Article

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Depression and anxiety in a community sample with epilepsy in Brazil

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ABSTRACT

Objective: To estimate the frequency of depression/anxiety and to establish the social, epilepsy and psychiatric characteristics in individuals with epilepsy. **Method:** A cross-sectional study was employed to evaluate 153 subjects with epilepsy who were identified in a previous community-based survey. First, a structured interview was conducted, followed by a psychiatric evaluation. Subjects with depression were compared to those without, and subjects with anxiety were compared to those without. **Results:** The prevalence of anxiety and depression was 39.4 and 24.4%, respectively. Both were associated with low schooling (OR 3.8, 95% CI 1.6 to 9.0 and OR 2.8, 95% CI 1.2 to 6.5 for depression and anxiety, respectively), lifetime suicidal thoughts (OR 4.4, 95% CI 1.9 to 10.3 and OR 3.6, 95% CI 1.7 to 7.7) and lifetime suicide attempts (OR 9.3, 95% CI 2.6 to 32.8 and OR 6.9, 95% CI 1.8 to 26.4). **Conclusion:** The high rates of depression and anxiety reinforced the need for recognition and treatment of mental disorders in epilepsy.

Key words: mood disorders, anxiety, depression, epilepsy, epidemiology, suicide attempt.

Depressão e ansiedade na epilepsia: uma amostra da comunidade no Brasil

RESUMO

Objetivo: Estimar a frequência de depressão/ansiedade em pessoas com epilepsia e estabelecer as características sociais, da epilepsia e psiquiátricas associadas. **Método:** Foi feito um estudo transversal para avaliar 153 sujeitos com epilepsia identificados em um levantamento prévio feito na comunidade. Primeiramente foi realizada uma entrevista estruturada, seguida de uma avaliação psiquiátrica. Os sujeitos deprimidos foram comparados com aqueles sem depressão e os sujeitos com ansiedade foram comparados com aqueles sem ela. **Resultados:** A prevalência de ansiedade e depressão foi de 39,4% e 24,4%, respectivamente. Ambas foram associadas a baixa escolaridade (OR 3,8; IC95% 1,6-9,0 e OR 2,8, IC95% 1,2- 6,5 para depressão e ansiedade, respectivamente), ideação suicida (OR 4,4; IC95% 1,9-10,3 e OR 3,6; IC95% 1,7-7,7) e tentativa de suicídio (OR 9,3; IC95% 2,6-32,8 e OR 6,9; IC95% 1,8-26,4). **Conclusão:** As altas taxas de depressão e ansiedade reforçam a necessidade de reconhecimento e tratamento dos transtornos mentais na epilepsia.

Palavras-chave: transtornos do humor, ansiedade, depressão, epilepsia, epidemiologia, tentativa de suicídio.

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It is becoming increasingly accepted that psychological disorders have a broad impact on individuals with epilepsy. Non-selected populations of people with epilepsy present consistently higher rates of psychiatric comorbidity compared to the general population[1-3]. Depression and anxiety disorders are the most frequent psychiatric comorbidities in epilepsy[2-4]. The lifetime prevalence of depres-

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sive disorder in epilepsy is unclear, varying from 8-48% depending on the methodological approach[4,5]. In a Canadian population-based study, the life prevalence for anxiety and depressive disorders in people with epilepsy was 22.8% and 17.4%, respectively[3].

Depression in epilepsy has been associated with poor quality of life[6,7], suicidal behavior[8], poor seizure control[9], unemployment[9], presence of another chronic health condition[9], perception of stigma[10] and effect of antiepileptic medication[9]. Although anxiety disorders have received less attention than mood disorders in patients with epilepsy, they have been associated with poor quality of life,[11] lack of seizure control[1,10,12] and earlier age onset of epilepsy[1]. Despite the impact and link of psychiatric disorders with epilepsy, they are all underrecognized and undertreated[4,7].

Especially in developing countries, there is a lack of community studies regarding depression and anxiety in people with epilepsy. The objectives of this study were to estimate the frequencies of depression and anxiety and determine the social, epilepsy and psychiatric characteristics related with these disorders in people with epilepsy in a community sample in Brazil.

METHOD

Study design and setting

This was a cross-sectional study undertaken in Campinas, a city with 1.1 million inhabitants in the southeast of Brazil. The study was carried out at the district of Barão Geraldo, which has approximately 44,000 inhabitants. This area is comprised of 19 neighborhoods, a technological center and two universities. In contrast, in the same region, there are rural areas and neighborhoods characterized by low income.

Subjects

The data were collected between May 2006 and December 2007. An attempt was made to interview all 171 individuals who were 13 years or older and had been diagnosed with epilepsy in a previous community-based study (part of the Global Campaign Against Epilepsy, launched by the World Health Organization (WHO), the International League Against Epilepsy and the International Bureau for Epilepsy). In this study, the targeted population was surveyed door-to-door and screened or epilepsy, and suspected cases were confirmed by neurologists[13].

Instruments

The questionnaire used in this survey was based on the WHO Multisite Intervention Study on Suicidal Behavior. This survey covers a series of socio-demographic, psychosocial and clinical variables. The following psychometric scales, each already validated in Brazil, were also included in the study.

The Hospital Anxiety and Depression Scale (HAD) covers psychological symptoms of anxiety and depression. This scale is comprised of 14 multiple-choice items regarding anxiety and depression. The cut-off points that were adopted for anxiety and depression were at eight and seven items positive (out of 14), respectively, as suggested by the Brazilian validation study[14]. These cut-off points provided 74% sensitivity as well as specificity for the anxiety parameter. For depression, the sensitivity and specificity were 85.7% and 72.4%, respectively[14].

The Global Assessment Scale (GAS) assesses the individual's general level of functioning. The evaluation was made by the interviewer. The scale ranges from 1 (the hypothetically sickest person) to 100 (the hypothetically healthiest person)[15,16]. Subjects with scores ranging from 0 to 30 were classified as severe cases, scores ranging from 31 to 60 were classified as moderate cases and scores ranging from 61 to 100 were classified as mild/normal.

The Mini International Neuropsychiatry Interview (MINI) version 5.0.0 was used to provide diagnoses according to the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV) criteria[17]. The MINI is a structured diagnostic interview that is compatible with the DSM-III-R/IV and ICD-10 criteria[17].

First, individuals were approached at their places of residence. A short-term interview with the HAD (read out for every patient) and the GAS were completed on that occasion. Second, for those who agreed, a new interview was scheduled at the university hospital. In this second interview, a detailed psychiatric evaluation, including the MINI, was performed by a trained psychiatrist. The first interview was conducted by seven trained interviewers: two psychology students, one medical student, two psychologists and two primary health care workers. The training of the interviewers included three 90-minute meetings and a pilot with questionnaire application. Meetings at regular intervals were held during the data gathering to ensure accurate classification of the subjects. No inter-rater reliability calculation was performed for this data.

Definition of variables

Active epilepsy – Any patient who has had recurrent unprovoked seizures with an interval of 24 h or more in the previous 24 months.

Inactive epilepsy – Any patient who has had recurrent unprovoked seizures with an interval between them of 24 h or more, but who has been seizure-free for the previous 24 months. Both active and inactive epilepsy were classified in accordance with previous study[13].

Economic group – Sefined by the presence and number of various household items, weighted as per the Brazilian Association of Research Companies (ABEP)[18].

This index of economic classification is based on the power of consumption, a measure of personal material wealth[18]. Three groups were defined: low (0-13), middle-low (14-22) and middle-high / high (23-35). People in the low economic group did not have a car or a freezer, 69% of them had no electronic appliances, such as a video or DVD, and 59% did not possess a refrigerator.

Occupational status – Was categorized in active (full, part-time or temporary employment or student), inactive (retired, unemployed or never had a job) and homemaker.

Statistical analysis

Subjects were classified as cases and non-cases of depressive and anxiety disorders based on their HAD scores. The independent variables in the analysis included socio-demographic, psychosocial and clinical variables and questions about suicidal behavior. Logistic regression analysis was used to compare those cases and non-cases of depressive and anxiety disorders using crude odds ratios (ORs) and 95% confidence intervals (CIs). All analyses were conducted using STATA version 8.0 (StataCorp, College Station, TX, USA).

Table 1. Demographic, social, occupational and economic characteristics of people with epilepsy who were depressed (n=32), not depressed (n=99), anxious (n=50) and not anxious (n=77).

	Depression							Anxiety						
	Yes		No					Yes		No				
Variables	N	%	N	%	OR†	95% CI‡	P value	N	%	N	%	OR†	95% CI‡	P value
Sex							0.7							0.01
Male	17	53.1	49	49.5	1.0			18	36.0	45	58.4	1.0		
Female	15	46.9	50	50.5	0.9	0.4-1.9		32	64.0	32	41.6	2.5	1.2-5.2	
Total	32	100	99	100				50	100	77	100			
Age bracket							<0.0001							0.6
13-41	8	25	61	61.6	1.0			27	54	38	49.4	1.0		
42 +	24	75	38	38.4	4.8	2.0-11.8		23	46	39	50.6	0.8	0.4-1.7	
Total	32	100	99	100				50	100	77	100			
Schooling (years)							0.002							0.02
≥4	18	56.3	82	82.8	1.0			33	66.0	65	84.4	1.0		
0<4	14	43.7	17	17.2	3.8	1.6-9.0		17	34.0	12	15.6	2.8	1.2-6.5	
Total	32	100	99	100				50	100	77	100			
Marital status							0.04							0.9
Married / Steady relationship	17	53.1	47	47.5	1.0			26	52.0	37	48.0	1.0		
Single	9	28.1	46	46.4	0.5	0.2-1.3		19	38.0	33	42.9	0.8	0.4-1.7	
Separated / Divorced / Widow	6	18.8	6	6.1	2.8	0.8-9.7		5	10.0	7	9.1	1.0	0.3-3.6	
Total	32	100	99	100				50	100	77	100			
Occupation							0.006							0.3
Active§	10	32.3	59	63.4	1.0			25	52.1	43	58.9	1.0		
Housewife	4	12.9	10	10.8	2.4	0.6-9.0		8	16.7	6	8.2	2.3	0.7-7.4	
Inactive¶	17	54.8	24	25.8	4.9	1.7-10.4		15	31.2	24	32.9	1.1	0.5-2.4	
Total	31	100	93	100				48	100	73	100			
Economic group							0.2							0.05
Mid-high 23-35	3	10.0	24	24.2	1.0			5	10.4	21	27.3	1.0		
Mid-low 14-22	19	63.3	59	59.6	2.6	0.7-9.5		30	62.5	44	57.1	2.9	1.0-8.4	
Low 0-13	8	26.7	16	16.2	4.0	0.9-17.4		13	27.1	12	15.6	4.5	1.3-15.9	
Total	30	100	99	100				48	100	77	100			

†OR: crude odds ratio; ‡95% CI: 95% confidence interval; §Includes students; ¶Retired, unemployed or never had a job.

Ethical aspects

The study was approved by the university's ethics committee (Comitê de Ética da Faculdade de Ciências Médicas da Universidade Estadual de Campinas). All subjects enrolled in the research agreed to participate and signed a consent form.

RESULTS

From the 171 individuals previously diagnosed with epilepsy, 153 were included in the present study (3 had died, 3 had moved and 12 refused to participate). Because of missing data from the HAD, 22 depression items and 26 anxiety items were excluded *post hoc* from the analyses. The MINI was used to evaluate the 111 individuals who came to the hospital for the diagnostic interview.

The HAD identified 32 (24.4%) subjects as having depression and 50 (39.4%) with an anxiety disorder. Being inactive (retired, unemployed or never had a job), fewer years of schooling and age above 41 years old were associated with depression. The female gender, fewer schooling years and being in the low economic group were associated with anxiety (Table 1).

Specific epilepsy characteristics are presented in Table 2. Only active epilepsy was found to be associated with depression. Psychiatric comorbidities are presented in Table 3. Both anxiety and depression were identified in 21 individuals (42.9%). Lifetime suicidal thoughts and suicidal attempts were associated with both disorders, and lower scores on the GAS were associated with anxiety (Table 3).

DISCUSSION

Our findings indicated that individuals with epilepsy identified in a door-to-door survey have high frequencies of anxiety (39.4%) and depression (24.4%). They also have important variables associated with both depression and anxiety, such as lower schooling, a higher risk of suicidal behavior and the association of symptoms of both depression and anxiety.

The major strengths of our study are its community setting, the use of validated psychometric scales and the fact that it was carried out in a developing country with the diagnosis of epilepsy being confirmed by neurologists. Nevertheless, some potential limitations should be considered. The size of our sample did not allow for multiple regression analysis, which would have identified discriminators that may predispose individuals for depression and anxiety in epilepsy. Due to economic limitations and because our sample was derived from a previous survey, we had a limited number of participants. The possible occurrence of a type I error should therefore be kept in mind.

Other limitations of our study included interviewers who were not senior researchers and the lack of inter-rater reliability assessments. The diagnoses of depressive or anxiety disorders made during the screening phase of the study were not later confirmed, as it was considered operationally difficult to obtain a reliable assessment by means of a standardized psychiatric interview. Structured psychiatric interviews are reliable and efficient; however, they require considerable time and are not readily accessible to standard practice in a non-psychiatric environment. A comprehensive review found that HAD performed well in assessing the symptom-severity and caseness of depression and anxiety in somatic, psychiatric and primary care patients, as well as in the general population[19]. This review reported an optimal balance between sensitivity and specificity when caseness was defined by a score of 8 or above on both the anxiety and depression subscales[19].

The frequencies of depression (24.4%) and anxiety (39.4%) encountered in our study are higher than the figures from a Canadian population-based study (17.4 and 22.8%, respectively)[3]. In contrast, they are lower when compared to those found in West Africa, where the respective frequencies of depression and anxiety were 84 and 66% in Togo and 85.3 and 84.1% in Benin[12]. Methodological issues might have contributed to differences found, for example, in the questionnaires used to identify depression and anxiety. The Composite International Diagnostic Interview used in the Canadian study is a diagnostic interview for the assessment of mental disorders according to the definitions and criteria of the ICD-10 and DSM-IV. As a diagnostic instrument, it is expected to generate more restrictive diagnosis categories[20]. On the other hand, the Goldberg's Anxiety and Depression Scale used in Togo and Benin works best as a screening tool because of its high sensitivity (88-100%) and lower specificity (33-68%) to detect depression and anxiety[21]. The HAD applied in our sample is a screening tool designed for detecting depression and anxiety in general medical settings and has been used in community studies of psychological outcome in epilepsy[1,9,22]. We adopted the cutoff points of the validation because it achieved 74% for both sensitivity and specificity for anxiety and 85.7 and 72.4%, respectively, for depression[14]. Even though methodological issues might have contributed to the differences, socio-economic and cultural factors may also have a role in the way people answered the questions. Epilepsy is associated with stigmatization and the "treatment gap," especially in developing countries, is likely one of the most important causes of non stabilized seizures, which is also connected to depression and anxiety[23].

Active epilepsy represented an almost 3-fold risk for depression. It has been suggested that recurrent seizures

Table 2. Epilepsy characteristics in people with epilepsy who were depressed (n=32), not depressed (n=99), anxious (n=50) and not anxious (n=77).

	Depression							Anxiety						
	Yes		No					Yes		No				
Variables	N	%	N	%	OR†	95% CI‡	P value	N	%	N	%	OR†	95% CI‡	P value
Type of seizure							0.9							0.8
Partial – simple	5	17.2	13	16.0	1.0			7	15.6	10	15.6	1.0		
Partial – complex	14	48.3	37	45.7	1.0	0.3-3.3		23	51.1	29	45.3	1.1	0.4-3.4	
Generalized	10	34.5	31	38.3	0.8	0.2-2.9		15	33.3	25	39.1	0.9	0.3-2.7	
Total	29	100	81	100				45	100	64	100			
Age at first seizure							0.08							0.8
≤21 years	9	28.1	44	45.8	1.0			20	40.8	32	42.7	1.0		
>21 years	23	71.9	52	54.2	2.2	0.9-5.1		29	59.2	43	57.3	1.1	0.5-2.2	
Total	32	100	96	100				49	100	75	100			
Active epilepsy							0.03							0.3
No	9	30.0	49	53.3	1.0			20	42.5	37	52.1	1.0		
Yes	21	70.0	43	46.7	2.7	1.1-6.4		27	57.5	34	47.9	1.5	0.7-3.1	
Total	30	100	92	100				47	100	71	100			
Medical treatment for epilepsy							0.2							0.7
Yes	28	87.5	77	77.8	2.0	0.6-6.3		39	78.0	62	80.5	0.86	0.4-2.1	
No	4	12.5	22	22.2	1.0			11	22.0	15	19.5	1.0		
Total	32	100	99	100				50	100	77	100			
Antiepileptic treatment							0.8							0.3
Monotherapy	18	75.0	39	78.0	1.0			19	73.1	38	82.6	1.0		
Polytherapy	6	25.0	11	22.0	1.2	0.4-3.7		7	26.9	8	17.4	1.7	0.5-5.5	
Total	24	100	50	100				26	100	46	100			
Antiepileptic drugs							0.3							0.6
Barbiturates	21	87.5	39	78.8	1.0			20	76.9	38	82.6	1.0		
No	3	12.5	11	22.0	0.5	0.1-2.0		6	23.1	8	17.4	1.4	0.4-4.7	
Yes	32	100	50	100				26	100	46	100			
Total														
Benzodiazepines							0.06							0.1
No	20	83.3	48	96.0	1.0			22	84.6	44	95.6	1.0		
Yes	4	16.7	2	4.0	4.8	0.8-28.3		4	15.4	2	4.4	4.0	0.7-23.5	
Total	24	100	50	100				26	100	46	100			
Phenytoin							0.9							0.4
No	19	79.2	40	80.0	1.0			22	84.6	35	76.1	1.0		
Yes	5	20.8	10	20.0	1.1	0.3-3.5		4	15.4	11	23.9	0.6	0.2-2.0	
Total	24	100	50	100				26	100	46	100			
Carbamazepine							0.8							0.6
No	10	41.7	19	38.0	1.0			12	46.9	18	39.1	1.0		
Yes	14	58.3	31	62.0	0.9	0.3-2.3		14	53.8	28	60.9	0.7	0.3-2.0	
Total	24	100	50	100				26	100	46	100			
Valproate							0.9							0.9
No	21	87.5	43	86.0	1.0			23	88.5	41	89.1	1.0		
Yes	3	12.5	7	14.0	0.9	0.2-3.7		3	11.5	5	10.9	1.1	0.2-4.9	
Total	24	100	50	100				26	100	46	100			

†OR: crude odds ratio; ‡95% CI: 95% confidence interval.

Table 3. Psychiatric comorbidity of people with epilepsy who were depressed (n=32), not depressed (n=99), anxious (n=50) and not anxious (n=77).

	Depression							Anxiety						
	Yes		No					Yes		No				
Variables	N	%	N	%	OR†	95% CI‡	P value	N	%	N	%	OR†	95% CI‡	P value
HAD§ Anxiety							<0.0001							
Negative	10	32.3	66	70.2	1.0									
Positive	21	67.7	28	29.8	4.9	2.1-11.8								
Total	31	100	94	100										
HAD§ Depression														<0.0001
Negative								28	57.1	66	86.8	1.0		
Positive								21	42.9	10	13.2	4.9	2.1-11.8	
Total								49	100	76	100			
GAS¶							0.04							0.01
Mild (61-100)	22	68.7	81	85.3	1.0			34	69.4	65	87.8	1.0		
Moderate / Severe (0-60)	10	31.3	14	14.7	2.6	1.0-6.7		15	30.6	9	12.2	3.2	1.3-8.0	
Total	32	100	95	100				49	100	74	100			
Suicidal thoughts (during life)							<0.0001							0.001
No	12	37.5	72	72.7	1.0			23	46.0	58	75.3	1.0		
Yes	20	62.5	27	27.3	4.4	1.9-10.3		27	54.0	19	24.7	3.6	1.7-7.7	
Total	32	100	99	100				50	100	77	100			
Attempted suicide (during life)							<0.0001							0.001
No	23	71.9	95	96.0	1.0			39	78.0	74	96.1	1.0		
Yes	9	28.1	4	4.0	9.3	2.6-32.8		11	22.0	3	3.9	6.9	1.8-26.4	
Total	32	100	99	100				50	100	77	100			
MINI							<0.0001							<0.0001
No psychiatric diagnosis	1	4.8	31	48.4	1.0			03	9.7	28	52.8	1.0		
At least one psychiatric diagnosis	20	95.2	33	51.6	18.8	2.4-148.5		28	90.3	25	47.2	10.4	2.8-38.6	
Total	21	100	64	100				31	100	53	100			
MINI (number of diagnoses)							<0.0001							<0.0001
None	1	4.8	31	48.5	1.0			03	9.7	28	52.8	1.0		
1	10	47.6	21	32.8	14.8	1.7-124.1		13	41.9	18	34.0	6.7	1.7-27.0	
2 or more	10	47.6	12	18.7	25.8	2.9-224.2		15	48.4	7	13.2	20.0	4.5-88.8	
Total	21	100	64	100				31	100	53	100			

†OR: crude odds ratio; ‡95% CI: 95% confidence interval; §HAD: Hospital Anxiety and Depression Scale; ¶GAS: Global Assessment Scale.

can be related to psychological sequela, and depression symptoms may influence the seizure frequency[24,25]. More recently, depression was thought to mediate the relationship between stress and anxiety and changes in seizure frequency[26].

Consistent with the literature regarding suicide, this behavior was increased among those with depression and those with anxiety disorder[27]. Depression is well known to pose a risk on suicidal behavior[28], as well as anxiety disorders[27,29]. Moreover, there is an increasing relationship between the number of mental disorders and suicidal behavior[29]. Our findings also indicate an increased risk of depression and anxiety between people with epilepsy suffering from more than one psychiatric disease.

In a systematic review, lower socio-economic status was associated with higher rates of depressed mood and

anxiety in youths[30]. Consistent with this result, individuals in the lowest economic group in our sample had at least four times the risk of anxiety, and subjects with less than four years of schooling had a higher risk of both depression and anxiety. These results are consistent with studies regarding depression and educational attainment[31,32]. Lower educational levels may lead to an accumulation of poor health outcomes associated with depression among people with in a lower social class, which is consistent with a review of socioeconomic factors and cardiovascular disease in the population[33]. They may also lack the necessary resources (social or financial) to cope with depression when it occurs[34].

While it is necessary to improve the recognition and treatment of depression and anxiety in people with epilepsy, it is also important to face other changeable factors associated with mental suffering, especially in developing countries, such as socio-economic conditions and adequate treatment of epilepsy.

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