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Examining the Prevalence of Depression According to Neurological and Mental Diseases (A Case Study of Epilepsy)

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Abstract

The purpose of this research is to identify the prevalence of depression in patients with epilepsy. Epilepsy is one of the most common chronic neurological diseases and its prevalence is about 1%. Epilepsy is caused by abnormal electrical discharge caused by overstimulated neurons with depolarization after the synapse. The mechanisms responsible for this depolarization include, change in ion conduction, reduction of inhibition of the GABA medium nerve on the excitability of the brain cortex, increasing the excitability of the brain cortex due to glutamate. Epilepsy is a syndrome in which electrophysiological changes, structural and biochemical changes in the brain are observed, especially in the limbic system, temporal lobes and possibly frontal lobes. The mentioned changes may affect the emotional, behavioral, cognitive, and social performance of the addict. Although the psychopathology of epilepsy has not been precisely determined, the result of the increase in psychiatric disorders can be seen in this neurological disorder. There is a difference of opinion about the most common psychiatric disorder associated with epilepsy. Some studies have reported depression and others anxiety disorder as the most common disorder. Feelings of worthlessness, despair, sadness, and nervousness were more common in people with epilepsy than in non-epileptics. Intermittent boredom syndrome and epileptic insanity are also among the psychiatric disorders reported in epilepsy patients. It is reported that suicidal thoughts are more common in these patients than in the general population.

Keywords: Depressive Disorder, Epilepsy, Emotional Behavior, Psychiatric Disorders.

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Introduction

The prevalence of depression in these patients is twice that of patients suffering from other debilitating diseases. Depression is often not diagnosed or treated incompletely in these patients. Incomplete treatment of depression in these patients can obviously have important consequences. Depression reduces the quality of life of people with epilepsy. Anxiety can also have many adverse effects on the quality of life of people with epilepsy [1-3]. The presence of depression along with epilepsy has led to more use of outpatient and inpatient medical services and higher cost of treatment. It has also been stated that the quality of life of people with epilepsy is more dependent on the variables related to mental health than it is on the variables related to epilepsy. Despite its

great importance, depression in people with epilepsy is less often diagnosed and treated. Doctors will be able to improve the outcomes of their patients through the evaluation and diagnosis of psychiatric problems of epilepsy patients [4-6].

It is mandatory for health service providers to pay more attention to psychiatric disorders in patients with epilepsy. Considering the inappropriate effects of psychiatric disorders on patients' lives and the need to pay attention to these disorders, the present study was conducted with the aim of determining the frequency of depression in patients with epilepsy and also investigating the relationship between the frequency of the aforementioned symptoms and some variables [7].

Depression is the most common psychiatric disorder, which according to the World Health Organization will be the second most threatening disease to human health and life around the world by 2020 after cardiovascular diseases. People suffering from chronic medical disorders are significantly more at risk of contracting this disease than other people, so that in some studies, the prevalence rate of 15-23 percent has been reported for it.

Depression is common among patients with epilepsy, but there are few studies on this disorder. The prevalence of depression in outpatients related to disability and its phenomenology in clinical patients admitted to the hospital were investigated in a comparative manner. The results of this research showed that 55% of 175 outpatient patients with epilepsy and 30% of 70 cases of the comparative control group were suffering from depression and 30% of patients with epilepsy compared to 7% of the control group had previous attempts to commit suicide. Constipated patients had a history of hospitalization due to depression four times more than non-constipated patients. 16 patients had partial attacks and 10 out of 11 patients were recorded with lateral brain waves focused on the left hemisphere [8-10].

These results indicate a mental disorder caused by defective psycho-cerebral or limbic function. In the early 20th century, Bloomer described depression in patients with depression, which includes a polymorphous pattern of symptoms and includes effective symptoms along with high mood irritability and in Mixed with cheerfulness, fear, signs of anxiety, lethargy, pain and insomnia. Gastat also confirmed these observations. Bloomer coined the term " Restlessness disorder or interstitial lethargy " to name this type of depression in obsessive-compulsive patients. and described its chronic course using recurrent symptom-free periods that responded well to low-dose antidepressants [11-13].

The prevalence of major depression in the normal population has been estimated to be 25 percent, while this figure in people with epilepsy is four to five times the average rate in the society. Epilepsy with depression leaves a deep impact and leads to a decrease in daily performance and the quality of life of the patient, a decrease in educational progress in affected children and adolescents, a decrease in the marriage rate and an increase in the unemployment rate and seizures, high mortality

and an increase in the need for medical treatments will be statistically, 1-5% of people in the society suffer from epilepsy, and it is possible for anyone to suffer from epilepsy.

The rate of suicide is four to five times that of the normal population. Psychosocial stress, especially depression, is one of the factors that increase the risk of suicide in these patients. 193 adult outpatients were evaluated in terms of depression and suicidal tendencies. The results showed that the prevalence of suicide among these patients was 11.9%. Normally, major depression occurs in a recurrent and repeated form with symptoms of anxiety or anxiety disorders, and this comorbidity increases the risk of suicide, which is higher in patients with epilepsy than in the general population. A review of 11 studies showed that the overall rate of suicide in people with seizures is five times higher than the general population and 25 times the expected rate of patients with partial seizures caused by temporal lobe [14].

Average lifetime suicide rate for patients with epilepsy is 12% and for the general population it is 1.1 to 1.2%. According to the results of the research, the symptoms of depression in patients with depression are strongly related to suicidal thoughts. However, depression, as the most common mental disorder with epilepsy, is often neglected and no effort is made to treat it. One of the common models in explaining depression with epilepsy is the cognitive model. The cognitive model of depression is based on the assumption that primary loss makes a person vulnerable to depression by forming stable cognitive structures. Events that provoke conflicting central beliefs and underlying assumptions cause depression. Epilepsy affects coping skills and the ability to cope with the problems of a chronic illness by creating dysfunctional underlying beliefs. The beliefs of this disease are different from the beliefs of a normal person and are strengthened by negative experiences of epilepsy and lead to high levels of depression and chronic anxiety.

Negativity is also considered as another part of depression vulnerability model. According to this cognitive vulnerability model, the explanation of depression in epilepsy strongly affects the way patients perceive themselves and their perception of their efficiency. According to Bandura, perception is an ability that determines behavior, not the reality of the situation, and because of their negative self-perception, people with epilepsy have a strong tendency to attribute failures caused by having a neurological disease to their inefficiency. By transferring this feeling of inadequacy and helplessness to their other experiences, they take away many opportunities for effective performance. In the cognitive model of depression, the trigger of depressed mood is negative and stressful life events [15-17].

Stressful events are a major part of the lives of patients with epilepsy. Epilepsy, its treatment, and constant involvement with a chronic neurological disorder result in a range of stress for the patient. In many cases, affected people have the ability to live a normal life in the interval between attacks, but problems related to the side effects of treatment, fear of losing control, and false social stigmas create extensive social restrictions for sufferers. The unpredictable nature of epileptic seizures often confronts people with stressful situations such as work and employment problems and poor

interpersonal relationships. Pharmacological treatment of depression in epilepsy is complicated because there is always concern that some types of antidepressants may affect the frequency of seizures. Studies have shown that cognitive-behavioral therapy is at least as effective as drug therapy in treating depression symptoms. Epilepsy research often focuses on the prevalence of psychiatric disorders in these patients. The effect of co-occurrence of depression with epilepsy on the quality of life of patients, the effect of the clinical characteristics of attacks, the consequences of surgery or the effect of drug treatment on the quality of life of these patients are focused.

Considering the prevalence of major psychiatric disorders in epileptics, as well as the impact of these disorders on the quality of life of these individuals, as well as the control of epilepsy, the importance of the current research issue is revealed. Depressive disorder increases the risk of suicide in epilepsy patients. In studies, the rate of successful suicide in people with epilepsy is 4-5 times higher than in non-epileptic people, and this indicates the importance of diagnosing and treating depression in epilepsy [18-20]. Therefore, epilepsy can be treated. This research can help in the prevention and treatment of depression in people with epilepsy. Depression is a common psychiatric disorder. Its lifetime prevalence is reported to be 12-25% in women and 5-12% in men (Benjamin, 2003). Depression has important negative effects on people's social and occupational performance and is considered one of the important causes of disabilities. Job or interpersonal relationship problems may be a manifestation of unipolar depression, which was the fourth leading cause of job loss. According to studies by the World Health Organization, it is estimated that in 2020, depression will be the second most disabling disease among all physical and mental diseases, i.e. more than road accidents, cerebrovascular diseases and obstructive pulmonary diseases in 1992. Due to the depression in America, 44 billion dollars have been realized.

Despite the global spread of depression, about 50% of patients do not seek treatment and are not treated. Failure to diagnose and treat depression leads to resistance and recurrence of this disease. Depression is a complex disease and it is not always easy to diagnose. Many depressed patients do not complain of a dull mood, and their dominant clinical characteristics manifest themselves in the form of anxiety, physical complaints, fatigue, and symptoms such as changes in sleep and appetite. But the physical symptoms of depression are less noticed. Its prevalence is in the general population [21].

About 30-60% of short-term hospitalized patients in internal and surgical departments are suffering from mental or psychosocial disorders, and depressed patients in medical departments refer to emergency centers three times more than others. Depression also has a negative effect on the course of diseases and increases the length of hospitalization of patients. In a study in the medical and surgical departments, the hospitalization length of depressed patients was on average 10 days longer than non-depressed patients. In fact, depression is one of the disorders along with other disorders, and the doctor must pay attention to both disorders for treatment.

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A review of the few researches in this field indicates the existence of some studies with contradictory results. For example, in research, he came to the conclusion that cognitive behavioral therapy had a significant effect on reducing the frequency of patients' attacks, but did not reduce their mood symptoms, which may be the reason for his treatment plan's greater emphasis on reducing the frequency of attacks (for example, identifying seizure triggers, relaxation and...) and the lack of designing a cognitive therapy plan specifically for patients. On the other hand, the rate of epilepsy patients hospitalized in psychiatric centers is higher than the general prevalence of epilepsy in the society. For example, about 4.7% of patients hospitalized in psychiatric departments in England and 9.7% in America have epilepsy. About 30% of patients with narcolepsy referred to outpatient clinics had a history of psychiatric hospitalization and 18% had a history of taking an antidepressant. (Mario and Mendez, 2005). In Iran, there is little information about the prevalence of general psychiatric disorders in obese patients, so it is very important to investigate the prevalence of the mentioned disorders.

According to the topics presented, it can be said that the importance of identifying, studying and investigating the prevalence of depression and the factors affecting it in sedation patients is to first identify many of the problems of sedation patients that are rooted in other disorders such as depression, and before basic measures can be taken to prevent future problems. In fact, doing this project will help poor people. If they do not accept their disease, they will suffer from related disorders, including depression, and understanding the relative effects of factors affecting epilepsy on epilepsy patients can be useful in clinical situations (Figure 1). Also, one of the necessities of the research is that it helps the doctors in the differential diagnosis of epilepsy and depression. Counseling centers, psychological clinics can use the results of this research for more practical and clinical counseling. In fact, this research gives a clearer view to the counselors to look deeper into the behavioral disorders of the patients [22].

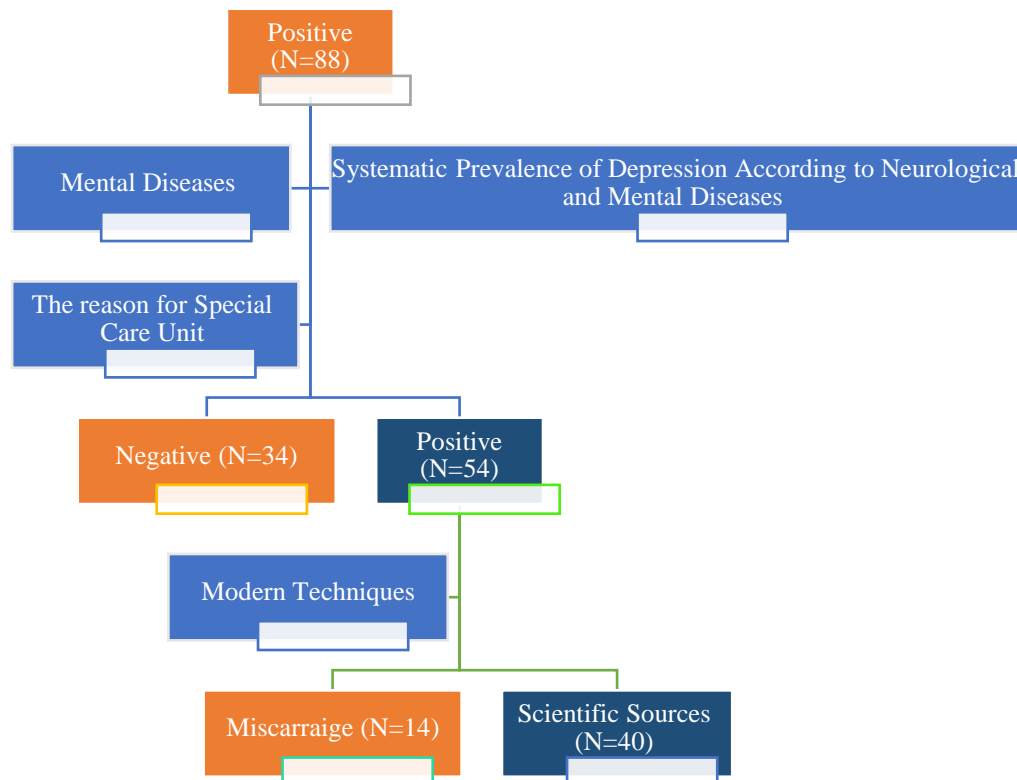


Figure 1. Flow chart of included subjects

Research background

The relationship between body and soul has been of interest since ancient times, for 10,000 years BC. One of the factors that affect mental health is hospitalization, which leads to various reactions due to the change in the usual pattern of life. Sometimes hospitalization can increase the psychological reactions of a person. Depression and anxiety are the most common mental disorders that affect people and societies around the world. Various surveys about the prevalence of depression and anxiety have provided different estimates of the prevalence of these disorders. Some studies have reported the prevalence of depression in the lifetime of about 10-25% [23].

Another group reported the prevalence of depression in men as 2.6-16% and in women as 6.7-24%. Also, the prevalence of anxiety and depression at the community level is 14-18%, and the prevalence of anxiety and depression among emergency center clients is 7-9%, respectively. The prevalence rate of depression in Iran is 11.87-53.7%. Women suffer from anxiety disorders with a prevalence of 30.5% more than men with a prevalence of 19.2%. In Iran, studies have been conducted on the prevalence of depression in teenagers. The results obtained from (Shojaeizadeh and Reza Fianiani, 2001) which was carried out using Zong's depression scale on 24 pre-university students in Kazeron showed that 28.8% of these students had mild depression, 6 9.9% had moderate depression, 3.3% had severe depression and 1.3% had deep depression. Although the estimation of these data covers a wide range, depression in children and adolescents is an important mental health problem that is expanding and spreading [24].

Despite this, the efforts made to treat this problem have not been proportionated. Countless factors are related to the onset, duration and recurrence of premature depression. Among these factors, we can mention demographic indicators such as age, gender, and socio-economic status. Gender differences seem to be effective in the prevalence of depression. Adolescent girls are more prone to suffering from mood and depressive disorders [25].

Recent studies show that women are twice as likely to suffer from depression as men. Also, the incidence of depression in girls is almost two to one compared to boys. This difference may be caused by multiple biological, psychological, social and cognitive factors. Hard economic conditions also exert their influence through irritable and depressed mood and behavior in parents and thus stress in children. In such a situation, negative parent-child interactions are associated with feelings of depression, isolation and loneliness in children.

Harsh and chronic environmental conditions in life, such as poverty, can affect people's feelings about themselves, the world, and their future. Epilepsy is one of the most common chronic neurological diseases and one of the most important health problems in developing countries. Research has shown that people with epilepsy are at high risk for behavioral and emotional problems such as depression, anxiety, obsession and social anxiety, as well as attention and learning disorders. The unpredictable nature and chronic course of epilepsy can affect the patient's physical, social and psychological functioning. On the other hand, the attitude and opinions of people with epilepsy about their disease are effective on their adaptability and quality of life.

Social attitudes, stigmas and discriminations created about epilepsy patients, which are often rooted in insufficient and incorrect information about epilepsy, can be more destructive than the disease itself. Obsessed patients say that the stigma and prejudged responses from others about their illness is one of their challenges. It is well established that being aware of the disease is a vital practice in the ability to successfully cope with epilepsy. The results of some studies show that the prevalence of depression and anxiety symptoms in obese people is high. However, it has been shown that the more patients are aware of the nature of the disease, the better their health is.

Definition of epileptic seizures

There are many types of seizures that originate in the brain. The brain plays a role in shaping emotions, thoughts, memory, controlling movements and understanding important events. The brain has two halves that are connected in the middle, the right half controls the left side of the body and the left half controls the right side of the body. In most of us, the left half is dominant. In other words, this half is responsible for controlling the way language is formed and understood. Each half is also divided into four parts. Damage to a part of the brain causes the loss of the function of that part [26].

Simple focal seizures: These types of seizures are limited to a small part of the brain, during which consciousness is never lost. Depending on where they started, these attacks are divided into

temporal lobe attacks, frontal lobe attacks, occipital lobe attacks, and occipital lobe attacks. In temporal lobe attacks, the patient may feel extreme fear, reminiscence, familiarity, and very unpleasant smells or tastes. All of us may have experienced some of these feelings at times, although they are not usually considered an attack, and the main difference is that in epilepsy these events occur regularly and for no reason. In frontal lobe attacks, there may be strong and uncontrollable shaking of the body and the eyes may turn to one side. In regional lobe attacks, there is a feeling of tingling in the lower part of one side of the body [27].

Compound local attacks: These attacks are actually the next stage of simple local attacks. This attack covers a wider part of the brain and spreads to the point where the patient loses consciousness from the environment. The speed of spread of the attack may be so intense that the patient does not feel a simple local attack, or it may be so great that the patient has a feeling of familiarity, unpleasant smell and taste.

Secondary general attacks: These attacks are caused by the spread of the pain attack and the hemisphere of the brain. The release may be so slow that it gives the patient an awakening or it can be done so fast that the patient loses consciousness without any prelude. This type of release is called "Secondary release" and the attack takes the form of a general tonic-clonic attack. In this attack, the body stiffens (phonic) and screams like a scream. After falling on the ground, he may be bruised and his arms and legs contract in a coordinated way (clonic phase). The attack usually lasts a few minutes, after which the patient often becomes confused and falls asleep. The next consequence (post-impact phase) lasts for hours. This attack, which used to be called a grand mal, is known as a "Tonic-clonic" attack and is sometimes called a seizure [28].

Silent attack: Previously, this attack was called "Petit mal". These attacks in children are usually seen in the form of a dull state (short term). It only takes a few seconds and may be mistaken for lack of attention and concentration. A child with silent epilepsy may have this condition many times during the day, and often neither the child nor the observer are aware of these attacks.

Psychopathology in epilepsy

(Herman and Jones, 2005), have divided serious risk factors in causing psychiatric disorders in epilepsy into three major groups:

- ❖ Factors related to the brain;
- ❖ Factors unrelated to the brain;
- ❖ Factors related to treatment [29].

Factors related to the brain include dysfunction of the limbic system, tumors, seizure type, changes in the medial nerve and biochemical changes, the location of the epileptic focus in the brain. The reduction of brain dysfunction as the etiology of psychiatric problems is confirmed by the study. In this study, the most obvious prevalence of psychiatric disorders in epilepsy was reported to be

80%. Brain-related factors explain the most in the emergence of insanity symptoms, and non-brain-related factors show the most relevance in the case of mood disorders. Factors not related to the brain include economic and social problems, such as social stigma, loss of sense of autonomy and chronicity of the disease. Factors related to treatment include pathological changes in the central nervous system and changes in the metabolism of monoamines, folate deficiency due to drugs. The type of epilepsy is also important in causing psychiatric disorders [30].

For example, primary insanity and personality disorders in complex localized epilepsy are 2-3 times more common than generalized tonic-clonic epilepsy. Severity and chronicity of epilepsy also play a role in causing psychiatric disorders. Chronicity means the long physiological effect of epilepsy. In a study on the prevalence of psychiatric disorders in 8 chronic medical diseases including diabetes, heart disease, high blood pressure, arthritis, physical disability and cancer, the results were compared with the control group (without any physical disease). The prevalence and lifespan of psychiatric disorders in chronic medical patients was higher than the control group, and these findings indicate the presence of chronic disease with an increased risk of psychiatric disorders.

Causes of epilepsy

Epilepsy is a symptom of a disease, not the disease itself. There are many causes such as infection, tumors, brain injuries at birth, and hereditary diseases that cause epilepsy. Sometimes, epilepsy manifests itself many years after the trauma, and it is not unusual for people who have suffered a brain injury in childhood to show symptoms of epilepsy at the age of 20. No known cause has been discovered for epilepsy in a large number of patients. In general epilepsy, genetic factors probably play a role, and some epilepsies are hereditary, but in most cases, this is not the case. Except for a few inherited genetic diseases that may be the cause of epilepsy, the risk of passing epilepsy from parents to children is really low [31].

Depressive disorder with epilepsy

Depressive disorders are the most common disorders associated with epilepsy. The prevalence of disorders in different studies and texts varies depending on the study method and choice of classification system and the selected group, and it has been reported from about 11-75%.

Depression before a seizure attack: Mood symptoms commonly appear before a seizure and are in the form of a depressed mood, anxious or sometimes dull, and last for hours to days, and often end with the occurrence of a seizure, and sometimes it may happen sometime later. It is not known whether these symptoms of depression before a seizure attack are part of the clinical symptoms of seizures or a process involving a decrease in the seizure threshold.

Depression during an attack

Depression symptoms may be a part of the seizure itself. Although anxiety is the most common emotional symptom of seizures, in a study, depressive symptoms were observed in 10% of 2000

patients with simple localized seizures. This form of depression has a sudden onset and is not related to external stimuli [32].

Depression after the attack

This type of depression is described in some texts, but its prevalence is not known. In one study, the average duration of depression was 37 hours in 56 patients with simple focal seizures. He proposed the theory that this depression is the consequence of the inhibitory mechanisms responsible for the termination of seizures. Seizures that last less than a month are clearly related to this depression [33].

Interictal depression

This type of depression is the most common type of depression in swallowing patients, and most studies have been conducted to diagnose and evaluate this type of depression. The clinical picture is dysthymic major depression. The exact prevalence is unknown, but in the literature it is estimated between 20-70%.

The effect of depressive disorder on the lives of addicted people

About five studies of patients with drug-resistant epilepsy show that depression is the strongest predictor of any health-based quality of life episode, even after controlling for seizures, their severity, and other psychological variables. In addition, people whose depression was not treated significantly used more health resources in all available species. Regardless of the type of their attacks and how much time has passed since their last attack. Also, people with mild, moderate, and severe depression went to therapy sessions 2-4 times more than non-depressed people, respectively. Pathology: Until now, a single model has not been mentioned to explain or cause depressive disorders in epilepsy (Kristin and Kirstin, 2005). Evidence shows that the prevalence of depression in temporal lobe epilepsy and complex focal epilepsy is higher than other types of epilepsy. Image studies of the brain show the connection between the presence of brain disorders and increased severity of depression [34].

Changes in the medial nerve in epilepsy are considered as a risk factor in the pathology of depression. In particular, the role of norepinephrine, serotonin, and dopamine deficiency in depression has been discussed. The relationship of the origin of epilepsy as a traumatic factor in the development of depression is debatable. Psychiatrists believe that the center of the left hemisphere of the brain is an underlying factor in the development of inter ictal depression. In patients with complex focal epilepsy with depression, decreased blood supply and reduced glucose metabolism in the left hemisphere compared to the right hemisphere.

Psychosocial factors play a significant role in causing depression symptoms. These factors include high unemployment rate, loss of autonomy, such as driving restrictions, job restrictions, family problems and marital problems, or the illness itself in people who are addicted. Hereditary factors may also play a role in etiology. A research in the UK has proven that half of all patients suffering from depression with depression have a family history of mood disorders. Taking anticonvulsants has negative side effects and may cause depression symptoms. The risk of depression increases when prescribing newer anticonvulsants such as tiagabine, felbamate. Depression in epilepsy is twice as common as in the non-disabled population, suggesting that depression in epilepsy is more than a psychological response to a disability [35].

Data analysis methods and tools

Two levels of descriptive and inferential statistics are used for statistical analysis. The data analysis methods of this research will be descriptive and inferential. At the descriptive level, using statistical characteristics such as frequency, percentage, mean, and standard deviation, the information was analyzed, and at the inferential level, according to the data measurement level and the basic hypotheses of the statistical test, using independent and one-group t-test methods. SPSS software is used, and if the data is not normal, Yu-Mann-Whitney and chi-square tests are used [36].

Research findings

In the first part, the description of the data is presented, which includes the frequency and percentage of questions related to the biographies of the patients, and in the next part, the hypotheses were analyzed. In this way, in this section, the Kolmogorov-Smirnov test was first used to check the normality of the data, and then independent groups t-test, one-way analysis of variance and univariate t-test were used to test the hypotheses. It should be noted that all statistical operations were performed through 20SPSS statistical software. In this way, first the raw data was entered into the program and then the data was analyzed and the results are shown below (Figure 1 & 2).

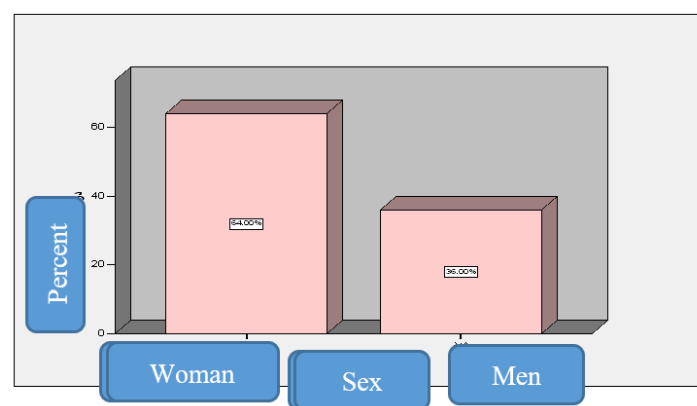


Figure 1. Distribution chart of the percentage frequency of gender of the subjects in the present study

The above graph is related to the frequency distribution of gender in the patients of the sample group. As seen, 64% of the sample is female and 36% is male. In fact, it was estimated that the number of male patients was almost double compared to female.

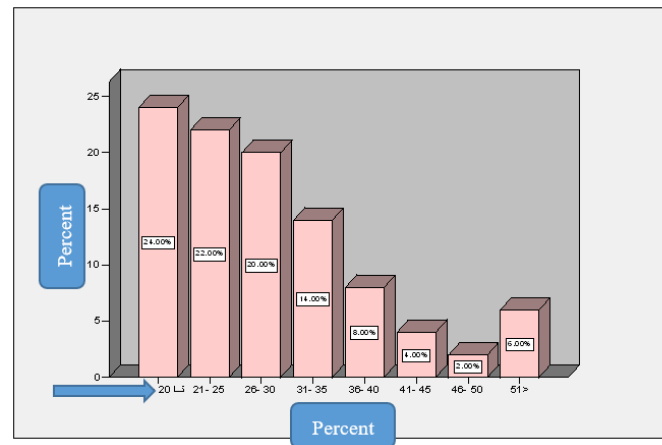


Figure 2. Frequency distribution chart of subjects' age in the present study

The above graph is related to the frequency distribution of age in sample group patients. As seen, 24% of the sample is between 20 years old, 22% between 21 and 25 years old, 20% between 26 and 30 years old, 14% between 31 and 35 years old, 8% between 36 and 40 years old, 4% Between 41 and 45.2 percent are between 46 and 50 years old and 6 percent are above 50 years old.

The above chart (Figure 2) is related to the frequency distribution of the economic status in the patients of the sample group. As it was observed, 10% of patients with poor economic status, 44% were average and 46% were good.

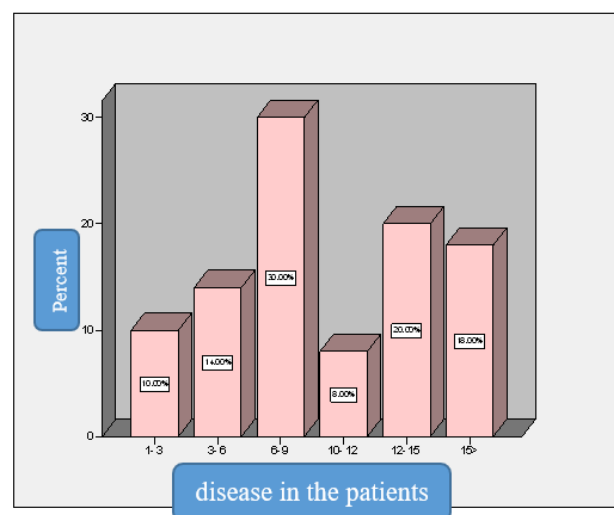


Figure 3. The distribution chart of the frequency of onset of disease of the subjects in the present study

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The above chart (Figure 3) is related to the frequency distribution of the onset of the disease in the patients of the sample group. 10% of patients had their disease onset between 1 and 3 years, 14% between 3 and 6 years, 30% between 6 and 9 years, 8% between 9 and 12 years, 20% between 12 and 15 years, and 18% above 15 years old.

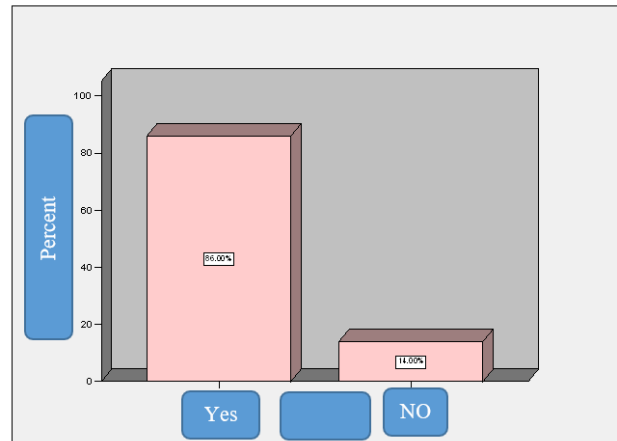


Figure 4. Distribution chart of the frequency of previous disease history of the subjects in the present study

The above chart (Figure 3) is related to the frequency distribution of previous history of other diseases in the patients of the sample group. 86% of patients do not have a previous history of the disease and 14% have a previous history of the disease.

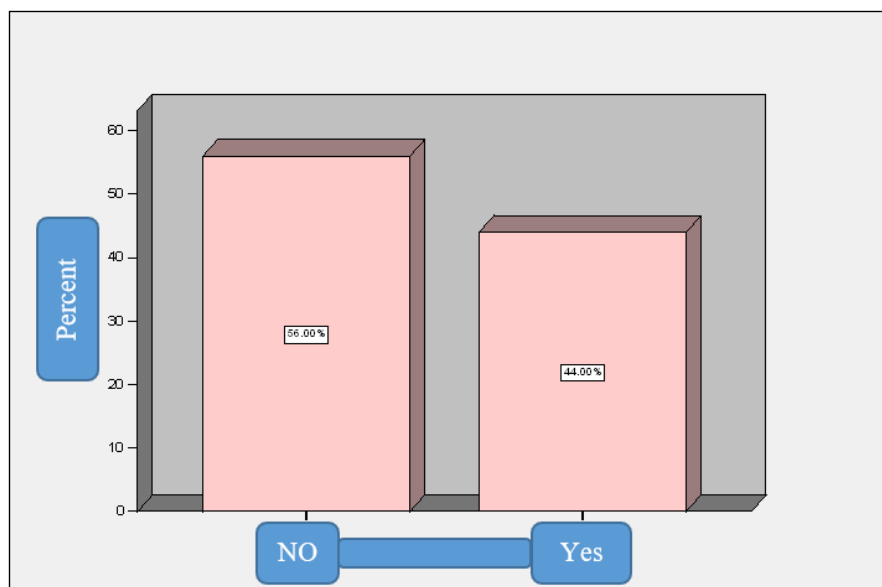


Figure 5. Distribution chart of the frequency of disease history in the family of the subjects in the present study

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The above chart (Figure 5) is related to the distribution of the frequency of the onset of the disease in the sample. 56% of patients do not have a history of the disease in their family and 44% have a history of the disease. The results of the Kolmogorov-Smirnov test showed that the z-value calculated at the alpha level of 5 percent is not significant, that is, the p-value is greater than 5 percent, and the null hypothesis that depression scores are normal is not rejected. As a result, it can be said that the scores related to depression had a normal distribution. Accordingly, it is necessary to use the parametric test to test the hypotheses. Parametric tests were used for the main hypothesis and to compare depression in both sexes, but considering that the number of sampled people in different classes was low. For the second, third and fourth hypotheses in the present study, the non-parametric Kruskal-Wallis test was used.

The above chart is related to the rank average of the prevalence of depression in patients with epilepsy according to their age, the age range of the patients is up to 50 years old, the level of depression is high at the age of 40 years, and from 41 years and above, depression has a downward trend. Those under 20 years old have more depression than those between 20 and 39 years old. Finally, depression is more common in elderly patients, which is not significant and may be due to the small sample size. The results of the Kruskal-Wallis test showed that the chi-square (9.03) with the degree of freedom of 2 is significant at the alpha level of 5%, and the null hypothesis was rejected. In fact, the economic status is effective in the prevalence of depression in swallowing patients, and according to the averages, it can be said that people with a low economic status have a higher level of depression, and the average economic status has a lower level of depression than the high and low economic status.

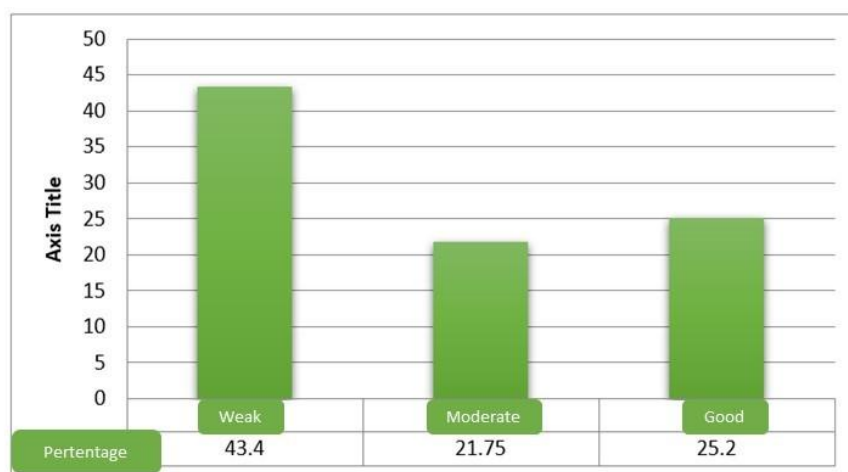


Figure 6. Percentage rank chart related to the prevalence of depression in patients with epilepsy according to the economic status

The above chart (Figure 6) is related to the rank average of the prevalence of depression in the patients with epilepsy according to their economic status. As it was observed, the prevalence of

depression is high in patients who were poor in terms of economic status. Because they have a 43.4 percentage rank in depression, patients with average economic status had a prevalence of depression with a rank of 21.75 and patients with a good economic status had a prevalence of depression with a rank of 25.20. As it was observed, patients with economic status were weak, had the highest level of depression, patients with average economic status had low depression, and patients with good economic status had less depression than patients with poor economic status, and had higher depression than patients with average economic status.

Discuss

The results of the descriptive part of the frequency distribution data related to the gender of the patients showed that 64% of the sample were female and 36% were male, of which 50% of the sample were single and 50% were married. In terms of age, 24% of the sample is up to 20 years old, 22% between 21 and 25 years old, 20% between 26 and 30 years old, 14% between 31 and 35 years old, 8% between 36 and 40 years old, 4% between 41 to 45 years old, 2% were between 46 to 50 years old and 6% were over 50 years old. Regarding the educational status, it was shown that 28% of the sample had a bachelor's degree, 12% a diploma, 32% a graduate degree, 24% a bachelor's degree, and 4% a master's degree. In terms of economic status, 10% of the patients had poor economic status, 44% were average and 46% were good [37-39].

However, in the research conducted by (Mario and Mendez, 2005), it has been shown that the amount of epilepsy patients hospitalized in psychiatric hospitals is higher than the general prevalence of epilepsy in the society. For example, about 4.7% of patients hospitalized in psychiatric departments in England and 9.7% in America have epilepsy. About 30% of patients with narcolepsy referred to outpatient clinics had a history of psychiatric hospitalization and 18% had a history of taking an antidepressant. (Jones and Herman, 2004) showed in their research that epilepsy along with depression leaves deep effects and leads to a drop in daily performance and quality of life of the patient [40].

Based on a cognitive vulnerability model in explaining depression in epilepsy, although it has been shown in research (Mario and Mendez, 2005) that the rate of epilepsy patients hospitalized in psychiatric hospitals is higher than the general prevalence of epilepsy in society. For example, about 4.7% of patients hospitalized in psychiatric departments in England and 9.7% in America have epilepsy. About 30% of patients with narcolepsy referred to outpatient clinics had a history of psychiatric hospitalization and 18% had a history of taking an antidepressant. (Jones and Herman, 2004) showed in their research that epilepsy along with depression leaves a deep impact and leads to a drop in daily performance and a decline in the patient's quality of life. Epilepsy affects the way patients perceive themselves and their perception of their efficiency. Research has shown that people with chronic diseases such as epilepsy are at high risk of depression. On the other hand, the research shows that depression is a common issue among patients with epilepsy. In research, he compared the prevalence of depression among outpatients related to disability and its

phenomenology in clinical patients admitted to the hospital. They also showed in their research that men suffer from epilepsy more than women. According to the obtained results and previous researches, it seems that gender differences are effective in the prevalence of depression. Adolescent girls are more prone to suffering from mood disorders and depression. Also, the incidence of depression in girls is two to one compared to boys, and this difference can be caused by multiple biological, psychological, social and cognitive factors [41].

The results showed that the chi-square value (9.45) with 4 degrees of freedom is significant at the alpha level of 5% and the null hypothesis is rejected. In fact, it was estimated that the level of education is effective in the prevalence of depression in patients with epilepsy and according to the averages can be said that people with a low level of education have a higher level of depression, and the level of post-graduate education has a lower level of depression than diploma and sub-diploma. Studies have shown that there is a close relationship between the social and economic status of the patient and depression. The prevalence of depression in low-income, unemployed, low-educated and illiterate people is 2-4 times higher than its prevalence among educated and professional people. According to the obtained results, it can be concluded that the higher the level of education, the more people have the power to adapt to problems and issues. For this purpose, this is also true in the patients with constipation [42].

The results of the Kruskal-Wallis test showed that the chi-square (7.79) with a degree of freedom of 7 is not significant at the 5% alpha level and the null hypothesis is not rejected. However, many psychiatric disorders, including anxiety and other mood disorders, are more common in old age. But in the present study, perhaps due to the limited statistical sample or other environmental reasons, no significant results were observed. The results of the Kruskal-Wallis test showed that the chi-square (9.03) with the degree of freedom of 2 is significant at the alpha level of 5%, and the null hypothesis is rejected. It can be said that the economic status is effective in the prevalence of depression in patients with epilepsy, and according to the averages, it can be said that people with a low economic status have a higher level of depression, and the average economic status has a lower level of depression than the high and low economic status. The results obtained from this hypothesis are explained in this way. According to researchers, the unpredictable nature of seizures makes people with epilepsy face more stressful and frustrating situations such as problems related to work, employment, and weak interpersonal relationships [3]. According to the results of the hypothesis, it is explained that the favorable economic status of people is more effective in the treatment process. Also, better people can use medical counseling to treat mental disorders.

Conclusion

According to the results obtained from the present study, it was estimated that the prevalence of epilepsy in Iranian society is not higher than its prevalence in the world and the average prevalence is almost equal. The prevalence of depression in patients with epilepsy is twice that of patients with other debilitating diseases. Depression is often not diagnosed or incompletely treated in these

patients, which can obviously have important consequences. Also, the influence of factors such as age, gender, education level and economic status showed that there was no difference between the age of patients and the prevalence of depression. There is a relationship between the economic status and the prevalence of depression in the patients, so that the higher the economic status of the patients, the lower the prevalence of depression in them, and a significant relationship was observed regarding the effect of the level of education on the occurrence of depression in these patients. The results showed that the lower the level of education of these people, the higher their level of depression and the lower the level of adjustment of patients with depression.

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