

Anxiety disorder: definition, symptoms, causes, epidemiology and treatments

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Preeti Gautam was responsible for the original draft writing; Payal Mittal was responsible for supervision; Shubham Gautam and Vivek Rawat were responsible for reviewing, editing.

Competing interests

The authors declare no conflicts of interest.

Acknowledgments

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Abbreviations

GAD, generalized anxiety disorder; PTSD, post traumatic stress disorder; OCD, obsessive compulsive disorder; SAD, seasonal disaffected disorder; TCA, tricyclic antidepressant; MAO, monoamine oxidase; GABA, gamma-amino butyric acid; CNS, central nervous system; SSRIs, selective serotonin re-uptake inhibitors; NET, norepinephrine transporter; SERT, serotonin transporter; DAT, dopamine transporter;

Citation

Gautam P, Mittal P, Gautam S, Rawat V. Anxiety disorder: definition, symptoms, causes, epidemiology and treatments. *Food Health*. 2022;4(4):18. doi: 10.53388/FH20221101018.

Executive editor: Na Liu.

Received: 26 May 2022; Accepted: 08 August 2022; Available online: 13 October 2022.

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Abstract

Anxiety is the most common disorder nowadays. Anxiety can be acute or can be chronic. There are several scientific evidences that prove nutrition's importance and role of different therapies in the treatment of anxiety. But very few people are familiar with the role of taking proper nutrition or a balanced diet in anxiety treatment. This article helps many people to know deeply about the therapies they can do at their home and the nutrition and food for healthy lives and controlling the mental disorder. This scoping review also helps to under the anxiety, symptoms, causes, prevalence in patient and how it should be treated with or without the use of medication. Long-term analysis of previous studies show more than 60,000 results with the use of Artificial intelligence which are totally different. So brief literature was studied and found that nutrition plays definitely a major role in treatment. Literature survey revealed the relation between a large intake of fruits, vegetables, omega 3, fatty acids, a ketogenic diet, calorie, magnesium, zinc, selenium, probiotics with low level of anxiety. Paper also revealed the association between higher anxiety levels with high intake of fat diet, sugar intake, carbohydrate, oily food. This paper helps you to understand the value of each therapy and nutrition for successive decreasing anxiety. This paper has main aim to describe the prevalence, causes, symptoms of anxiety so that it can help people to understand that what kind of anxiety is there which they are suffering from and what ways can be done to treat it naturally with the help of huge beneficial therapies, nutritional food, exercises and marketed medicines with advantages and disadvantages and by adding some herbal plants in their diet.

Keywords: anxiety; health; inflammation; nutrition; mental illness; medication; prevalence; therapies

Background

Anxiety is an emotion that is a part of our daily life. It is the most common psychiatric disorder that affect every third person across the world. These disorders can be long-lasting or recurrent and in daily life, it impair the person's ability to function [1]. Those people suffering from these disorders can feel low mood, anxious, empty, guilty, worthless, irritable, sad, hopeless, helpless, ashamed or restless. Those people can also lose interest in physical activities with loss of appetite or maybe overeating. They face problems during concentration, decision making, sometimes people commit suicide [2]. Depression is also a very common disorder that is characterized by loss of interest, desire, misery, uneasy sleep, low self-esteem, poor appetite, feelings of tiredness, reduced concentration. Every 1 in 7 people is reported to have anxiety symptoms. About 40 million people are suffering from anxiety. So study of mental health problems like anxiety, stress, and depression has become an important topic of discussion [3].

Anxiety disorders are associated with a high burden and prevalence of occurrence of anxiety is most common. Other disorder like drug abuse, alcohol abuse, addictive behaviour, schizophrenia, eating disorder, personality disorder, trauma-related disorder, substance abuse disorder etc can produce by anxiety [4]. Disorders have less prevalence of occurrence than anxiety and depression.

Symptoms of anxiety

Anxiety consists of various symptoms such as nervousness, helplessness, increase of heart rate, danger, suicidal thoughts, sweating, numbness, loss of concentration, trembling, overthinking, hyperventilation, unable to stop overthinking, worrying about every small thing, increased irritability, headache, sleep disturbances etc. Every classification has different symptoms of anxiety [5].

Causes of anxiety

Biological Cause

It consists of neurotransmitter imbalance, hereditary, medicine, other illness due to different disease, nutritional changes.

Psychological cause

It include low self esteem, interpersonal interest, due to development of crises, negative emotions, perception of situational factor.

Social cause

Social causes include lack of support, work load can cause stress, lack of social skills, changing values, terrorism [6].

Epidemiology of anxiety disorder

Anxiety has different classification and that classification has different prevalence. Here it is given in detail in the Table 1.

Prevalence of Mental illness

Prevalence of anxiety in comparison to other diseases

According to previous research, anxiety is the most prevalent psychiatric disorder among all the brain disorders. Survey reveals that anxiety is most common in women nowadays than in men. It is also more in young generation than in old ones. Young generation get

affected easily due to anxiety, stress and depression because of changing in diet, low nutritional food, lack of strong immune system or can be more due to study, family issues or any other social and biological cause. But pre-valance is affected or variation depends upon type of people. Sometimes it can affect by gender or age. The Figure 1 shows the pre-valance of anxiety than other diseases [8].

Age wise prevalence of anxiety

Age can affect the prevalence of anxiety. Various previous studies show that women are more prone to anxiety than men. Throughout the life span, women are more likely to develop anxiety in comparison to men. Although, with increasing or decreasing the age, anxiety can develop and more dangerous in a specific age like young generation are more anxious and the older ones also gets more affected due to this. Still the children and adults who cross the age of 25 is less prevalent to anxiety. You can see in the Figure 2 [8, 9].

Numerous ways of treatment

Every person who is suffering from anxiety does not need treatment. Only severe anxiety needs therapies, treatments and cures which are severe and long-lasting, so only about a third of people need the treatment. Some treatments are of evidence-based like Anticonvulsants, cognitive behavioral therapy, Selective serotonin re-uptake inhibitors (SSRIs), steroids, sedative, hypnotics etc [10].

For last many years, numerous treatment has been developed for anxiety and CNS (central nervous system)-related disorders. Anti anxiety medications are found in the market for every type of anxiety disorder other than specific phobia. Once the medication is stopped. There is development of high relapse rates which are problematic and some classes of anti anxiety drugs are habit forming drugs. Some chemical based medicine such as tricyclic antidepressant (TCA), monoamine oxidase (MAO) re-uptake inhibitor can be used as allopathy treatment [11]. The way to take medicine and the dose or duration is depend on discussion with a registered medical practitioner. Whereas, various diets can to improve anxiety as well as in depression such as protein, vitamins, zinc, magnesium, omega 3 etc plays a major role to treat this disorder. Psychological therapies as well as pharmacotherapy can help to relieve anxiety. They did not cause habit-forming side effects and some medicinal plants are also there for the same purpose. There can be more other ways of treatment such as yoga, exercise and acupuncture etc [12].

Best Treatment techniques at home for anxiety

Learn about anxiety

Knowledge is a powerful full weapon. If you know something you are suffering from, you can fight alone with it. So patients should learn about anxiety. Learning anxiety can motivate patient that how to deal with it [13]. If you feel anxious, talking about anxiety help you to work out where your negative feeling and ideas are coming and why they are there and what causes make it worse. Talk to your doctor to find out what causes your condition to get worse and how it can be controlled and what type of treatment is best for your cure [14].

On the other side, learning everything about anxiety can help people to maintain their lifestyle such as diet, nutrition, proper sleep, yoga, exercise, mind fullness, medication, therapies, Cognitive therapy, behavioral therapy, learning problem-solving skills, techniques of breathing etc [15].

Table 1 Prevalence of mental illness

S.NO.	Disorder	Life time prevalence	Prevalence by gender
1	Panic disorder	2-5%	67% Female
2	Special phobia	1-19%	60-90% Female
3	Agoraphobia	0.2-5%	40% Female
4	Social phobia	5-12%	50%Female
5	Generalized anxiety disorder(GAD)	1-6%	67% Female
6	Post traumatic stress disorder (PTSD)	2-8%	52% Female
7	Obsessive compulsive disorder(OCD)	2-3%	55% Female
8	As a group	20-30%	10-30% Female [7]

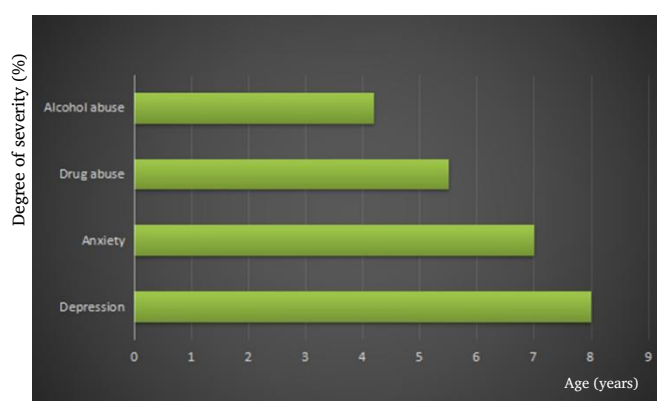


Figure 1 Prevalence of anxiety in comparison to other diseases

Stay physically active and mind fullness

Anxiety can be managed by changing or improving the daily routine so that you can stay physically active throughout the week. To stay physically active, exercise or yoga is very powerful weapon or can say stress reducer [16]. Mind fullness is very important to calm the anxious feeling. It helps you to stay positive in every difficult situation. Mind fullness helps the anxiety patient that how to react to a difficult situation and how to respond a stressful situation. It also deals with clearing the thoughts and will help to make right decisions [17]. It can help to improve your mood and it will help you to stay healthy. You must do daily exercise in the morning as well as in the evening for a specific time a duration, such as 30 min or 1 hour. In the first day, you must start with a little workout and as the days increase, then the duration and intensity of activities must increase. Play outdoor games daily, also can do zumba dance and some exercises, meditation, dance, singing, writing your thoughts etc. Which can help you to reduce the anxiety and tension [18].

Avoid alcohol

One of the major causes of anxiety is alcohol or drug. These kind of substances can make your anxiety worse. If you are not capable of quitting these substances on your own. Then you should see a doctor or provide this information to your family or friend so that they can support or help you out of this situation [19].

Make sleep a priority

According to some scientific report, it is found that anxiety patients suffer more from sleep either they sleep more or sleep very less. So in that situation, you need to check or make sure that you are getting proper sleep of 8 to 9 hours to feel rested [20]. If you are unable to do that, you must see a family doctor or any registered medical practitioner. They will give you the right suggestion for proper sleeping or can give medicine if he/she feel its necessary [21].

Eat healthy foods

Food and nutrition always play a major role in the management of anxiety, stress, depression. According to the scientist, a healthy diet such as vegetables, fruits, whole grain, fish, vitamins, protein, magnesium, serotonin-enhancing food etc is having the major role in the reduction of anxiety [22]. It is shown in Table 2.

Stay Socialize

Never be a person sitting in a corner when you feel anxious, who doesn't want to talk to anyone even with their loved ones, by this problem will definitely go worse. Worries, anxiety, stress can isolate you from your loved ones [23]. Stay social in every difficult situation [30]; it will help you to change your mood and severity level of anxiety and help you to stay calm. You may forget your problems for a

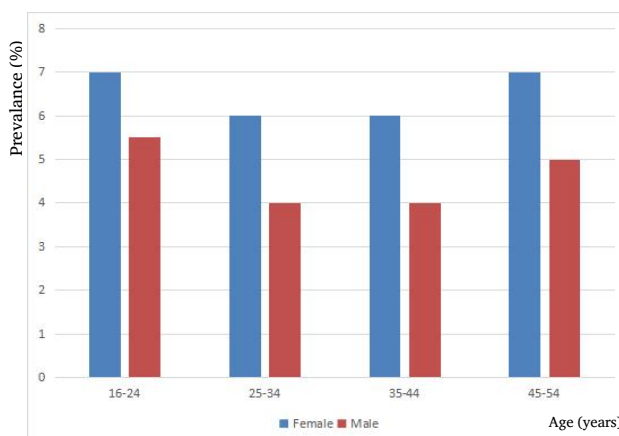


Figure 2 Age wise prevalence of anxiety

short time. It will help you to motivate and help you start again in life with full energy [24].

Stick to your treatment plan

Anxiety can be acute or chronic. In case of acute anxiety you must stay with proper routine, diet, exercise, being socialize. These things will heal you faster and help you out from anxiety. In other case if the anxiety is severe, you must go to a doctor. In that case medication are necessary to take [25]. So strict to your medication routine and time with proper intake of diet. Take medications as directed. Complete assignments if your therapist gives you. Trust it that consistency can make a huge difference, more especially when we talk about medication of any disorder [26].

Yoga

It can be the most effective and cost-less therapy for the treatment of anxiety. Yoga help to relax the muscles and it helps to control breathing which attenuates anxiety [27].

Hypnotherapy

This therapy can be used in combination with cognitive-behavioral therapy. Hypnotherapist uses or applies different 2 therapeutic approaches which surely help for anxiety patient to confront their fears while in a state of relaxation [28].

Acupuncture

It is also very effective and known since ancient times. This therapy is totally cost less and very easy to do. Acupuncture used in traditional Chinese medicine which helps to alleviate the anxiety level.

Hydrotherapy

It helps to relax the nervous system and promotes calmness [29].

Impact of Nutrients on Anxiety

Various scientific evidences are there which directly show that eating a poor diet, such as processed food, sodium, low nutritional value food, junk food, may increase the severity of anxiety. If diet quality is improved, it will help to improve the anxiety definitely and help to stay calm and improve mood and well-being. Erratic meal time and poor meal trigger the anxiety disorder resulting in high weight and can also cause chronic diseases including mental health problems. It is depicted in Table 3.

Medicinal plants for anxiety

Most people consider herbal remedies other than a prescription for the treatment. We all know from this fact that herbals have lesser side

effects than allelopathic drugs and these medicinal plants are used as herbal remedies from ancient times. Here is the description of some most common and very effective plants for treatment of anxiety. It is shown in [Table 4](#).

Anti-anxiety drugs in the market

Marketed medicines that are used to treat anxiety are called as anxiolytic. These are chemical-based medicine used for the treatment of mental illness. Different drug falls under a different classification. The most common medicine prescribed by a registered medical practitioners is SSRI, barbiturates, B blocker, MAO, sedatives etc. In the table, different classification is given with subcategories.

Specific treatment for specific disorder

The health & human services of the U.S. department 2014, they provided 5 types of classification of anxiety disorders. They are generalized anxiety disorder, obsessive compulsive disorder, panic disorder, post traumatic stress, social phobia. According to that classification, every person needs different treatment because of variation in the cause of their illness. So here is the allelopathic drug classification of anxiety which shows the choice of treatment i.e, First line, second line, third line drug for a specific class of anxiety. It is depicted in [Table 5](#).

Table 2 Variety of nutrients, their sources and function in anxiety

S.NO.	Nutrients	Sources	Function
1	Omega-3-fatty acids	Cold water fish or salmon, trout, tuna, sardines, walnut, herring, chia seeds	Lessen the danger of mood problems also help in cerebrum sicknesses by improving function of brain and safeguarding the myelin sheath that helps in the protection of nerve cells from damage, help to reduce depression as well.
2	Antioxidant	Turmeric, ginger, apple, plum, curcumin, berries, green vegetables such as beans, broccoli, spinach	Help from oxidative stress, provide serotonin, norepinephrine which have major role in treatment of happiness and mood, decrease inflammation [31] .
3	Protein/Amino acids	Lean meat, fish, nuts, dairy	Key neurotransmitter for treatment of anxiety, reduce the depressive episodes in patient, help to maintain cortisol level.
4	Vitamin D	Fish, egg, yolks, fortified dairy products, sunlight, beef liver	Improve mood and symptoms associated with depression, in winter, it improve seasonal disaffected disorder (SAD), improve cognitive, mental functioning.
5	Magnesium	Almonds, peanuts, cashew, leafy greens, such as spinach, Swiss chard, nuts, legumes, seeds, whole grains, dark chocolate	Help in calmness, help in formation of mitochondria, provide energy from food [32] .
6	Vitamin B6	Fish, starchy vegetables, poultry, non-citrus fruits	Formation of blood cell, protein and energy formation, help in metabolism, formation of neurotransmitters [33] .
7	Vitamin B9 and B12	Eggs, milk, meat, oysters, some fortified cereals, fish	Maintain nervous system and brain, Reduce the symptoms associated with mood disorders
8	Selenium	Brazil nuts, rice, nuts, corn, tuna, baked halibut, legumes, cooked brown rice, egg, White bread, wheat, eggs, cheese	Improve mood by reducing inflammation, help to prevent cell damage, reduce anxiety [34] .
9	Vitamin C	Bellpeppers, berries, oranges	Maintain homeostasis, brain booster, main vitamin for anxiety treatment.
10	Folic acid (vitamin B5 and B12)	Dark leafy vegetables, beans, Fruit juices, seafood, peas	Balancing out depressive mood, maintain depressive mood, reduce stress, help to synthesis of serotonin.
11	Zinc	Oysters, beans, beef, chicken, nuts, pumpkin seeds, egg, whole grains, cashews, liver, beef, pork	Help to boost immune system, also influence depression, reduce symptoms of stress and anxiety [35] .
12	Serotonin, dopamine	Eggs, tuna, turkey, chickpeas	Help in maintaining mood, sleep wake cycle, emotion, body clock, relieve anxiety.
13	Flavonoids	Chamomile, mugwort, dark chocolate, turmeric, yogurt, pumpkin seeds, apple, flavonoid, red wine, pomegranate	Reduce inflammation and oxidative stress, protect neuron from neurotoxin, reduce anxiety, prevent from neuron degeneration.
14	Anti inflammatory	Cinnamon, turmeric, almond, salmon, egg	Promote brain functioning, reduce anxiety, ease inflammation, help to maintain good mood, reduce the symptoms.
15	Tryptophan	Eggs, cheese, dark chocolate, bananas, pineapple, oats, tofu	Reduce symptoms; help to make serotonin, niacin, vitamin b6 which help in anxiety [36] .
16	Vitamin E	Nuts, leafy vegetables seed, almonds, vegetable oils, sunflower	Relive in anxiety, stress, improve good behaviour, reduce oxidative stress because of having excellent anti oxidant property.
17	Probiotics	Pickles, Kefir, sauerkraut, kimchi, dairy products that contain Lactobacillus	Help in Social anxiety, reduce inflammation, improve mood, weight loss, reduce symptoms of anxiety, increase serotonin level.
18	Beta- carotene	Mangoes, carrots, spinach, peas	Anti oxidant, improve immune system.
19	Lycopene	Pink or red fruits, vegetables such water-melon, tomatoes	Help in functional recovery, reduce oxidative stress, prevent from memory loss.
20	Lutein	Green, papaya, oranges, leafy vegetables, corn	Neuroprotective, anti inflammatory, anti anxiety, help in memory improve [37] .

Table 3 Plants having role in treatment of anxiety

S.NO.	Plant	Family	Pharmacological uses
1	Ashwagandha	Solanaceae	Treatment of anxiety and in stress
2	Chamomile	Asteraceae	Help to treat generalized anxiety disorder.
3	Valerian	Caprifoliaceae	It helps to alleviate anxiety, stress or depression.
5	Gold shower	Malpighiaceae	It helps in Generalized anxiety treatment.
6	Passionflower	Passifloraceae	Help in restlessness, nervousness, anxiety.
7	Kava	Piperaceae	It helps to relief the stress and helps in alteration of mood, have affinity to the GABA receptors, help in inhibition of MAO.
8	Cannabis	Moraceae	Produce calming effect in CNS
9	Peppermint	Moraceae	Help in anxiety and depression.
10	Jasmine	Oleaceae	Help in anxiety treatment.
11	Aloe vera	Liliaceae	Remove harmful chemicals from air, reduce anxiety.
12	Indian chrysanthemum	Asteraceae	It help to reduce the symptoms of worry, stress.
13	Gerbera	Asteraceae	It provide calmness to the patient.
14	Lemon balm	Lamiaceae	It produce relaxing effects, inhibition of GABA metabolism
15	Passion flower	Passifloraceae	Has sedative action.
16	St. John's Wort	Hypericaceae	Balance brain neurotransmitter.
17	Valerian	Caprifoliaceae	Increase in GABA release, agonist for adenosine receptors, have Interaction with the 5-HT receptors.
18	Saffron crocus	Iridaceae	Inhibition of the NET, SERT and DAT have affinity to the Benzodiazepine.
19	Rosemary	Lamiaceae	Interaction with 5-HT1A, 5-HT3 receptors.
20	Camellia sinensis	Theaceae	Inhibition of the NET, SERT and DAT
21	Common hop	Cannabaceae	Increase in activity of the GABA ergic system, stimulation of glutamate decarboxylase [38].

GABA, gamma-amino butyric acid; CNS, central nervous system; NET, norepinephrine transporter; MAO, monoamine oxidase; SERT, serotonin transporter; DAT, dopamine transporter.

Table 4 Anti-anxiety drugs in the market

S.NO.	Class	Drugs	Mechanism	Advantage	Disadvantage
1	Benzodiazepine	Alprazolam Clonazepam Diazepam Temazepam Oxazepam Clorazepate Lorazepam Estazolam	Facilitation of y-amino-butyric acid	High therapeutic index, low abuse liability	Sedation, memory impairment, weight gain, alteration in sexual function, dependence
2	Azapirones	Buspirone Gepirone Ipsapirone	Partial agonist of 5-HT1A receptor	Do not cause sedation, nophysical dependence, no abuse liability	Slow onset of action, only given for chronic anxiety, require thrice daily administration of drug
3	Sedative -Antihistamine	Hydroxyzine	Histamine receptor blockade	Provide calming effect, lower brain activity and very help full when associated with insomnia.	Restlessness, rapid heart rate
4	Beta blockers	Propranolol	These drugs block the effects of epinephrine, or adrenaline, on beta receptors.	Reduce symptoms of anxiety, used for situational anxiety.	Fatigue, dizziness, weight gain, sexual dysfunction
5	Barbiturate	Phenobarbital Amobarbital Pentobarbital Thiopental	Inhibition of the central nervous system. It stimulates the gamma-amino-butyric acid.	Reduce heart rate, BP, prevent seizures	Lightheadedness, dizziness, sedation
6	SSRI'S	Citalopram Dapoxetine Escitalopram	Block the re-uptake of serotonin into neurons.	Can give in chronic anxiety	Very slow onset of action [39]

Table 5 Specific treatment for specific disorder

Type of disorder	1 st line drug	2 nd line drug	3 rd line drug
Panic disorder	Paroxetine Sertraline Alprazolam	Fluvoxamine Citalopram Diazepam	Venlafaxine Fluoxetine
Generalized anxiety disorder	Venlafaxine XR Buspirone Benzodiazepine	Paroxetine Nefazodone	Tricyclic antidepressant Fluoxetine
Social anxiety disorder	Paroxetine	Sertraline Fluvoxamine Fluoxetine	Venlafaxine Buspirone Bupropion
Post traumatic disorder	Sertraline	Sertraline Fluvoxamine Paroxetine	Phenelzine Amitriptyline
Obsessive compulsive disorder	Paroxetine Sertraline Fluoxetine	Venlafaxine Clomipramine	Clonazepam Buspirone Nefazodone [40].

Conclusion

Anxiety is also called neurosis which is a common mental disorder. It affects every third person across the world. Anxiety disorder is the most prevalent disorder in comparison with other mental disorders. It is widely distributed in all age groups person. These disorders can be long-lasting or recurrent and in daily life, it impair the person's ability to function. This paper helped you to understand the symptoms, causes, drug classifications with advantages and disadvantages with proper mechanism or action. You also understood about medicinal plants and the part which plant is used for a particular type of anxiety. This paper revealed about the prevalence according to age and according to types of disorder. Other than this, it helped you to understand nutritional value, and the impact of good diet in anxiety.

When anxiety gets more chronic, treatment will be needed. So this paper helped you understand the full benefits of nutrition and food and different therapies that can be used to prevent anxiety such as yoga, Exercise, stay socialize, being strict to diet etc. Even not anxiety, many other disorders are related to a balanced diet. Nutrition plays important role in anxiety treatment. When the anxiety is mild or moderate, it can be treated with the help of proper nutrition or a proper diet. Researchers showed that a balanced diet plays a major role in the cure of anxiety or reduction in anxiety. The most successive treatment for anxiety disorder is antioxidant, antibacterial, folic acid, vitamin, protein. These all are the major nutrients and are part of a healthful diet. This paper showed that only not the nutrition is beneficial for cure. But there are several therapies like yoga, mind-fullness, stay socializing, making sleep a priority and when anxiety is severe, then taking proper medicine can help to control the anxiety disorder. In the conclusion, it may say that eating right food and nutrition, also strict diet plan, self-motivation can help you to help out in the treatment of many disorders.

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