.8	13	27.7
3. DIVORCED	9	9.0	4	7.5	5	10.6
4. WIDOWED	1	1.0	-	-	1	2.1
5. UNKNOWN	1	1.0	-	-	1	2.1

Table 5. Sample according to gender and marital status

MARITAL STATUS	Gender	N	Average age in years	Standard deviation (S.D.)	Student t test of difference among average age of men and women
TOTAL	Total	100	39.1	11.18	t = 0.171
	Male	53	39.0	11.30	not significant
	Female	47	39.4	11.05	
MARRIED	Total	65	41.2	9.31	t = 0.463
	Male	38	40.8	9.76	not significant
	Female	27	41.9	8.63	
SINGLE	Total	24	31.8	11.13	t = 2.021
	Male	11	27.4	5.47	Significant at
	Female	13	35.5	13.16	p < 0.01
OTHER	Total	11	43.9	14.36	
	Male	4	54.0	8.39	
	Female	7	38.1	13.88	

Table 6. Average age of the patients according to gender an marital status

Age of first epi event	TOTAL		Age when got married					
			up to 22 years		23 -27 years		28 years and older	
YEARS	75	100	43	57,3	25	33,3	7	9,4
0 – 9 years	3	100	2	66,7	1	33,3	-	-
10 – 19 years	19	100	12	63,2	7	36,8	-	-
20 – 29 years	20	100	12	60,0	6	30,0	2	10,0
30 – 39 years	11	100	6	54,5	4	36,4	1	9,1
40 and older	20	100	10	50,0	6	30,0	4	20,0
Unknown	2	100	1	50,0	1	50,0	-	-

Table 7. Age of first epi event and years when patient got married

Frequency of epi seizures	TOTAL	Marriage duration in years					
		0 – 1	2 – 6	7 – 11	12 – 16	17 and more	Unknown
TOTAL	75	11	9	10	5	37	3
1. Daily	9	4	-	1	1	3	-
2. Weekly	6	2	-	-	-	4	-
3. Monthly	20	1	3	3	2	9	2
4. Every couple months	14	2	1	3	-	8	-
5. Annual	5	-	-	1	-	4	-
6. Several years	20	2	5	2	2	8	1
7. Unknown	1	-	-	-	-	1	-

Table 8. Frequency of epileptic events

Type of epi events	TOTAL	Marriage duration in years					
		0 - 1	2 - 6	7 – 11	12 – 16	17 and more	Unknown
TOTAL	75	11	9	10	5	37	3
1. Primary generalized seizures	42	3	5	7	5	20	2
2. Partial seizure with or without generalization	7	1	2	-	-	4	-
3. Seizures with complex symptomatology	10	3	-	1	-	6	-
4. Combined seizures	14	4	2	2	-	5	1
5. Unknown	2	-	-	-	-	2	-

Table 9. Marriage duration and type of epi events

The difference between the average age of the first epileptic event between married [27.7] and total bachelors/unmarried (14 years) was statistically highly significant. Value of t-test is: $t=7.00$, $p<0.01$. The result shows that the unmarried were significantly younger than married when they had first epileptic event.

The difference between men and women, depending on the average age of life where they had first epileptic seizure was not significant with the value of t-test $t=1.506$.

T-test of the difference significance between the average age of men and women in the group of married is $t=0.463$, and is not significant. In the group of bachelors/unmarried in the total sample, we had 24 (24%) patients with a mean age of 31.8 ± 13.11 years. There was 11 men in this group at average age of 27.4 ± 5.47 years.

Significance of the difference between the average age of men and women in a group of bachelors/unmarried measured by Student's t test show result of $t=2.021$ which was significant at the level $p<0.01$.

The difference between the average age of the married (41.2 years) and a group of bachelors/unmarried (31.8 years) was statistically highly significant, or group of bachelors/unmarried was significantly younger than the group of married. Value of t-test is: $t=3.716$, at the confidence level of $p=0.01$.

We tested the difference between marital status and age at which respondents first had epileptic manifestation in life and came to the result that these differences were highly significant (χ^2 test values: 18.801, $p < 0.01$).

Based on the above data we tested the difference between men and women according to "marital status", the difference is not statistically significant (χ^2 test value is 0.920), which means that between men and women there is no significant difference according to marital status.

We tested the difference between married and unmarried according to the type of epileptic manifestations which was statistically significant. The value of χ^2 test is: $\chi^2=9.313$, $p<0.05$, $DF=3$)

The difference between men and women according to the type of epileptic manifestations was not significant. The value of χ^2 test was 3.839, $DF=3$.

The test of significance between specific focal EEG changes in relation to marital status between married and unmarried is 1.008 which was not significant.

Contingency test between EEG generalized specifically altered and marital status was 0.341 which is also not significant.

According to the results of all three groups of respondents, regardless of marital status, the largest number of patients have generalized specifically altered EEG findings. Testing the significance of differences between married and unmarried according to the proportion of patients with generalized specifically altered EEG findings indicated that the difference was not statistically significant. Value of Student's t-test is: $t=1.008$. Thus there is no significant difference in the proportion of patients with focal specifically altered EEG findings. Value of t-test is: $t=0.341$.

Having in this manner calculated average duration of marriage in relation to the type of epileptic manifestations, we tested the significance of differences in the average duration of marriage of patients with primary generalized seizures (type 1) in relation to other types of epileptic events by Student's t-test and came to the following results:

The difference in the average duration of the marriage between patients with primary generalized seizures (17.4 years) and patients with partial seizures with or without generalization (13.9 years) was not statistically significant (t-test value is: $t=0.850$).

Also, there is no significant difference in the average duration of marriage between patients with primary generalized seizures and patients with seizures of complex symptomatology (Value of t-test is: $t=0.768$)

The difference between patients with primary generalized seizures and patients with combined seizures is significant, but at a lower level of reliability, $t=1.908$, $p<0.10$.

5. Discussion

Progress in medicine over the last century has been accompanied by advances in social and human attitudes in relation to man in general, while it is especially pronounced in some groups of patients, for example, in patients who have epilepsy [18].

The main motive for taking care of these patients is functioning of whole personality which implies besides proper diagnosis, treatment and therapy, also complete social rehabilitation of these patients. It should be noted that "living with epilepsy" means to live with a series of restrictions aimed at protecting these patients. It first refers to the sphere of education, relationship to the patient, education, career choice, limitations in daily life that the disease inevitably brings and restrictions on marriage and parenthood [19,20].

Advice whether the patient with epilepsy should get married or not depends solely on individual decisions. Regardless of epilepsy form the spouse must be informed about the disease and be familiar with it, and make a decision about marrying a person who has epilepsy. It is best that future spouse meet with the doctor who treated his/hers future spouse, and that with enough patience doctor inform both the patient as well as the future spouse on the character of the disease and the limitations that it brings, the possible situations in which they may find themselves, with a special emphasis on providing accurate and useful information in terms of genetic factors [21,22,23].

The existence of laws which was prohibiting marriage to patient with epilepsy has shown that the establishment of such legislation did not discourage mentally healthy patients to marry and have children [14].

Alstrom (1950) proved that in spite of eugenic laws patients with epilepsy get married in Sweden. Lennox and Mchram (1963) found that in the U.S., patients with epilepsy more rarely get married in relation to the general population [14].

Goodmsson (1965) presented the results made in Iceland on marriage of patients with epilepsy and low rate of marriages in patients where the seizures began early in life, in which the seizures were frequent and when personality changes occurred [18].

In our sample, we had 100 respondents, 65 married, 24 unmarried/single, 9 divorced, 1 widowed and one whose marital status was unknown.

In the group of married we had 38 men and 27 women.

Kantardzic et al (1990) on a sample of 5076 respondents, obtained results that differ from ours. In that study 64.4% of the sample were unmarried/single, 13.9% married, 2.3% divorced, 28% widowers, 10.1% in common law marriage and 8.8% unknown [24,25].

The diversity of the results can be explained by the fact that Kantardzic and associates conducted a wide social study at the territory of the Republic of Bosnia and Herzegovina, and that sample covered all age populations of patients in all regions including residents of the Institute for the mentally retarded. In our sample, we had patients who have good social adjustment in relation to the disease and whose treatment through the Dispensary for epilepsy was aimed at increasing the quality of life and social adaptation [24,25].

Our results agree with the results of Schupf and Ottman (1996) which in their study on 863 patients treated by voluntary organizations in cooperation with Neurological Clinic in Montreal, presented findings that male respondents were more likely to be married than women. It should be noted that all subjects in study by Schupf and Ottman were married [26,27].

In respect of occupation among a group of married we had 75 patients: 26 laborers, 4 craftsmen, 20 clerks, 16 retirees and 8 housewives.

According to Kantardzic and colleagues (1990) on a sample of 7698 respondents in the highest percentage were represented students, then laborers, followed by housewives, craftsmen and clerks [24,25].

Also this difference in results can be explained by the size and sample specificity in our study and study conducted by Kantardzic and associates (1990).

In relation to marriage in our results we should indicate that more than half of the respondents were married before the age of 22 years. The exceptions were clerks who entered into marriage after age of 22 years.

Dansky Linda, Anderman Eva and Frederic Andermann (1980) examined the marital status of epileptic patients and fertility of women with epilepsy compared with the fertility of women whose husbands suffering from epilepsy and obtain the results that were previously described in the literature: there is a direct correlation between marital status and age when the first epileptic event in life occurred, and as the first epileptic event occurs later in life the chance that such a person get married and remains in marriage is higher. [14]

Their results are as follows: if the seizures began in the first decade of life the married status among male patients was reduced to 32% from expected with a very significant difference. In the female sample the same authors also found reduced specific nuptiality directly related to the age of first epileptic event occurrence by 58% from expected, which is also important [28,29].

In our sample, we had only 3 patients with the occurrence of the first epileptic event in the first decade of life, of which 2 got married before 22 years of age, and one at age from 23-27 years.

Number of patients with the disease onset in the first decade of life in our sample is so small that these results could not be compared with the results of Dansky, Andermann and Andeemann [14,3].

For patients with onset of the seizures in the second decade of life the men had significantly reduced specific nuptiality, their ratio was 47% of expected. In our sample of 19 patients which had a first epileptic manifestation in the second decade of life, married was all 19 respondents after age of 22 years, so after the first epileptic event. First epileptic event after age of 20 in our sample had 51 patients, 38 is married before 22 years of age, 16 at the age from 23-27 years and 7 after age of 28 years.

In our study, we came to the conclusion that there is a significant difference in the average age of the respondents at age when they get married and age of the first epileptic event. The linear correlation coefficient between the age of the first occurrence of epileptic event and age of marriage amounts to 0.435 and means that for the possibility of marriage an important parameter is the absence or presence of disease. So there is a significant correlation between age of marriage and the occurrence of the first epileptic event.

Dansky and Andermann (1980) determined that in patients with the first seizure after 20 years of age specific nuptiality is not much different than the general population [14].

Our results also show that there is a significant difference between the average age of a total number of married (41.2 years) compared to the average age of the total number of unmarried, or the group of unmarried was significantly younger than the group of married.

Gudmuston (1966) stated that male patients more rarely get married. Dansky and Andermann (1980) showed that the difference between male and female patients is equal. Our results agree with the results of the Dansky and Andermann considering that the difference between men and women according to marital status was not statistically significant, with chi square value for this parameter of 0.920. These results can be explained by significant advances in medicine and epileptology in general, and the changes of attitudes towards patients with epilepsy who do not show mental changes in terms of alteration of personality within nosology entity or the disease with consequent changes in personality [14,18].

Thus, from the current results and literature we have data that women get married more often, or those patients in whom the first epileptic event occurred after 20 years of age, or to say, before the first epileptic event [30,31].

In our sample, we had 53 men and 47 women. The average age of men was 39.0 years and of women 39.4 years.

We had 38 married men, with a mean age of 40.8 years, and 27 married women, with a mean age of 41.9 years.

Dansky and Andermann (1980) tested 100 patients with epilepsy. The average age of the male patients in their sample was 39.3 ± 1.7 years and average age of female was 42.3 ± 1.6 years.

Our results in relation to the age of the male and female patients are comparable with the sample from study conducted by Dansky and Andermann (1980) at the Neurological Clinic in Montreal [14].

In our sample, as well as in a sample from comparative literature there is no significant difference between the average age between genders.

In relation to the etiology the recent division into genuine (idiopathic, cryptogenic) and symptomatic is already largely abandoned. Epilepsy in many ways is idiopathic while the genuine epilepsy can manifest if the hereditary tendency is influenced by some other symptomatology. Basically pathophysiological cause of epilepsy include all that can overcome the polarization balance in groups of nerve cells located at the main afferent-efferent pathways of the brain. On inherited tendencies, level of maturity, location, size, and material cells in focus depends on whether one cause will initiate the crisis-epileptic form of seizure, or a single disorder of polarization balance will cause the second and so on, until the first primarily functional, and then structurally "biochemical focus" does not lead to such balance disorder of irritant and inhibitory processes in the brain that are clinically manifested as epilepsy [32,33,34].

In the group of exogenous factors in our study, we considered:

Birth trauma (reliable data), infectious diseases of the CNS, head injury with or without loss of consciousness, and the existence of "macro factors". Positive heredity in epilepsy in our sample was present in 6.88% of patients, negative in 54 and unknown in 16 patients.

Our results in relation to specific heredity agree with results from the literature: In case of petit mal 15.3%, 2.6% in case of psychomotor epilepsy (Lennox), 3% (Gastaut), Gibbs 4.5%.

Jears et al. (1975) at the Children's Hospital in Ljubljana found among 525 patients positive specific heredity in 12.98%. Jears and associates had sample of 809 children between 3 and 15 years of age. In our sample the youngest patient was 17 years old, the oldest 53 and the positive result of a specific heredity is considered to be in accordance with results from the literature [22,30].

Hajnsek (1980) presented the results of the age group from 20-50 years in testing the etiology of epilepsy on a sample of 572 patients and came to the following results: trauma 40.7%, 35.4% of unknown etiology, inflammatory CNS processes 11.4%. Positive heredity for epilepsy in his study was 10%.

In our sample we found: trauma 6% (tested reliable data of birth trauma), infectious CNS diseases 6%, and head injury with or without loss of consciousness 17% and 58% with unknown data. Positive heredity in the total sample was 13% and among married 8.8%.

We can conclude that our results agree with the results of Hajnsek, while certain differences can be explained by age variations of the samples.

Classification of epilepsy is an open problem. International classification of diseases in the latest version from the 1981 simplifies the main categories of epilepsy into a) generalized and b) partial seizures. Hercegovac (1976) deepened earlier given classification by Gastaut (1969) which divided epileptic events into the following groups:

I.

- a. Partial seizures with simple symptomatology.
- b. Partial seizures with complex symptomatology.
- c. Partial seizures with secondary generalization.

II. Generalized seizures:

- a. Generalized seizures without local onset,
- b. Generalized seizures with local onset.

III. Unilateral or predominantly unilateral seizure

IV. Unclassified seizures.

In our study we use the following classification of seizures: primary generalized seizures 51%, partial seizures with or without generalization 10%, seizures with complex symptomatology 12%, combined seizures 25% and unknown in 2%.

According to the results of Jears (1975) from the Clinical Center in Ljubljana on a sample of 525 children-aged between 3 and 15 years, using the division on focal and generalized seizures there was 31.3% cases of generalized epilepsy and 68.7% of focal epilepsy.

Our results agree with the results of Kantardzic and associates who on a sample of 250 patients from the territory of Sarajevo, Tuzla, Mostar and Livno (1990) found that most respondents had generalized seizures, followed by partial with complex symptomatology, then partial seizures with simple symptomatology and combined seizures.

In relation to marriage in our sample of 65 respondents more were married (65.0%) compared to unmarried (35%). 38 patients had generalized seizures, 7 partial seizures with simple symptomatology. Our result was also that the group of unmarried had in much larger number of cases 41.7% the combined seizures than married 15.4%.

Study by Schupf and Ottman (1996) on a sample of 863 patients treated by voluntary organizations in cooperation with the Clinic of Neurology in Montreal showed partial onset in 82% of patients, which is different compared to our study.

These authors state in their discussion diversity compared with previous studies. Weber also states that specific nuptiality in the group of patients with epilepsy with partial seizures is higher than in group suffering from generalized seizures. The average duration of marriage in 40 patients with primary generalized seizures was 17.4 years, patients with partial seizures with or without generalization 13.9 and patients with seizures of complex symptomatology 14.3 years.

Our conclusion is that the type of epileptic event does not affect the duration of the marriage, which we did not compared with the results from other authors as these results in the available literature were not found.

In relation to EEG results significance of difference between married and unmarried according to proportions of generalized specifically altered EEG, and the results of difference significance

between married and unmarried according to specific proportions of focal EEG changes in terms of the absence of statistical significance, we also did not compare with the earlier studies because for us such results in the literature were not known.

Understanding the neurological aspects of epilepsy significantly improved during last decades. Psychiatric aspects have for many years been neglected. Lately in the project to improve the quality of life of patients with epilepsy more attention is focused on the psychological aspects of life of patients in order to achieve better social functioning and good social reintegration.

Quality of life of patients with epilepsy was one of the leading topics of the 29th Congress on Epilepsy (Tokyo 1995) and the Second European Congress of epileptologists (Hague 1996).

The most important contribution in this regard was the European Quality of Life study conducted on 5000 adult patients in 15 European countries. The study collected clinical and demographic data on psychosocial functioning. Survey was filled by the patients. The questions focused on: types of seizures, the frequency of seizures, injuries related to the seizures, the side effects of anti-epileptic therapy, problems in social functioning in relation to the family, workplace and the environment in general. Results are as follows: 1/5 of the respondents felt that the seizures are not under good control, 1/3 considered to have frequent seizures. The most common side effects of antiepileptic drugs that patients listed were: fatigue, memory problems and focusing difficulties. In our country in the last two years special attention is given. In light of the global trend of epileptology psychological changes, to patients with epilepsy. Gavranovic (1996) and associates all psychological changes within epilepsy divided into two large groups:

1. Epilepsy and intellectual functions (mental retardation, cognitive disorders, dementia or psychosindrome) and;
2. Psychiatric disorders (epilepsy personality changes, psychosis, vacillating moods-dysphoria, depression, psychoreactive disorders).

According to Kantardzic (1997) study on the prevalence of conduct disorder shows that these disorders occurs in 12-95% of cases and depends on the study population. They are lowest in the normal population, in schools and general practice (12-23%), in the out-patient clinics for epilepsy 50% and 95% in inpatient psychiatric hospitals [24,25].

In our sample psychological changes that have been investigated are: character changes 4%, signs of organic mental disorder 23%, neurotic disorders 37%, 13% oligophrenic, without psychiatric disorders 21%, unknown 2% and 0% of psychosis.

Neurotic reaction in our sample occurred in 37% of patients, twice as often is present neurotic reactions among women with epilepsy than in men. Our result is comparable with some results from the literature like ones by Currie and colleagues, Betts, Ramesch et al., Fenton and colleagues, and Bingley [12].

Signs of organic mental disorder we found in 23 patients, 17 were in the group of married, 16 men and 7 women. Our results are compatible with the results of Brox and Abeyasinghe

(1984) from Maudsley and Kings College Hospital, which have proven that the intellectual deterioration as the ultimate outcome of epilepsy occurs much less frequently than previously thought at the beginning of the 20th century. Through comparative results we can say that the mental deterioration occurs in a certain number of patients, but not in majority of cases, as previously thought. In both studies it was concluded that the mental deterioration occurs more frequently in men than women. This can be explained by the long history of the disease in terms of early onset of the seizures, poor therapeutic reactivity and the possible effects of antiepileptic drugs, especially barbitone and diphetoin. Confirmation of toxic effects on mental functioning of AEDs have been proven Thomson and Trimble, De Niegri et al., Andrewes et al., Calandre et al., Thompson and Trimble [14].

In our sample, we had 21 patients without mental changes, 14 men and 7 women. In relation to marital status 14 respondents in this group were married with different marriage duration.

These results can be correlated with good psychosocial functioning of patients on which there are many studies: Salajpal and Ristovic (1986) have shown an adverse effect of some social factors in the course of the disease and psychological status: poverty, deficient education within the family, poor emotional family relationships, duration of conflict family situations with an aggressive and rejecting attitude towards the patient [27].

In the same context Kocijan-Hercegonja (1986) and colleagues have concluded that the social status of the family is the most important factor in forming the patient's personality, and for the presence or absence of psychological changes in patient [22].

Loewenson et al (1980) in terms of socioeconomic status, interviewed 298 patients: all were older than 18 years and none of them was mentally retarded. The average duration of disease was 15 years at mean age of 30 years. The results were: There was no significant correlation between marital status, employment, good income with the frequency of seizures, type of seizures and psychological problems of reactive nature [24,25].

All respondents without psychiatric disorders in our sample were of good social status. Seventeen respondents who were married had a harmonious relationship with the spouse.

Slodnjak et al (1986) evaluated the overall psychosocial functioning of patients with epilepsy and found poor prognosis in 26% of boys and only 7% girls. Our result agrees with the result of Slodnjak et al (1986), the women in our sample had more disorders of mental sub normality without disorder of psychosocial functioning [30].

Our results on mental changes depending on the marriage duration are the following: mental changes have occurred after 12 or more years of marriage in 64.7% of cases: neurotic disorders 71% and 21.4% were without problems.

Our results in terms of the correlation between the marriage duration and psychological changes can be explained by multiple factors: disease factors, factor of antiepileptic therapy, psychosocial dynamics factor in marriage not related to the disease, problems that marriage brings in relation to the provision of the financial basis for the family as a whole and the like.

In relation to gender differences in psychological problems that we found, they also may be explained by the above-mentioned factors that we discussed, as well as socio cultural specific factors of the environment and climate of our respondents.

When we talk about psychological changes in our patients we must emphasize the fact that we tested those patients who had been treated through the Dispensary for epilepsy, and that the triage of these patients in terms of nonpsychotic disorders by sample selection was already made.

Our results on psychological changes agree with the other results from the literature. According Pekovic (1990) neurotic problems are encountered in 32% of patients, character personality disorders in 22%, signs of organic mental disorder at an early form in 15% and 32% of respondents had no psychological disorders. Our results are parallel with this.

In relation to treatment there are strict principles with the aim of successful treatment. According to Gavranovic (1988) principles of epilepsy treatment are:

1. Diagnosis of epilepsy must be reliable.
2. When the diagnosis is certain the treatment should be started as soon as possible because is well-known fact that the neurons damage by repeated seizures is much more severe than by other factors.
3. Treatment should always begin with monotherapy while polytherapy should be avoided. Reynolds et al (1976, 1981) reported that 80% of seizures can be treated by monotherapy. When introducing AEDs start with small doses. Each patient is an individual in terms of treatment and the determination of AEDs dose is highly complex depending on: type of seizure, seizure frequency, age, general condition, individual drug tolerance, the environment and the attitude of the environment in relation to the disease and socioeconomic factors.
4. Selection of antiepileptic drugs depends on the type of epileptic manifestations. Partial seizures with elementary symptomatology and generalized seizures are treated with phenobarbitone, carbamazepine, and diphenyl-hydantoin. Partial complex seizures are the most common drug-resistant seizures, they are treated with carbamazepine, diphenyl-hydantoin and primidone. In case of generalized non convulsive seizures of simple type the drug of choice is ethosuccimide, then sodium valproate, or these two drugs in combination.
5. In refractory cases when we are forced to use polytherapy we must respect the principle: never combine identical antiepileptics, avoid combinations of toxic drugs, the choice of antiepileptic drugs and its concentration should be within the therapeutic dose spectrum.
6. It is necessary to control the drug tolerance which in clinical practice means to control the skin, lymph nodes, liver, spleen, mental state and possible ataxia.
7. A special task is to educate patients in terms of knowledge about the disease and precipitating factors of potential seizures such as: reduced sleep, alcohol use, stress, hormonal changes.

In our sample we found the following therapeutic reactivity: 27% of our patients had one seizure in several years, 19 every couple of months, 8 once per year, 21 once a month, 14 weekly and 10 daily seizures, so complete or very satisfactory therapeutic reactivity was found in 54% of our respondents.

Remission rates of patients with different types of seizures in the literature varies: in patients with tonic seizures, they vary according to Gavranovic (1988) from 60-80%, according to Sofijanov (1982) remission rate as simple absence seizures is 70-80% [24,25].

Satisfactory therapeutic reactivity in our sample we found in 54% of patients which is consistent with those authors.

In relation to marital status in our sample we had the following results: the group of married and group of unmarried in approximately same percentage had epileptic events during few years before the study, while a group of unmarried usually have weekly frequency of seizures (29.2%).

Comparison of therapeutic responsiveness in relation to marriage we did not conduct because in the available literature we did not find such results [31,32].

Explanation for better therapeutic responsiveness of married in our sample we can find in following facts: our sample was respondents from the Dispensary for treatment of epilepsy, so the patients who in previous period were treated and whose social status (employed in the profession 55, at another job 8) requested functionality within the job, environment and family. The purpose of their treatment through the Dispensary is "best possible therapeutic reactivity" in relation to the type of disease, EEG changes, disease duration, age and choice of antiepileptic drugs.

Our results in terms of patient's employment patients agree with the results of Kantardzic and associates (1990) as they found the overall employment rate of 43.2% (28% in the profession and 15.2% at another job).

Hydanphen received 61 patients, 4 patients were taking barbiturates, Tegretol 9, 22 combinations of Tegretol and Phenobarbitone.

6. Conclusion

1. Epilepsy affects the possibility of marriage and is in the direct correlation with the age at which the first epileptic event occurred and the type of the epileptic event.
2. Early occurrence of the disease reduces the possibility of entering into marriage, if the disease occurs later in life chances of conceiving marriage are significantly higher.
3. Patients who are married have less frequent epileptic seizures.

Author details

Azra Alajbegovic¹, Jasminka Djelilović-Vranić¹, Salem Alajbegović² and Lejla Alajbegović³

1 Neurology Clinic, Clinical Center of Sarajevo University, Sarajevo, Bosnia and Herzegovina

2 Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina

3 Berlin-Chemie Sarajevo, Representative office Bosnia and Herzegovina, Germany

References

- [1] Al-Khateeb JM, Al-Khateeb AJ Research on psychosocial aspects of epilepsy in Arab countries: A review of literature *Epilepsy Behav.* 2013 Nov 5. doi:pii: S1525-5050(13)00499-X.
- [2] Helmstaedter C, Droege F, Witt JA Assessing activities of daily living in patients with epilepsy). *Fortschr Neurol Psychiatr.* 2013 Aug;81(8):452-8. doi: 10.1055/s-0033-1335993. Epub 2013 Aug 12.
- [3] Dominian J, Serafetinides EA, Dewhurst MA. Follow-up study of late-onset epilepsy. *Br Med J* 1963;1:431-5
- [4] Todorova K.S. Kaprelyan A.G. Influence of depressive mood on quality of life rating of women with epilepsy of childbearing age. *Folia Med.* 2013. Jan-Mar;55(1):70-5.
- [5] Castano Monsalvie. Antidepressants in epilepsy. *Rev Neurol* 2013 Aug 1;57(3):117-22.
- [6] Helmstaedter C, Witt JA. Epilepsia. Multifactorial etiology of interictal behavior in frontal and temporal lobe epilepsy 2012 Oct;53(10):1765-73. doi: 10.1111/j.1528-1167.2012.03602.x. Epub 2012 Aug
- [7] Andermann E, Dansky L, Kinch RA. Complications of pregnancy. Labour and delivery in epileptic women. Janz D, Dams M, Richens A, Bossi L, Helge H, Schmidt D, eds, *Epilepsy, pregnancy and the child.* New York, Raven Press 1982:61-74.
- [8] Aicardi J. The Prevention of Epilepsy in Children. D. Janz (Ed). *Epileptology*, George Thieme Publishers, Stuttgart, pp. 2-9, 1976.
- [9] American Academy of Pediatrics Committee on Drugs. Anticonvulsant and pregnancy, *Pediatrics*, 63:331-335. 1979.
- [10] Baker GA, Jaciby A, Smith DF, Dewey ME, Chadwick DW. The development of novel scale to assess life fulfillment as part of the further refinement of a quality of life model for epilepsy. *Epilepsia* 1994; 35:591-6.

- [11] Baker GA, Smith DF, Dewey M, Jacoby A, Chadwick DW. The initial development of health-related quality of life model as an outcome measure in epilepsy. *Epilepsy Res* 1993; 16:65-81.
- [12] Betts TA. Depression, anxiety and epilepsy. Reynolds EH, Trimble MR, eds. *Epilepsy and psychiatry*. New York, Churchill Livingstone, 1981.
- [13] Britten N, Morgan K, Fenwick PBC, Britten H. Epilepsy and handicap from birth to age thirty-six. *Dev Med Child Neurol* 1986; 28:719-28.
- [14] Dansky LV, Andermann E, Andermann F. Marriage and fertility in epileptic patients. *Epilepsia* 1980; 26:1-71.
- [15] Dodrill CB, Batzek LW. Patterns of Psychosocial Problems in Chronic Epilepsy. *Acta Neurol Scand* 62 (suppl-79) 9:31-32, 1980
- [16] Ercegovic D, Savić Č, Mitrović D. Psihosocijalni aspekti epilepsije. X Jugoslovenski simpozij o epilepsijama, Knjiga sa`etaka, Zadar, 1984.
- [17] Goodridge D, Shorvon SD. Epileptic seizures in a population of 6000: Treatment and prognosis. *Br Med J* 1983; 287:645-7.
- [18] Gudmunsson G. Epilepsy in Iceland. A clinical and epidemiological investigation. *Acta Neurologica Scandinavica* (supplementum 25), Vol. 43, 1966.
- [19] Hauser WA, Hersdorffer DA. Epilepsy: frequency, causes and consequences. Epilepsy Foundation of America. New York: Demos 1990.
- [20] Jacoby A, Baker GA, Smith DF, Dewey M, Chadwick DW. Measuring the impact of epilepsy: the development of a novel scale. *Epilepsy Res* 1993; 16:83-8.
- [21] Jacoby A, Graham Jones S, Baker GA, Ratoff R, Haynes J, Chadwick DW. A general practice audit of care for people with epilepsy (In preparation)
- [22] Janko M. Liječenje epilepsije i anti-epileptici. *Psihofarmakologija*, 1990.
- [23] Jensen P, Jensen SB, Sorenson PS, et al. Sexual dysfunction in male and female patients with epilepsy: A study of 86 patients. *Arch Sex Behavior* 1990; 19:1-14.
- [24] Kantardić DŽ, et al. Epilepsija - analiza sociomedicinskih pokazatelja u grupi od 4071 pacijenata u BiH, 1989.
- [25] Kantardžić DŽ, Gavranović M, Jovanović M. Socijalna trauma u provokaciji epileptičnih manifestacija, *Medicinski arhiv*, 33, 105, 1979.
- [26] Reproduction Among Individuals with Idiopathic (Cryptogenic Epilepsy) Risk Factors for Reduced Fertility in Marriage. *Epilepsia* 37 (9): 833-840, 1996. Nicole Scupl and Ruth Ottman
- [27] Salajpal T, Risočić DŽ. Utjecaj psihosocijalnih faktora na tok epilepsije - Soc. Psihijatrija 15 (2): 125-135, 1987.

- [28] Self –reported Sexual Function and Sexual Arousability in Women with epilepsy, Marta J Morrell and Gregory T Guldner *Epilepsia* 37 (12) 1204-1210.1996.
- [29] Sexual disfunction in epilepsy. *Epilepsia* 1991;32:S38-45. Reutens DC, Howell RA, Gerbert KE, et al. Validation of sexual dysfunction in women: results of a survey study of 329 women in a outpatient gynecological clinic. *J sex Marital Ther* 1993;19:171-88.
- [30] Slodnjak V, Goriček M, Ravnik I et al Pokušaj opredjeljenjadijagnostično značajnih mjerilapsihosocijalnog funkcionisanj adjece i omladine sa epilepsijama. XI jugosl. simpozij o epilepsijama, Savez lige za borbu protiv epilepsije Jugoslavije (Ed), Dom štampe, 1986.
- [31] The clinical Course of epilepsy and Its Psychosocial Correlates: Findings from a c.k. Community Study Ann Jacoby, Gus A. Baker, Nick Steen, Pauline Potts, and David W, Chadwick *Epilepsia*, 37(2):148-161, 1996
- [32] Toone BK, Edeh J, Nanjee MN, et al. Hyposexuality and epilepsy: a community survey of hormonal and behavioural changes in male epileptics, *psychological Medicine*, 19, 937-943, 1989.
- [33] Zielinski JJ. Social prognosis in epilepsy. *Epilepsia* 1972;13:133-40.
- [34] Zielinski JJ. Social Prognosis of Epilepsy- *Epilepsia* 13:133-140, 1972.