

Prevalence and Factors Associated to Depression and Anxiety among People with Epilepsy on Follow up at Hospitals in West Shewa Zone, Oromia Regional State, Central Ethiopia: Institutional Based Cross- Sectional Study

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Abstract

Background: Although depression and anxiety disorders are very common in people with epilepsy; there are no studies that assessed the magnitude and associated factors among epileptic people in west shewa zone, Oromia regional state, Ethiopia. Therefore, this study determined prevalence and associated factors of depression and anxiety disorders in people with epilepsy.

Method: Institutional based cross-sectional study was conducted from May 20, 2017 to June 20, 2017. All people with epilepsy in west Shoa zone were source population. The sample size was determined using single population proportion formula and 387 subjects were selected. To select the study subjects the hospitals found in West Shoa Zone was stratified and the calculated sample size was proportional allocated. The study subject was selected using systematic random sampling. Data was analyzed using SPSS version 20.

Results: The prevalence of depression and anxiety among people with epilepsy were 43 and 47.8 %, respectively. Age and perceived stigma were found to be significantly associated with both depression and anxiety. Occupational status and perceived stigma were associated with depression while educational status, no formal education and grade 1-8th was associated with anxiety.

Conclusion: The prevalence of depression and anxiety were found to be high among people with epilepsy. Early identification of depression and anxiety in people with epilepsy and managing people with epilepsy to screening depression and anxiety should be of great concern for health care providers.

Keywords: Depression; Anxiety; People with epilepsy; Ambo; Central Ethiopia

Abbreviations: AEDs: Antiepileptic drugs; KSSE: Kilifi Stigma Scale of Epilepsy; SPSS: Statistical Package for the Social Sciences; PWE: People with epilepsy

Background

Among the 50 million people with epilepsy (PWE) worldwide, ~15 to 60% also likely suffer from depression and/or anxiety disorders, and 90% reside in low-income regions where these co-morbidities are often under recognized and undertreated [1,2]. In Ethiopia, epilepsy is a huge problem, which affects about 5.2 per 1000 population [3]. Epilepsy can cause a wide range of neurological disorders and psychological

disorders, the latter most commonly being mood disorders such as depression and anxiety [4]. Although depression and anxiety in association with type of epilepsy and frequency of seizures the highest rates of psychiatric co-morbidities are reported in patients with chronic, refractory seizure disorders [5]. A recent study looks for psychopathology using a standardized diagnostic interview in inpatients with all types of epilepsy obtained similar results the 1-year prevalence of anxiety disorders was 25%, and that of depression disorders

19% [6]. Impact negatively on their family, social interaction, leisure opportunities and occupation, there is also higher level of psychiatric co-morbidity and poor self-esteem compared with people without the condition [7]. The unpredictability of the seizures results in embarrassment as well as disruption of the normal activity of daily living with consequent depression and anxiety [8]. Which are frequently unrecognized and untreated [9]. The presence of emotional distress badly affects the disease and treatment outcome and also exerts a profound negative effect on the health-related quality of life in PWE [10]. Depression and anxiety disorders are very common in people with epilepsy. The altered brain activity that causes epileptic seizures can lead to depressive moods and the stress of living with a chronic condition can worsen feelings of depression and anxiety. As a consequence, epilepsy may be more difficult to manage as depression is sometimes known to make seizures more frequent and can decrease the motivation to manage epilepsy effectively [7].

A cross sectional study conducted in Mexico showed that use to both scales (BDI and MADRS) 42.3% of the patients were considered depressed. The HAMA ratings revealed that 38.8% experienced significant anxiety symptoms, as defined by a rating above 18 points and depression, posttraumatic epilepsy, low educational level, poly therapy use and inadequate seizure control were related to the presence of significant anxiety symptoms [11]. Cross sectional study conducted in Brazil showed that using HADS 24.4% subjects as having depression and 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 [12].

A case control study conducted in USA showed that the prevalence of anxiety among PWE was using GAD-7 26.2% [13]. A cross sectional conducted in Europe showed that Anxiety was estimated in 35% of cases and 45% was depressed and depression was significantly associated to the celibacy, the feeling of stigma and anxiety was correlated with the absence of hobbies [14]. A study conducted in the US showed that higher levels of stigma correlated with higher level of depressive symptoms; furthermore, low social support and low level of patient satisfaction were significantly associated with depression among PWE [15]. A population-based cross sectional study conducted in Canadian 17.4% subjects as having depression and 22.8% with depression respectively [16]. A case control study conducted by using HADS in Iran showed that 9.5% epilepsy patients had depression and 24.5% had anxiety and female gender was significantly related to anxiety and lower educational status was significantly related depression [17]. A case control study conducted in Chennai showed that the prevalence of anxiety is 57% among PWE [18]. Study conducted in West Africa (Togo 84, 66% and Benin 85.3, 84.1%) showed that the respective frequencies of

depression and anxiety were among PWE respectively [19]. A cross section study conducted in western Nigeria showed that the prevalence of depressive disorder was 20.4% assessed by HADS and sex, previous hospitalization for epilepsy, increased seizure frequency, prolonged duration of epilepsy and AED duration is significant associated with depression in epilepsy [20]. A cross sectional study conducted in Nigeria showed that the prevalence of anxiety and depressive symptoms were 20.2% and 15.4% respectively and old age, being a female, poor social support and short seizure-free periods were significantly associated depression and anxiety among PWE [21]. A cross sectional study conducted using beck depression inventory in Northwest Ethiopia showed that the prevalence of depression was found to be 45.2 % and illiterate [can't read and write], Perceived stress, onset of illness <6 years, frequency of seizure ≥ 1 per month, poly-pharmacy and difficulties of adherence to antiepileptic drugs were also found to be independently associated with depression [22]. Institutional based cross sectional study conducted using BDI-II in Southern Ethiopia Jimma showed that the prevalence of depressive disorder among patient with epilepsy was 49.3% and Educational status, were able to minimally read and write, seizure frequency, epilepsy-related perceived stigma significant associated with depression among PWE [23]. A cross sectional study conducted in Ethiopia using HADS instrument showed that the prevalence of anxiety symptoms among epileptic patient was found to be 33.5 % whereas prevalence of depression was 32.8 % and monthly family income, frequency of seizure and side effects of AEDs were significantly associated with both depression and anxiety. However, being divorced/ widowed was significantly associated with anxiety whereas perceived stigma, types of AEDs, and unable to read and write were associated with depression [24].

There are limited studies which showed the magnitude of depression and anxiety among epileptic patients in Sub-Saharan Africa particularly in Ethiopia. The aim of this study was to determine the magnitude of depression and anxiety disorders among epileptic people at West shewa public hospital, Oromia regional state, Ethiopia. Hence, the findings might have importance to stakeholders and policy makers working in Neuropsychiatric areas by showing its prevalence and the factors associated with it.

Method

Institutional based quantitative cross-sectional study was conducted from May 20, 2017 to June 20, 2017, at Oromia regional state, west shewa zone public hospital which have psychiatry and neurology department. The minimum number of samples required for this study was determined by using single population proportion formula and found to be 387. The adults aged 18 years and above were included in the study and subjects who had major cognitive impairments or intellectual and physical disability were not included in the study. A systematic random sampling technique was used to select participants. People with epilepsy who were already diagnosed

and on regular follow-up at Ambo general, Gindeberet and Gedo district Hospitals Psychiatry and neurology unit were interviewed the questionnaire included socio-demographic characteristics, clinical and social factors of epilepsy, concerning co-morbid anxiety, depression, perceived stigma and stress. Hospital Anxiety and Depression Scale (HADS) and stigma scale were used, respectively. HADS is a 14-item questionnaire, commonly used to screen for symptoms of anxiety and depression. The 14-items can be separated into two 7-item subscales for anxiety and depression. HADS scale was validated in Ethiopia and the internal consistency was 0.78 for the anxiety, 0.76 for depression subscales and 0.87 for the full scale. The scales use a cut-off score for anxiety and depression of greater than or equal to 8 [25]. Perceived stigma was assessed by Kilifi Stigma Scale of Epilepsy which was developed and validated in Kilifi, Kenya, with high internal consistency, Cronbach's α of 0.91, and excellent test-retest reliability with r of 0.92. It is a simple three-point Likert scoring system scored as "not at all" (score of 0), "sometimes" (score of 1), and "always" (score of 2). It has fifteen items and a total score was calculated by addition of all item scores. The score above the value on 66th percentile of the data indicated presence of perceived/felt stigma [26]. For the assessment of the stress, Perceived Stress Scale (PSS) was used. The PSS is the most widely used psychological tool for measuring the perception of stress. The questions in the PSS asked about the feelings and thoughts of the patients during the past month. Each item is rated on a 5-point scale ranging from never (0) to almost always [27]. Positively worded items are reverse scored, and the ratings are summed, with higher scores indicating more perceived stress. The presence of perceived stress was defined using a cutoff point ≥ 20 on PSS. PSS had an internal consistency of Cronbach's alpha for the total score of PSS = 0.793[28]. Data was collected by three BSc. Nursing data collectors and supervised by three BSc Psychiatry. The questionnaire was translated to local language (Afan Oromo) to be understood by all participants and translated back to English. The translation and back translation were done by language expert. Data was entered, cleaned, and stored by using EPI info version 3.5.1 and then exported into SPSS version 20 for analysis. Frequency and percentage were used to describe the data. Crude and adjusted OR was analyzed using logistic regression and the level of significance of association was determined at p value < 0.05 .

Ethical consideration

The study proposal was initially approved by the ethical review board of Ambo University. A formal letter of permission was obtained from Ambo University and Ambo general, Gindeberet and Gedo district hospitals and submitted to the respective outpatient department. The information about the study was given to the participants. Verbal and then written informed consent was sought from each participant who agreed to participate in the study and full filled the inclusions criteria. Only anonymous data collected in private rooms.

Result

A total of 387 participants were recruited for the study which makes the response rate 100 %.

Socio-demographic characteristics of the respondents

Respondents' age ranged from 18 to 82 years with a median age of 29 years. Around 225 (58.1%) of the respondents were males. Of the total respondents, 120 (31 %) were in the age group of 18-24 years. Majority of the respondents were Oromo 339 (87.6%) by ethnicity, protestant followers 49.4 % and married 45.7 % followed by unmarried 41.3 % by marital status. Regarding occupational status, 28.4% farmer followed by student 21.7 % and 47.8% grade 1-8 educational status (Table1).

Clinical characteristics of the respondents

Out of the total 387 respondents, 39.3 % were with epilepsy for 2-5 years followed by 6-10 years 28.4 %. Concerning duration of on AED, 33.6 % found between 2-5 years and 6-10 years 28.2 %. Most of the respondents 75 % not had complication during seizure (Table 2).

Table 1: Distribution of study subjects by socio demographic factors patients with (n=387) epilepsy of follow up at west shewa zone public hospital, Oromia regional state, Central Ethiopia, 2017.

	Variables	Frequency	Percentage
Age	18-24	120	31.0
	25-34	106	27.4
	35-44	90	23.3
	>45	71	18.3
Sex	Male	225	58.1
	Female	162	41.9
Ethnicity	Oromo	339	87.6
	Amhara	30	7.8
	Others	18	4.7
Religion	Orthodox	148	38.2
	protestant	191	49.4
	Muslim	48	12.4
Marital Status	Unmarried	160	41.3
	Married	177	45.7
	Divorced	21	5.4
	Others	29	7.5
Educational Status	No formal education	56	14.5
	1-8	185	47.8
	9-12	111	28.7
	>12	35	9.0
Occupational Status	Farmer	110	28.4
	House wife	72	18.6
	Student	84	21.7
	Merchant	56	14.5
	Government employment	65	16.8
Monthly family income	<300	122	31.5
	301-600	94	24.3
	601-1000	80	20.7
	>=1001	91	23.5

Table 2: Clinical related factors of patients with (n=387) epilepsy on follow up at West shewa zone public hospital, Oromia regional state, Ethiopia, 2017.

	Variables	Frequency	Percentage
Duration of illness	≤ 1 year	59	15.2
	2-5 years	152	39.3
	6-10 years	110	28.4
	≥ 11 years	66	17.1
Duration of on AEDs	≤ 1 years	82	21.2
	2-5 years	130	33.6
	6-10 years	109	28.2
	≥ 11 years	66	17.1
Frequency of Seizure in three months	0	130	33.6
	1- 2x	140	36.2
	>2x	117	30.2
Complication of seizure	Yes	96	24.8
	No	291	75.2
perceived stigma	Yes	131	33.9
	No	256	66.1
Perceived stress	No	140	36.2
	Yes	247	63.8

Prevalence of depression and anxiety among epileptic patients

The prevalence of depression symptoms among people with epilepsy was found to be 43% whereas prevalence of anxiety was 47.8%

Factors associated with anxiety and depression among people with epilepsy

On bivariate analysis, the factors found to fulfill the minimum requirement (p-value < 0.2 in this study) were age, occupational, educational status, and duration of illness, perceived stigma and stress. However, no significant association was noted in depression and anxiety between sex, marital status, and duration of illness, frequency of seizure, duration on AEDs and complication of epilepsy among people with epilepsy. The results of multivariate logistic regression showed that age and stress were significantly associated with both depression and anxiety. However, occupational status (farmer and house wife) and perceived stigma were significantly associated with depression whereas; No formal education and grade 1-8th were associated with anxiety.

It was found that lower educational level was significantly associated depression with anxiety. No formal education was two times [AOR=2.12, 95 % CI: 1.09, 4.14] and grade 1-8th was three times [AOR=2.85, 95%CI: 1.42, 5.69] more likely to have anxiety as compared to respondents with educational level of above grade 12th. The result indicated that patients who had stress were about six and seven times more likely to have depression and anxiety, respectively as compared to patients who had no stress [AOR=6.27, 95 % CI: 2.51,10.37 and AOR=7.09, 95 % CI: 4.46, 12.91]. Age was another factor associated with both depression and anxiety. Those who ages are greater than or equal 45 years were twice and six times more

likely to have depression and anxiety as compared to patients who those age 18-24 years, respectively [AOR=5.46, 95 % CI: 1.65,18.37] and [AOR=2.35, 95 % CI: 1.12,4.92]. Similarly, patients those who had epilepsy-related perceived stigma had approximately 17 fold likelihood to have depression compared to their counterparts [AOR=17.11, 95 % CI: 9.08, 29.63]. Regarding occupational status, those who are farmer and house wife were around six and three times more likely to have depression [AOR=5.74, 95 % CI: 2.46, 13.37] and [AOR=3.00, 95%CI: 1.21, 7.41] respectively (Tables 3,4).

Discussion

The aim of this study was to assess the prevalence of depression and anxiety and associated factors among people with epilepsy on follow up at west Ambo general, Gindeberet and Gedo district hospitals. Overall, the prevalence of depression and anxiety were found to be 43% and 47.8% respectively.

Prevalence and Factors associated with depression and anxiety among people with epilepsy

In this study, the prevalence of depression among people with epilepsy was 43% and the prevalence of anxiety was 47.8 %. The prevalence of depression was in line with the study done in Mexico (42.3%), Northwest Ethiopia (45.2%) and Jimma, southern Ethiopia (49.3%) [11,22,24]. The prevalence of depression (47.8%) was line with study conducted in Chennai (47%) [18]. among people with epilepsy. The result of this study depression (43%) and anxiety (47.8%) are greater as compared to the study carried out in Brazil (24.4%, 39.4%) [12], Canadian (17.4%, 22.8%) [16], Iran (9.5%, 24.5) [17] and Central Ethiopia (32.8%, 33.5%) depression and anxiety respectively among people with epilepsy [24]. In contrast, the prevalence of depression and anxiety the result of these study (43%, 47.8%) are lower than when compared to the study conducted in west Africa Togo (84%, 66%) and Benin(85.3%, 84.1%) respectively [20]. The possible explanations for the variation may be due to use of different tools; geographical areas sample size and cultures of the study subject. Regarding the associated factors, age group equal or greater than 45 were more likely to have depression [AOR=5.46, 95%CI 1.65,18.03] and anxiety [AOR=2.35, 95% CI: 1.12, 4.92] when compared to those who were 18-24 years among people with epilepsy. This result is in line with that the study conducted in Brazil [12] and Nigeria [21]. This is explained by old age people who were more likely to report feeling stigmatized many of social aspects, for older patients, they become more hopeless and frustrated about their condition and their prospects for the future.

When we compare educational status no formal and grade 1-8th participants were twice [AOR=2.12, 95% CI: 1.09, 4.14] and three times odds [AOR=2.85, 95%CI 1.42, 5.69] more likely to have anxiety when compared to those who have grade 12th and above among people with epilepsy respectively. Relatively the study that conducted in Mexico [11] and Brazil [12] showed that no academic qualification participants were significant association.

Table 3: Factors associated with depression of people with epilepsy (bivariate and multivariate analysis).

Variables	Depression		Bivariate and multivariate analysis	
	Yes	No	COR (95%)	AOR (95%)
Age				
18-24	34	86	1.00	1.00
25-34	48	58	2.09(1.21, 3.63)	2.129(0.72, 6.34)
35-44	36	54	1.69(1.95, 3.01)	3.65(0.17, 11.37)
>45	52	19	6.92(3.58,13.38)	5.46(1.65, 18.03)*
Marital Status				
Unmarried	59	101	1.00	1.00
Married	87	90	1.66(1.07, 2.56)	1.12(0.91, 1.33)
Divorced	13	8	2.78(1.09, 7.10)	1.18(0.11, 5.91)
Others	11	18	1.05(0.463, 2.366)	1.55(0.43, 2.66)
Educational Status				
No formal education	28	28	3.38(1.31, 8.70)	1.95(0.44, 6.73)
1-8	102	83	4.15(1.79, 9.61)	3.21(0.63, 5.77)
9-12	32	79	1.367(0.562, 3.327)	1.23(0.31, 2.34)
>12	8	27	1.00	1.00
Occupational Status				
Farmer	70	40	3.94(2.05, 7.58)	5.74(2.46, 13.37)*
House wife	37	35	2.38(1.18, 4.79)	3.00(1.21, 7.45)
Student	20	64	0.71(0.34, 1.46)	0.41(0.15, 1.09)
Merchant	23	33	1.57(0.74, 3.32)	0.83(0.29, 2.31)
Government employee	20	45	1.00	1.00
Perceived stigma				
Yes	110	21	13.97(12.88, 29.63)	17.11(9.88, 29.63)*
No	60	196	1.00	1.00
Perceived Stress				
Yes	53	194	8.62 (1.85,3.97)	6.27(2.51,10.37)*
No	117	23	1.00	1.00

Table 4: Factors associated with Anxiety of people with epilepsy (bivariate and multivariate analysis).

Variables	Depression		Bivariate and multivariate analysis	
	Yes	No	COR (95%)	AOR (95%)
Age				
18-24	34	86	1.00	1.00
25-34	48	58	1.37(0.79,2.33)	1.28(0.68, 2.40)
35-44	36	54	3.17(1.79,5.61)	5.08(0.55, 10.10)
>45	52	19	3.14(1.706,5.78)	2.35(1.12, 4.92)
Educational Status				
No formal education	28	28	1.64(0.67, 3.98)	2.12(1.09, 4.14)
1-8	102	83	2.86(1.33, 6.19)	2.85(1.42, 5.69)
9-12	32	79	1.49(0.66, 3.34)	1.06(0.42, 2.65)
>12	8	27	1.00	1.00
Perceived stigma				
Yes	110	21	5.77(3.59, 9.25)	3.21(0.61, 7.48)
No	60	196	1.00	1.00
Perceived Stress				
Yes	53	194	5.60(3.54,8.87)	7.59(4.46,12.91)**
No	117	23	1.00	1.00

The possible explanations might be those individuals with lower educational status might face difficulties socioeconomic stressors like unemployment, poverty and economic dependency and may have poor coping strategies to their illness, which in turn to social isolation, poor adherence to their AEDs, school dropout that impaired their cognition and contributes to poorer psychological adjustment that they face in life. Those patients those who had develop perceived stigma were seventeen times [AOR=17.11, 95% CI: 9.08, 29.63] more likely to develop depression than those people with epilepsy who had not develop perceived stigma. These results were consistent with the previous studies in Europe [14], Jimma [22] and central Ethiopia [24]. This may be due to lack of coping strategies to different seizure effect such as perceived negative social attitude as a result of unaccepted sign of seizure, or the subjects may not develop stigma resistance ability through their life that help them to cope up with different cultural belief, social stigma and the impact of the illness that contributed to felt stigma. Those patients with high perceived stress had more than six times [AOR=6.26, 95 % CI: 2.51, 10.37] odds of depression and seven times [AOR=7.59, 95%CI: 4.46, 12.91] odds of anxiety as compared to those patients who had low perceived stress. These results were consistent with the previous studies in Ethiopia [22]. This may be due to the fact that those individual with high perceived stress may have poorer psychological adjustment when they face different stress causing problems such as perceived stigma, unemployment, lower educational status and seizure frequency in their life that may be the cause for depression disorders.

The strength of this study is the first of its kind in study area that determined the prevalence and associated factors for both depression and anxiety among epileptic patients. However, our limitations include recall bias regarding duration of illness, age at the onset of seizure and medication duration. Some important variables such as intellectual disability and treatment adherence were not assessed.

Conclusion

The prevalence of anxiety and depression was found to be high among people with epilepsy in this study. Age and perceived stress were associated factors depression and anxiety. Educational status was associated factors of anxiety while occupational status and patients with epilepsy have various mood disorders including depression and anxiety. Whereas the relationship between epilepsy and depression and anxiety has received less attention, Clinicians and neurologists should early identify co-morbid psychiatric illnesses like depression and anxiety in people with epilepsy and it should be of great concern for health care providers. Further research should be done in different part of the country to provide stronger evidence regarding the prevalence and factors associated with this co-morbid anxiety and depression among epileptic people.

Declarations

Ethics approval and consent to participate

The study proposal was initially approved by the ethical review board of Ambo University. A formal letter of permission was obtained from the west shoa hospitals and submitted to the respective outpatient department. The information about the study was given to the participants. Verbal and then written informed consent was sought from each participant who agreed to participate in the study and full filled the inclusions criteria. Only anonymous data collected in private rooms.

Availability of data and materials

This study is a part of institutional based a cross sectional study among on people with epilepsy. The dataset pertaining to this study will be shared upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Takele T. has involved in the conception, design, analysis, data interpretation and report writing. Adamu B. has involved in the design, analysis and report writing. Both of authors read and approved the final manuscript.

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