

## The Impact of Educational Guidelines on Anxiety and Depression among Epileptic Patients

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### Abstract

**Background:** Epilepsy is a common neurological condition associated with recurrent and unpredictable seizures associated with significant psychological and social consequences. Epileptic patients are more vulnerable to psychiatric illnesses: rates of psychiatric illness are 9% higher among epileptic patients than in the general population and rates of depression, are 22% higher. **This study aimed to** evaluate the impact of educational guidelines on anxiety and depression among epileptic patients. **Method: Design:** A quasi-experimental research design was used to accomplish this study. **Setting:** The study was carried out at the Outpatient Neurology Unit at Sohag University Hospital. Egypt. **Subjects:** A sample of 150 epileptic patients who were attending the previously selected setting within six months. A convenience sampling technique was adopted to recruit samples. **Tools:** Data was collected by using three tools; **Structured interview** questionnaire, GAD-7 (General Anxiety Disorder-7), and Neurological Disorder Depression Inventory for Epilepsy (NDDI – E). **Results:** There were statistically significant improvements in anxiety and depression among epileptic patients pre & post-training instructional guidelines (P<0.001). **Conclusion:** The present study concluded that the educational guidelines implementation had a positive effect on improving anxiety and depression among epileptic patients. **Also,** findings revealed anxiety was more than depression among epileptic patients. **Recommendations:** More attention should be paid to incorporating anxiety and depression screening and treatment into existing epilepsy programs and to revising treatment guidelines for epileptic patients. There is a need for developing comprehensive simple Arabic printed educational materials such as (booklets, pamphlets, and posters) for epileptic patients that can improve anxiety and depression. Replication of the current study with a larger sample of patients in different settings is required to generalize the results.

**Keywords:** Anxiety, Instructional guidelines, Depression, Epileptic patients.

### Introduction:

According to WHO (2020), Recurrent brief episodes of symptoms or signs characterize a group of neurological diseases known as epilepsy brought on by abnormally high levels of neuronal activity in the brain. It can range in duration from extended, intense shaking motions that could cause physical harm to brief, untraceable episodes (Daroff et al., 2016). Additionally, tongue biting or a loss of sphincter control (bowel or bladder) may be linked to it. It typically has an idiopathic cause, but other possible causes include infection, trauma, drugs or toxins, inflammation, or lesions that occupy space in the brain<sup>8,9</sup>. According to Berkovic et al. (2019), genetic mutations might also have

minor role. According to Hammer et al. (2014) and the Epilepsy Foundation North West (2018), epilepsy cannot be cured, but it is typically effectively managed.

About 22 million cases were reported globally in 2015, with the majority of those cases taking place in developing nations (Jobe, 2019). It is linked to a discriminatory societal mindset in developing nations, which eventually compromises the patients' social and mental health. Approximately 20–30% of individuals with epilepsy are said to have mental health issues. Obsessive-compulsive disorder, anxiety, depression, and migraines are more common in

epileptic patients (Taylor et al., 2018). In patients with co-occurring anxiety or depression who also have epilepsy, suicide, and suicidal behavior are more common. According to a study conducted in Pakistan, sixty percent of these epileptic patients had depression, compared to thirteen percent in another study (Usman et al., 2017).

It has been discovered that anxiety, a comorbid condition in epilepsy patients, significantly lowers the patients' quality of life. Patients with refractory focal epilepsy are more likely to experience anxiety disorders; therefore, clinicians should carefully evaluate their patients while keeping this significant comorbidity in mind. Approximately 50–60% of people with chronic epilepsy worldwide experience mood disorders, such as anxiety and depression. The connection between epilepsy and depression has drawn a lot of attention, but anxiety disorders are still poorly understood. It is now recognized that anxiety can significantly impact an epilepsy patient's quality of life (Ettinger et al., 2018)

According to a cross-sectional study conducted in Canada, depression affected 13% of patients with epilepsy compared to 7.2% of patients without the condition. 49.2% of epileptic patients in a Polish study had a depressive disorder, followed by mild depression in 11.8% and severe depression in 37.4% of cases. Using the Hamilton Rating Scale for Depression (HRSD) and the Beck Depression Inventory (BDI) measuring scales, the study found that 42% and 45%, respectively, of epileptic patients in Nigeria had depression. Everyone agrees that individuals with epilepsy are four to five times more likely to experience depression (Perini et al., 2016).

Additionally, compared to the general population, epileptic patients experience anxiety at a higher rate. Patients with epilepsy may frequently experience both anxiety and depression at the same time (Kanner, 2016). The co-morbidity of depression and anxiety in epilepsy is believed to be a bidirectional phenomenon because of the shared pathophysiological conditions caused by

structural abnormalities, monoamine pathways39–41, cerebral glucose metabolism, hypothalamic-pituitary-adrenal axis, gabaaminobutyric acid suppression, amygdala hyperreactivity, psychological disturbances related to antiepileptic drugs 49–53, and psychosocial factors (Salzberg et al., 2016). In the epileptic phase, depression and anxiety can present with a range of symptoms (preictal, ictal, interictal, or postictal). Whereas depression manifests as lethargy, irritability, and disinterest, anxiety typically manifests as fears and panic attacks (Aziz et al., 2021).

Many epileptic patients go untreated for depression and anxiety as a result of carelessness or ignorance. The symptoms of epilepsy will likely lessen if the symptoms of anxiety or depression improve (Zung et al., 2020). It is advised by the International League Against Epilepsy (ILAE) to regularly screen the epileptic population for anxiety and depression (Kerr et al., 2019). Additionally, they have advised the patient and family to seek out supportive counseling and therapy. Among medications, it is advised to take antidepressants like selective serotonin reuptake inhibitors (SSRIs). Before administration, drug interactions and psychiatric effects of antiepileptic medications should be taken into account (Phabphal et al., 2017).

Nurse support is offered in several ways including telephone consultations, nurse-led clinic consultations that are requested by a consultant or GP, and home visits. Also, epilepsy nurses can provide advice on many aspects of living with epilepsy including Understanding epilepsy, Seizure triggers and management of seizures, First aid for epilepsy, How to use a seizure diary, including video recording, The influences of daily life on epilepsy, including driving laws and employment, Discuss challenges of higher education for a person with epilepsy, Contraception, pre-conception, and pregnancy advice for women with epilepsy, Dedicated Nurse-led outpatients clinics, Review of specialist epilepsy medications, side effects, management, complex drug changes. Additionally, patient Information as Training

and education in the use of community emergency/rescue medications in the event of cluster, prolonged, or series of seizures plus formulation of guidelines, Referrals to specialist services as required, Provide access to a range of information leaflets, Provide communications links with other healthcare professionals such as GPs, Neurologists, therapists, and voluntary agencies (**Adult epilepsy nursing service, 2022**).

### **Significance of study:**

According to numerous recent epidemiological studies, epileptic patients have high rates of anxiety (11–25%) and depression (9–37%) (Cleary et al., 2018). These numbers are even higher when treating refractory epilepsy, such as temporal lobe epilepsy (Kanner et al., 2018).

For epileptic patients, having a depression-related comorbidity is associated with a lower quality of life and increased suicidal ideation. Comorbid depression with epilepsy is associated with significantly reduced overall seizure recovery, increased seizure severity, and increased cognitive, emotional, and physical illness (Cleary et al., 2018). Clinicians may also find it difficult to manage antidepressant treatment for their epileptic patients due to concerns about drug interactions, polytherapy side effects, and fears of lowering seizure thresholds. Depression in epileptic patients strains health systems, particularly in low-income countries, in addition to complicating treatment and lowering quality of life (Liik et al., 2019). As a result, the researchers designed this study to assess the impact of educational guidelines on anxiety and depression in epileptic patients.

### **Aim of the study:**

To evaluate the impact of educational guidelines on anxiety and depression among epileptic patients through:

- 1- Assessing the anxiety level among epileptic patients.
- 2- Assessing the depression level among epileptic patients.

- 3- Designing and implementing the educational guidelines according to epileptic patients' needs.
- 4- Determining the effect of educational guidelines implementation on anxiety and depression among epileptic patients
- 5- Knowing the correlation between depression and Anxiety among epileptic patients.

### **Research hypothesis:**

Epileptic patients who receive the educational guidelines will experience lower anxiety and depression levels post - guidelines implementation than pre-implementation.

### **Subjects and Method:**

#### **Research design:**

A quasi-experimental research design was used to accomplish this study.

#### **Setting:**

The study was carried out at the Outpatient Neurology Unit at Sohag University Hospital. Egypt.

#### **Subjects:**

A sample of 150 epileptic patients who were attending the previously selected setting within six months. To collect samples, the convenience sampling technique was used.

#### **Data collection tools:**

Tools: Three tools were utilized to gather the data required for the study:

#### **Tool 1: Structured interview questionnaire:**

It was created by the researcher following a review of the literature and is divided into two sections.

**Part 1:** Epileptic patients' demographic data such as age, sex, level of education, occupation, and residence.

**Part 2:** Epileptic patients' medical history such as previous hospitalization, duration of the disease, history medical, Past Psychiatric history, Age at onset of illness, the total course of the disease, seizure type, seizure frequency, and taking antiepileptic drugs.

### Tool II: Generalized Anxiety Disorder 7

In order to determine probable cases of generalised anxiety disorder (GAD) and to grade the severity of symptoms, the Generalised Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006) was created. Every one of the symptoms bothered them. An additional item was included to gauge how long the anxiety symptoms persisted. Nine items that represented every mental disorder listed in the Diagnostic and Statistical Manual of Mental Disorders made up the original item pool of possible items for this measure. A newly developed self-report tool called the Generalised Anxiety Disorder-7 (GAD-7) asks respondents if they have experienced anxiety-related problems in the past two weeks. A higher score indicates a higher level of difficulty. The questions are graded on a 4-point scale from 0 to 3, and the total score ranges from 0 to 21 and a higher score signifying a greater degree of nervousness.105 It can be finished in less than three minutes, and a score of more than nine indicates that GAD is the cause. Because it only has seven items that address somatic symptoms that can be mistaken for the side effects of AEDs, cognitive symptoms of seizure disorder, or the underlying neurologic disorder associated with epilepsy, this instrument—which has been used extensively by general practitioners<sup>106</sup>—can be used to screen for GAD in PWE.<sup>107</sup> GAD7 validation was recently carried out in Korean PWE.<sup>108</sup> A score greater than six validated the GAD diagnosis. The GAD-7 had outstanding internal consistency (Cronbach alpha =.92). Additionally, there was good test-retest reliability (intraclass correlation = 0.83). When the scores from the self-report scales were compared to the scores from versions of the same scales administered by mental health professionals, similar results were obtained (intraclass correlation = 0.83), suggesting good procedural validity. Additionally, the GAD-7 showed strong factorial, construct, and criterion validity.

**Tool III: Neurological Disorders Depression Inventory for Epilepsy (NDDI-E)** is a short inventory (six items) that was developed for fast-tracking (about 3 minutes) of depressive episodes in epilepsy. It has the advantage of

minimizing the influence of confounding factors associated with epilepsy, such as the adverse effects of the use of antiepileptic drugs (AEDs) on mood or cognitive impairment. This short screening tool was developed for use specifically among people with epilepsy and aims to limit the impact of anticonvulsant side effects and common cognitive deficits in epilepsy on screening for depression. It consists of six statements about thoughts and feelings in the preceding two weeks that are scored between 1 (never) and 4 (always/often), with a minimum score of 6 and a maximum of 24. **Kanner (2006)** reports that it takes under 3 min to complete. When **Gilliam et al. (2006)** analyzed data on 229 patients with epilepsy, ROC curve analysis indicated an ideal cutoff of >15 resulting in 90% specificity and 81% sensitivity against DSM-IV major depression with NPV of 0.96 and PPV of 0.62. The NDDI-E has recently been validated and demonstrated an internal consistency reliability of 0.85 and test–retest reliability of 0.78. A score of N15, according to its creators, has shown a specificity of 0.90 and a sensitivity of 0.81 for the diagnosis of major depression (**Friedman et al., 2009**).

### Tool validity and reliability:

The data collecting tool's clarity, comprehensiveness, appropriateness, and relevance were evaluated as markers of its validity by five experts in psychiatric nursing and psychiatric medicine. The second tool's Cronbach alpha coefficient was 0.92, while the third tool's was 0.85, demonstrating both tools' good dependability.

### Procedures:

#### The actual study included three phases: A-Preparatory phase:

The researchers examined recent and related literature available as textbooks, periodicals, magazines, and internet searches to develop data collection instruments and instructional recommendations. Following the implementation of the educational guidelines, an Arabic handout was created, printed, and distributed to study participants.

**Pilot study:**

Before gathering information to test the feasibility of tools and make necessary modifications, a pilot study on 10% of the epileptic patients from the selected setting (15 epileptic patients) was approved. The study sample included these epileptic patients.

The Research Ethic Committee of Sohag University's Faculty of Nursing granted ethical approval. The epileptic patients were also informed that their participation in the study was entirely voluntary and that the privacy of the study subjects was guaranteed. The epileptic patients were assured that their participation was voluntary and that they had the right to accept or decline participation in this study. They are free to withdraw from the study at any time.

**Implementation phase:**

The researchers examined the existing literature, which included books, journals, magazines, and internet searches. Each epileptic patient was interviewed individually, and the necessary information was gathered using the study tools. The medical records of epileptic patients were revised to complete the part of the epileptic patient's medical history. The information was gathered over 6 months, beginning in July 2021 and ending in December 2021. The epileptic patients were informed about the study's goals, methodology, and expected outcomes before the interview.

The approval of the research's ethics committee was obtained from the Sohag University faculty of nursing. Before beginning the interview, the researcher made sure the epileptic patients were seated comfortably and gave them a brief explanation of the study's goal. The researcher interviewed each of the epileptic patients under study one-on-one to obtain the necessary data using all available research instruments.

The time required to complete the study instruments ranged from 35 to 45 minutes. The researcher began data collection based on the hospital's regular schedule, which runs from 9 am to 1 pm. She was able to interview two to three epileptic patients each day. The researcher developed the study tools after reviewing the

pertinent literature. Study tools I (demographic and medical data of the epileptic patients, Generalized Anxiety Disorder 7, and Neurological Disorders Depression Inventory for Epilepsy) were completed pre and post-the-start of the educational guidelines implementation. Group sessions were once a week, one hour per session. Each group consisted of 14 to 16 epileptic patients. The researchers were given written materials with graphics in addition to instructions so that patients could comprehend the study more fully. This illustrative handout was developed by the researchers using a review of the pertinent literature, findings, and suggestions from prior research, opinions of healthcare professionals, and content testing. The subject contents have been sequenced through eight theoretical sessions and each session took 40- 50 minutes. patients involved in the study were divided into 10 groups.

The content of the sessions	
Time (week)	Content
First	outlines the goals, guiding principles, and Overview of epilepsy and associated psychological issues
Second	Provide epilepsy-related health education so that patients can comprehend their own thought patterns and behavior patterns, as well as how thinking influences emotional, physical, and behavioral reactions.
Third-Fourth	Recognize the causes of each patient's depression, keep an eye out for their negative thoughts and perceptions, and keep an emotion log.
Fifth-Sixth	The significance of medication intake. Patients talk about the mechanisms and techniques of the medications they take for epilepsy. Therapists respond to patients' inquiries and thoroughly explain drug use, placing special emphasis on the drug's standard use.
Seventh	Patients' negative emotions should be cleared; Minimize seizures and educate patients on how to keep a steady mental state and prevent emotional swings
Eighth	Establishing objectives Motivate patients to use their epilepsy treatment to improve their lives; control their emotions and seizures

### The Evaluation phase:

Following the start of the educational guidelines, each epileptic patient was evaluated using the pre-test study tools to ascertain how the sessions affected their anxiety and depression two months after the educational guidelines implementation in the previously selected setting.

### Administrative design:

The director of the previously chosen setting received formal approval from the chosen nursing faculty at Sohag University to conduct the study and request permission to collect data from the studied sample.

### Statistical analysis:

The researchers used Microsoft Excel software to code, process, and analyze data from previous tools and outcome assessments. The Statistical Package for the Social Sciences, version 25, was used to enter the data and perform data analysis and graphical presentation. Quantitative variables were described by mean and standard deviation (SD), while qualitative categorical variables were expressed by frequencies and percentages. The chi-squared method was used to test the independence of

categorical variables. Pearson's correlation and the linear correlation coefficient ( $r$ ) were used to determine the correlation between two quantitative variables in a group. The p-values were classified as follows: Significant (S) P-value  $\leq 0.05$ , Highly significant (HS) P-value  $\leq 0.001$ , and Non-significant (NS) P-value  $< 0.05$ .

### Results:

As shown in **Table 1**, the studied epileptic patient's average age was  $32.23 \pm 6.42$  years old and 60% of them were female. Less than three-quarters of the studied epileptic patients (70%) were illiterate. As regards residence, it was observed that 80% of them live in urban areas. Concerning occupation among the studied epileptic patients (76%) of them were having a job.

Out of the total 150 epileptic patients, 36% were with epilepsy for five years followed by 6-10 years (34%). Concerning age at onset of illness, 40% were found between 10–19 years and 20–29 years (36%). Most of the respondents (60%) had one seizure attack per month, 62% of them under combined antiepileptic drug as shown in (Table 2).

Table 3 shows the mean differences between the anxiety levels among the studied

epileptic patients pre and post-educational guidelines implementation. Whereas, after the educational guidelines implementation of two months, it was seen that the anxiety level significantly improved and the difference was significant at ( $P=0.001$ ).

Table 4 shows the mean differences between the depression levels among the studied epileptic patients pre and post-educational guidelines implementation. Whereas, after the educational guidelines implementation of two months, it was seen that the depression level significantly reduced and the difference was significant at ( $P=0.001$ ).

**Table (1): Distribution of the epileptic patients' demographic data (n=150)**

Demographic data	No	%
Age (years, $\bar{x}\pm s$ )	32.23 $\pm$ 6.42	
Male	60	40.0
Female	90	60.0
<b>Education level</b>		
Illiterate	105	70.0
Read & write	36	24.0
Secondary education	6	4.0
University education	3	2.0
<b>Residence</b>		
Urban	120	80%
Rural	30	20%
<b>Occupation</b>		
With job	114	76%
Without job	36	24%

Table 5 shows the level of correlation between anxiety and depression among epileptic patients. The mean anxiety score was 6.78 and its standard deviation was 4.67, similarly the mean depression score was 10.34 and its standard deviation was 4.58. The value was 0.794 which was significant at the 'P' value  $< 0.001$  level.

According to Table 6, there is a statistically significant correlation between the studied epileptic patients regarding anxiety and depression pre and post-educational guidelines implementation at ( $p$ -value =0.000).

Table (2): Distribution of the epileptic patients' medical history (n=150)

Demographic data	No	%
Previous hospitalization		
Yes	3	2.0
No	147	98.0
Duration of the disease		
≤5 years	54	36.0
6-10years	51	34.0
≥11 years	48	32.0
Family history		
Yes	6	4.0
No	144	96.0
History medical		
Yes	3	2.0
No	147	98.0
Past Psychiatric history		
Yes	6	4.0
No	144	96.0
Age at onset of illness		
< 10 years	21	14.0
10-19 years	60	40.0
20-29 years	54	36.0
≥ 30 years	15	10.0
Seizure type		
Focal seizures	96	64.0
Generalized seizures	51	34.0
Seizure frequency (month)		
≤1 time	90	60.0
≥1 time	60	40.0
Antiepileptic drugs		
Combined drug group	93	62.0
Single group	57	38.0

Table (3): Mean differences in total anxiety of the studied epileptic patient's pre and post-educational guidelines implementation (n=150)

Item	Pre- educational guidelines implementation	Post-educational guidelines implementation	t-test
	Mean ± SD	Mean ± SD	Mean ± SD
Generalized Anxiety Disorder	29.30±4.60	21.41±5.26	14.78 (0.001)*

Paired-sample t-test

\*Significance at  $p \leq 0.05$

**Table (4): Mean differences in total depression level of the studied epileptic patient's pre and post-educational guidelines implementation (n=150)**

Item	Pre- educational guidelines implementation	Post-educational guidelines implementation	t-test
	Mean ± SD	Mean ± SD	Mean ± SD
Neurological Disorders Depression Inventory for Epilepsy	17.78±4.53	10.22±2.77	15.33 (0.001)*

Paired-sample t-test

\*Significance at  $p \leq 0.05$ **Table 5: Level of co-relation between score of anxiety and depression (n=150)**

Variables	Mean	S.D	'r' value	'P' value
Anxiety	6.78	4.67	0.794	<0.001
Depression	10.34	4.58		

**Table (6): Correlation between Anxiety and depression among the studied epileptic patient's pre and post-educational guidelines implementation**

Anxiety level	Depression level			
	Pre- educational guidelines implementation		Post-educational guidelines implementation	
	R	P	R	P
Pre- educational guidelines implementation	0.487**	0.001		
Post-educational guidelines implementation			0.669**	0.000

\*. Correlation is significant at the 0.05 level (2-tailed).

**Discussion:**

According to Gilliam et al. (2019), epilepsy is a neurological disorder that is distressing to people worldwide and is frequently viewed as unacceptable in developing nations. There are numerous causes for epilepsy, a chronic condition affecting the central nervous system. Epilepsy is as common as 7% and has a prevalence of 5-11.2%, according to epidemiological studies (Fisher et al., 2017). Over 9 million people worldwide currently suffer from epilepsy, and 450,000 receive a new diagnosis each year (Falcone et al., 2020).

The World Health Organization lists mental morbidity as one of the major factors that contribute to disability globally. Of the top 10 causes of disability, mental illnesses are responsible for five of them globally (WHO, 2021). Approximately 70%

of epileptic patients can manage their condition with standard medication treatment; however, 30% respond poorly to medication and eventually develop intractable epilepsy (Bonnett et al., 2014).

Regarding demographic information, the findings of this investigation showed that the average age of the examined epileptic patients was 32.23±6.42, with 55% of them being female. Similar gender findings were also observed in another study, which suggested that women were more likely than men to have epilepsy. This finding may have been caused by the large number of female participants in the study. In contrast, males were found to have a higher prevalence of epilepsy than females (Usman et al., 2017).

According to the current study's results, less than 75% of epileptic patients were illiterate when it came to demographic data. According to the researchers, there might be a

knowledge gap regarding the patient's condition, which is frequently linked to heightened anxiety.

The current study's findings showed that there was a significant improvement in the mean differences between the anxiety levels of the epileptic patients under investigation before and after the implementation of educational guidelines compared to before. According to the researchers, it demonstrated the advantages of implementing instructional guidelines. This finding is consistent with that of **Goldstein (2017)**, who discovered that anxiety development is highly prevalent in epileptic patients.

The current study's findings showed that there were mean differences in the depression levels of the examined epileptic patients before and after the implementation of educational guidelines. However, following two months of implementing the educational guidelines, a significant reduction in depression levels was observed. According to the researchers, the implementation of educational guidelines had a positive impact on reducing depression among epileptic patients by providing them with sufficient knowledge about their conditions and reflecting on their level of depression.

The most common neurological disorder in the world is epilepsy, it affects approximately 50 million people globally and is associated with different psychiatric illnesses. Depression is one of the most frequent co-morbid psychiatric disorders that affect the lives of patients (**Biftu et al., 2015**)

This finding was corroborated by **Kanner & Nieto's (2019)** research, which revealed that epileptic patients are twice as likely as non-epileptics to develop depression (**Mendez et al., 2020**). The results of this investigation are consistent with those of another study carried out in Pakistan by **Yousafzai et al., (2019)**, which found that 60% of epileptic patients had depression<sup>33</sup>. Numerous risk factors,

such as seizure control, the kind and severity of epilepsy, and depression are responsible for the high percentage of depression among epileptic patients (**Thompson & Oxley, 2018**).

The study's findings showed a statistically significant relationship between the pre- and post-implementation of educational guidelines about anxiety and depression in the population of epileptic patients under investigation. According to the researchers, it verified that the implementation of educational guidelines was successful.

The majority of the epileptic patients were diagnosed with moderate anxiety, according to the study's results, which also showed that all of the patients had anxiety. This result is in line with a high prevalence of anxiety that was previously documented (**Khalid & Aslam, 2019**). This may be the result of the fact that the majority of epileptic patients fear the consequences of their condition. This may be one of the factors contributing to the notable psychosocial stress experienced by epileptic patients.

To determine the prevalence of anxiety and the variables connected to patients who were diagnosed with epilepsy, **Pham et al., (2017)** conducted a study. According to the Hospital Anxiety and Depression Scale, approximately 40.0% of the subjects in the entire sample (n = 250 patients) had anxiety. The most common sign of anxiety was "thoughts of worry."

The study's findings suggested a relationship between the demographics of epileptic patients and the level of anxiety they experienced. This study also reveals that among epileptic patients, unemployment and education are statistically significant risk factors for depression. This factor is consistent with findings from another study by **Usman et al., (2017)**, which showed that epileptic patients had higher rates of anxiety and depression. These findings may be related to educational deficiency, which may prevent epileptic' patients from knowing symptoms of anxiety and depression and result in an under diagnosis by medical professionals.

Following the implementation of educational guidelines, the study's findings showed a significant correlation between anxiety and depression in patients with epilepsy. According

to the researchers, it might have something to do with how well educational guidelines were implemented, giving epileptic patients' adequate knowledge about their condition and lowering their anxiety, which in turn helped to lower their depression. Due to worries about seizures and negative medication reactions, some patients discover that their epilepsy is frequently made worse by anxiety and depression. According to research, there are 32 times more epilepsy patients who experience anxiety and depression than there are people in the general population (Akosile et al., 2021, Siarava et al., 2019).

Patients with epilepsy may have a better quality of life and reduced symptoms of anxiety and depression by following educational guidelines through intervention therapy. The study's findings show that patients' anxiety and depression improved after following instructional guidelines. By addressing patients' thoughts and beliefs, educational guidelines through intervention therapy can help patients feel less anxious. This is especially beneficial for those who use combination medications which can lead to increased anxiety (de Barros et al., 2018 Tuvevsson et al., 2020).

The study conducted by Thapar et al. (2019) sought to investigate the connection between seizures and psychological variables (such as anxiety, stress, and depression). The results of this long-term cohort study indicate data on anxiety, depression, perceived stress, and seizures. Of the 558 people who were initially willing to participate, 433 provided two waves of data for this analysis. The three variables that predicted the change in seizure were stress ( $\beta = 0.25$ ,  $P < 0.01$ ), anxiety ( $\beta = 0.30$ ,  $P < 0.01$ ), and depression ( $\beta = 0.30$ ,  $P < 0.01$ ). Depression, on the other hand, acted as a mediator in the relationship between anxiety and stress and the modeled changes in seizure frequency ( $\beta = 0.30$ ,  $P < 0.01$ ) and  $\beta = 0.19$ ,  $P < 0.01$ ) over time.

### Conclusion:

Based on the results of this study, the present study concluded that the educational guidelines implementation had a positive effect on improving anxiety and depression among epileptic patients. Also, findings revealed anxiety was more than depression among epileptic patients.

### Recommendations:

Based on the results of this study the following recommendations are suggested:

More focus should be placed on updating treatment protocols for epileptic patients and integrating anxiety and depression screening and treatment into already-existing epilepsy programs.

There is a need for developing comprehensive simple Arabic printed educational materials such as (booklets booklets, pamphlets, and posters) for epileptic patients that that can improve anxiety and depression.

Replication of the current study with a larger sample of patients in different settings is required to generalize the results.

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