

A Review on Herbal Remedies for Anxiety and Stress

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Abstract—Anxiety and stress are two of the most prevalent mental health conditions and a significant contributor to disability worldwide. We all experience feelings of anxiety, fear, and worry at many points in our lives. These feelings can have a negative impact on every individual's mental and physical health if they persist for an extended period of time. Clinical anxiety disorders result from this. Anxiety disorders can be treated with a variety of methods and can also be treated with herbal remedies, as this article outlines. Anxiety and stress are prevalent mental health concerns that significantly impair quality of life and overall well-being. Conventional pharmacological treatments, such as benzodiazepines and selective serotonin reuptake inhibitors, while effective, are often associated with side effects and risk of dependency. This has prompted growing interest in alternative and complementary approaches, particularly herbal remedies, which have been traditionally used across cultures for centuries. This review explores the efficacy, safety and mechanisms of commonly studied herbal remedies for managing anxiety and stress, including *Withania somnifera* (Ashwagandha), *Passiflora incarnata* (Passionflower), *Valeriana officinalis* (Valerian root), *Matricaria chamomilla* (Chamomile), and *Lavandula angustifolia* (Lavender). Emerging evidence suggests these herbs may exert anxiolytic effects through modulation of neurotransmitters such as GABA, serotonin, and cortisol pathways, contributing to reduced stress responses and improved mood regulation. While clinical trials indicate promising outcomes, variability in study design, dosage, and standardization of herbal preparations remains a limitation. Additionally, potential herb-drug interactions and lack of long-term safety data warrant cautious use. Overall, herbal remedies present a promising adjunct or alternative in the management of anxiety and stress.

Index Terms—anxiety, natural remedies, alternative therapy,

I. INTRODUCTION

Over the past few years, the use of natural or herbal remedies as a form of self-treatment of various afflictions has become increasingly popular in Western societies. Recently, the National Institute of Health recognized that up to one third of people in the United States make use of nontraditional treatments for their ailments (1). Use of complementary and alternative medicine in all of its varieties, such as herbal remedies and dietary supplements, increased from 34 percent of the overall U.S. population in 1990 to 42 percent in 1997(2).

People today suffer from a variety of psychiatric conditions, particularly insomnia, anxiety, and depression. Depressive disorders, one of the most common mental illnesses, have a significant impact on people and society. Major depressive disorders (MDDs) will account for the second most common disease worldwide by 2020, according to the World Health Organization (WHO). During the past ten years, the study of anxiety has grown into a crucial area of psychopharmacological research. It has been observed that people with anxiety frequently have sleep problems. The subjective complaint of an inability to initiate or maintain sleep or of poor quality or quantity of sleep is the most common form of sleep disorder. The general population suffers from insomnia, which has the potential to result in significant physical disorders. Around 95% of people worldwide are thought to suffer from insomnia, which has serious side effects during the day (3).

As the new millennium approaches, it comes with advancements in computer technology, diversity in life events, and drastic changes in health care. All of these have produced increased stress in all aspects of our lives. To deal with stress, people have tried various coping strategies including positive thinking, social support, assertive behavior, stress management, and

medications. Drugs, though, often have undesirable side effects. For various reasons, these ways of handling stress have been slow in bringing about the desired changes in reducing the stress that people experience on a daily basis. Consequently, many individuals have turned to complementary health modalities. One popular category of natural remedies is the use of herbs for alleviating stress. The first part of this article will provide a brief overview of stress, including its effects on one's total being. The second part will describe the common herbal remedies as well as other helpful herbs that are used in decreasing stress and ultimately, in promoting health. Last, a few general practical guide-lines are discussed for those considering the use of herbs (4 to 7).

II. ANXIETY

Anxiety is a mental state that is elicited in anticipation of threat or potential threat. Sensations of anxiety are a normal part of human experience, but excessive or inappropriate anxiety can become an illness. In this review, we consider the evidence for anxiety as a product of early environmental experiences, the impacts of which are modulated by genetic susceptibility factors. We propose that such interactions can induce persistent structural and functional changes in the brain that underlie susceptibility to anxiety. Investigation of the molecular nature of these factors and the plastic changes that they induce has the potential to reveal why different individuals experience different levels of anxiety (8).

A growing body of data indicates that human susceptibility to mood disorders such as depression and anxiety can be determined early in life. These data support the view that early developmental mechanisms can set the lifelong tendency of an organism to express anxiety in response to threatening stimuli. Such developmental mechanisms are under both genetic and environmental control. Studies of anxiety related behaviour in monkeys and rodents

support the important role of gene-environment interactions in the aetiology of anxiety (9).

- Anxiety Disorders

The types of disorders of anxiety are as following-

1. Generalized anxiety disorder (GAD) and non-specified anxiety

GAD is diagnosed in persons with excessive worry and anxiety, accompanied by more than three somatic symptoms (e.g. tension, irritability) which occurs more days than not, for a period of at least 6 months (10). GAD is second only to MDD as the most commonly diagnosed psychiatric condition in primary care (11).

2. Panic disorder/agoraphobia

Panic attacks can occur in the context of other mood disorders, medical conditions or substance-related disorders. The disorder is marked by the presentation of chronic periods of intense fear in the absence of real danger, with at least four cognitive or somatic symptoms (e.g. shaking, tachycardia, sweating) (10). To date, no RCTs with HM exist. Four case studies, however, have been documented using Kampo herbal medicines Kami shoyo-san (TJ-24) and Hange-koboku-to (TJ-16) in patients with panic disorder and agoraphobia (12).

3. Obsessive-compulsive disorder (OCD)

The primary features of OCD are unreasonable recurrent obsessions or compulsions that are sufficiently severe to consume time and cause marked distress (10).

4. Depression with anxious symptoms (AnxD)

No diagnosis of AnxD is identified in DSM-IV (American Psychiatric Association, 2000), and GAD cannot be diagnosed as present unless symptoms cannot be explained by the presence of MDD. However, anxiety symptoms are endemic in depression (Kessler et al., 2003), and true comorbidity of depressive and anxious conditions commonly occurs (10)

DIFFERENT TYPES OF ANXIETY



Fig.1- Different types of Anxiety

- Symptoms of Anxiety:
While manifestations differ across anxiety disorder types, some symptoms are commonly observed:
 - Physical: Heart palpitations, chest pain, rapid breathing, and gastrointestinal issues.
 - Psychological: Excessive fear, restlessness, irritability, and dread.
 - Behavioral: Avoidance of certain places or situations, compulsive rituals, and incessant need for reassurance.
 - Sleep-Related: Nightmares, night sweats, or insomnia.
 - Cognitive: Intrusive thoughts, constant worry, and difficulty concentrating (13).

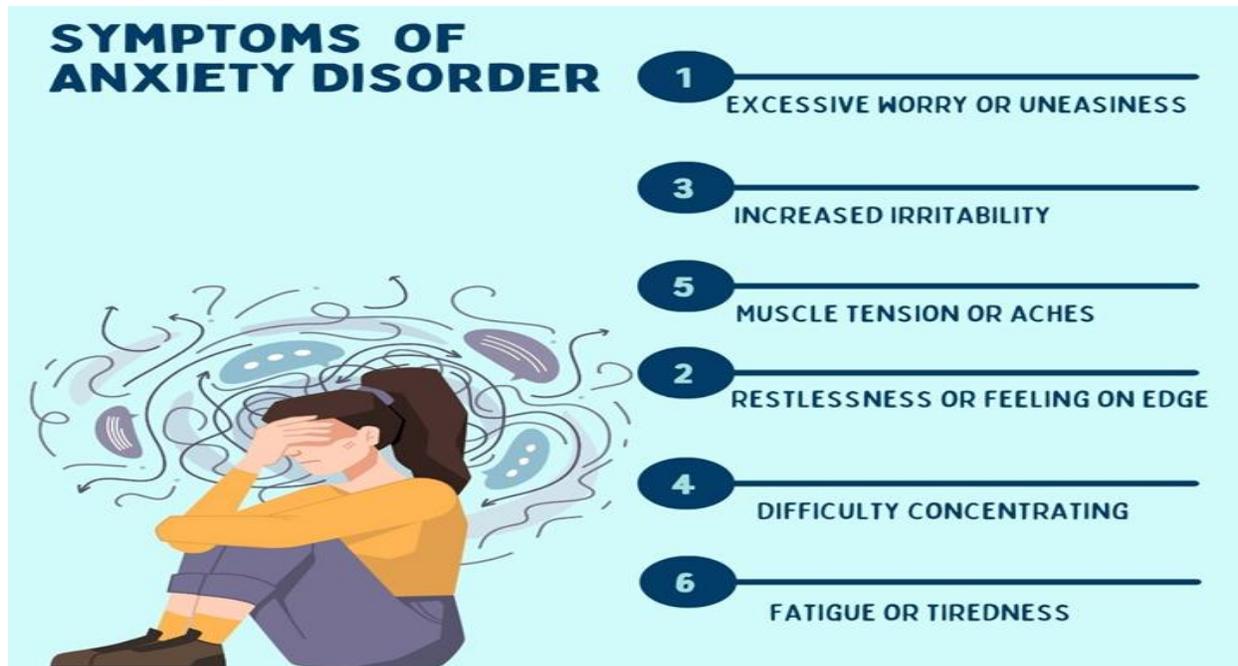


Fig.2- Symptoms of Anxiety

- Causes of Anxiety:
The causes of anxiety disorders include genetics, chemical imbalances in the brain, and traumatic experiences, according to a study by Adwas AA et al. 2019, “Anxiety: Insights into Signs, Symptoms, Etiology, Pathophysiology, and Treatment,” as described below (14)

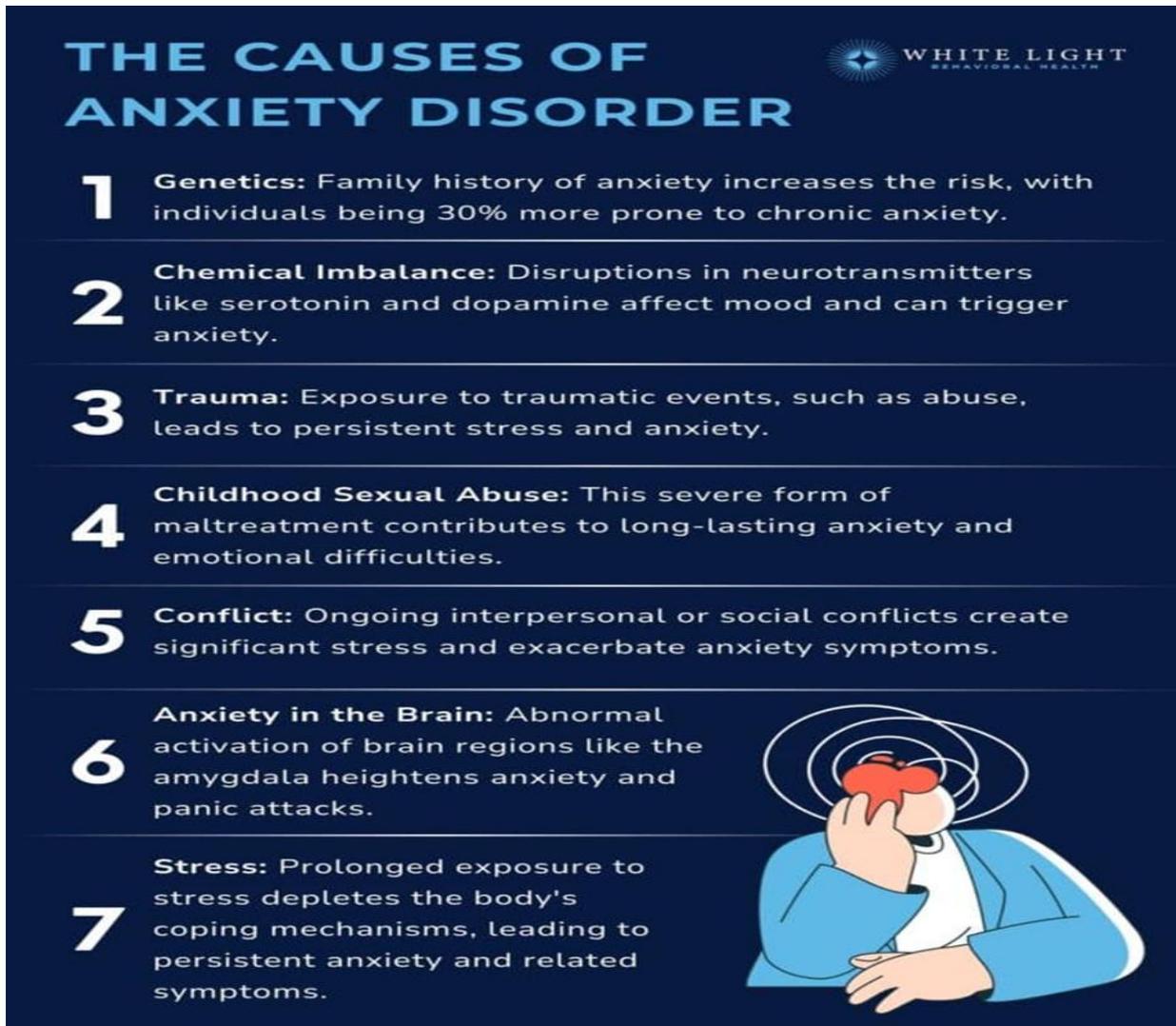


Fig.3- Causes of anxiety

- **Herbal Remedies for Anxiety**

The Indian traditional medical system of Ayurveda treats a variety of neuropsychiatric conditions with the help of herbs and their preparations. In folk and other traditional medicine, many herbs have been used for centuries to improve mood and calm the mind. Herbal remedies, which are widely used in developing nations, are regaining popularity in both developed and developing nations. In the last 10 to 15 years, clinical trials have only just begun to precisely test the efficacy and safety of using these natural medications to treat anxiety. Additionally, psychiatric disorders like anxiety, sleep disorders, convulsions, cognitive impairment, and depression have been prevented and treated with preparations containing valerian, hops, lemon balm, and passion flower extracts. The

following is a list of herbal treatments for anxiety disorders that are frequently used.

1. **Matricaria recutita (Chamomile)**

One of the most common single ingredients in herbal teas, or tisanes, is chamomile. Traditional uses for chamomile tea, which is made from dried flower heads, include treating gastrointestinal issues. Other applications include treating allergic rhinitis, ADHD, restlessness, insomnia, dysmenorrhea, mastitis, and varicose ulcers. Flavonoids found in chamomile have benzodiazepine-like effects, and it also inhibits phosphodiesterase, which raises cAMP levels. A recent study (DSM-IV) compared the effectiveness of a standardized extract of *Matricaria recutita* (L) over eight weeks in patients with mild to moderate GAD to that of a placebo.

2. Bacopa monnieri (Brahmi)

Nerve tonics have been used with a variety of herbs in Indian traditional medicine. Brahmi, a well-known memory enhancer, is the most well-known of these herbs. Ayurvedic doctors have been using this herb for almost 3000 years. Animal and clinical research back up the traditional Ayurvedic use of brahmi as a treatment for anxiety. According to Singh and Dhawan (1997), Brahmi is used in Indian traditional medicine to treat a variety of brain disorders, including memory loss and anxiety (15). According to Kar Chowdhury et al., Brahmi protects the brain from the negative effects of stress by regulating the activities of Hsp70, P450, and SOD (16). In another study, pretreatment with brahmi restored ulcer index, adrenal gland weight, creatine kinase, and aspartate aminotransferase changes induced by immobilization stress (17). Brahmi syrup administration to 35 patients with anxiety neurosis was shown in a previous clinical study to significantly reduce anxiety symptoms and levels. A recent placebo-controlled, randomized, double-blind clinical trial evaluated the effects of standardized Bacopa monniera extract on anxiety, depression, and recall memory in healthy elderly patients. When compared to the placebo, Bacopa participants' Rey Auditory Verbal Learning Test (AVLT) delayed word recall memory scores were higher (18).

3. Withania somniferous (Ashwagandha)

Over three thousand years ago, this herb played a significant role in Ayurveda and indigenous medical practices. Ashwagandha can be used to treat anxiety, inflammation, Parkinson's disease, cognitive and neurological disorders, and other conditions, according to preclinical and clinical studies. It is also used therapeutically as an adaptive to treat stress-related weakness, insomnia, and nervous. Withania somniferous (WS) root extract demonstrated anxiolytic activity in the elevated plus-maze, as well as social interaction and feeding latency in an unfamiliar environment, in preclinical studies. Ashwagandha reduced chronic stress-induced hyperglycemia, cognitive impairment, immunosuppression, and depression (19). The findings demonstrate that ashwagandha exhibits significant antistress adaptogenic activity, confirming the clinical application of the plant in Ayurveda. In a recent study, a compound natural health product with

Withania as the main herb in an open label human trial was found to have anxiolytic properties (20).

4. Centella asiatica (Mandookaparni or Gotu Kola)

Centella asiatica is known for helping a variety of neurological disorders. Ayurvedic and traditional Chinese medicine have used Gotu Kola for centuries to treat depression and anxiety. Long-term pretreatment with Gotu Kola has been shown to reduce locomotor activity, improve elevated-plus maze performance, and reduce acoustic startle response in rats (21). Gotu Kola significantly reduced peak acoustic startle response amplitude 30 and 60 minutes after treatment in a double-blind, placebo-controlled study of Centella asiatica's anxiolytic activity in healthy subjects (22).

5. Valeriana officinalis

According to Donath et al., Valerian is one of the most widely used herbal remedies for insomnia. 2000) and is also used for anxiety treatment. In the brains of rats, valerian root hydroalcoholic and aqueous extracts have shown affinity for the GABA-A receptor. The psychic factor of the HAMA scale was only significantly reduced in the diazepam and valepotriates groups, and the preliminary findings of this study suggest that valepotriates may have a potential anxiolytic effect on the psychic symptoms of anxiety. The low dose of diazepam and the small sample size of this study necessitate improved methodological design for future replications (23).

III. STRESS

Stress is a common phenomenon that is experienced by every individual (24). When stress becomes extreme, it is harmful to the body, and hence to be treated. Stress is involved in the pathogenesis of a variety of diseases that includes psychiatric disorders such as depression and anxiety, immunosuppression, endocrine disorders including diabetes peptic ulcer, hypertension, cognitive dysfunction, and ulcerative colitis (25).

Stress has close connections with various dysfunctions of the body. It is a response of the body to the diverse aversive assaults, which threaten internal homeostasis. It is known to alter the physiological homeostasis of the organism and results in the breakdown of integrated adaptational processes in response to

extreme environmental stimulus (26). The body reacts to such a situation by eliciting various autonomic, endocrinal and visceral responses in a variety of situations, e.g. release of hormones like cortisol and adrenalin (27).

In other words, stress is the body's reaction to any stimuli that disturb its equilibrium. When the equilibrium of various hormones has altered the effect of these changes can be detrimental to the immune system. A stressful event can trigger the "fight-or-flight" response, causing hormones such as adrenaline and cortisol to surge through the body. A little bit of stress, known as "acute stress," can be exciting-it keeps us active and alert. But long-term, or "chronic stress," can have detrimental effects on health. You may not be able to control the stressors in your world, but you can alter your reaction to them (28,29).

Herbal formulations have been in use for many years not only in Asian countries but also globally humans' well-being. They claimed to enhance physical endurance, mental functions. The potential utility of

safer and cheaper herbal medicines as anti-stress agents have been reported as they can withstand stress without altering the physiological functions of the body (30).

- **The Effect of Stress on the Immune System:**

The stress hormones released by the adrenals during episodes of fear and anxiety also affect white blood cells, the infection-fighting army within our blood. Initially, the surge of the brain and adrenal hormones that accompanies stress causes an increase in circulating white blood cells. When cortisol remains high, however, white blood cell numbers are reduced. As stress, anxiety, or depression continue unabated over weeks or months, the output of the adrenal hormone cortisol is consistently high and white blood cell numbers remain reduced (31).

- **Types of Stress:**

These types of stress are described below:

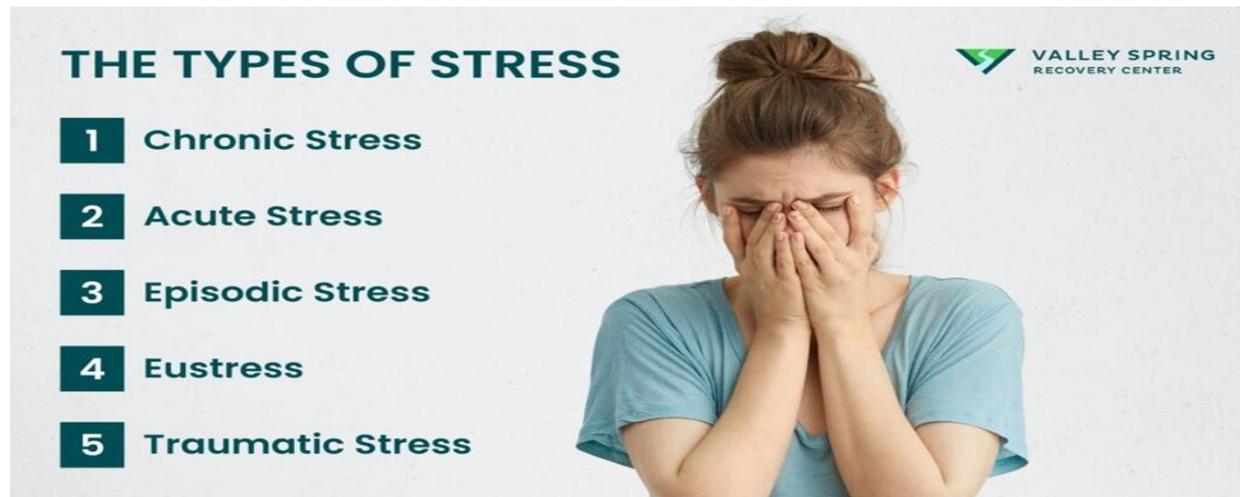


Fig. 4 Types of Stress

1. **Chronic Stress**

Chronic stress occurs when a person is experiencing pressure and demands for a long period. This type does not have a clear end point and puts in a constant state of anxiety and worry. It mainly emerges from financial problems or long-term illnesses and can result in serious health problems like depression, anxiety, and heart diseases. The cure to chronic stress involves making lifestyle changes and seeking professional support.

2. **Acute Stress**

Acute stress is a response to sudden challenges or pressure. This type is short-term and often cures quickly. Acute stress is known for triggering the human body's fight or flight response which releases hormones like adrenaline and cortisol. The main causes are arguments, changes in life, or job-related issues. Acute stress is intense, but it does not cause any major harm. It can be instantly managed by going through a quick psychotherapy.

3. Episodic Stress

Episodic stress is characterized by frequent episodes of acute stress. This never-ending cycle of occasional stress makes people feel like they are always rushing or taking too much pressure. This type of stress is highly common among individuals who are driven and competitive. Episodic stress can lead to health issues like cardiovascular diseases or high blood pressure. It can be managed by adapting time management techniques or indulging in physical activities.

4. Eustress

Eustress is a more positive type as it is known to encourage and energize individuals. This type often occurs during exciting events like getting married, going to a party, starting a new job, or doing your favorite activity. It will help the person improve their mood and performance during that event. Eustress can be easily managed if you always keep a positive attitude and engage in mindful practices like meditation.

5. Traumatic Stress

Traumatic stress emerges when an individual experiences traumatic events in their life. The event could be a natural disaster, a major accident, or a violent assault. The amygdala, hippocampus, and prefrontal cortex in the brain are significantly affected by traumatic stress. Traumatic stress can lead to

conditions like post-traumatic stress disorder (PTSD). Traumatic stress requires professional help for effective management and recovery. Going through cognitive-behavioral therapy (CBT) or eye movement desensitization and reprocessing (EMDR) can be helpful (32).

- Symptoms of Stress:

1. Headaches

A headache is a dull aching pain that surrounds the forehead, temples, and back of the head. Stress can trigger tension, which causes headaches. This painful discomfort can last for a very long time. Some people may require medications or proper rest to relieve headaches.

2. Fatigue

Fatigue happens when the body remains in a state of alertness for a long time due to stress. It can make an individual lazy by reducing energy levels and also disrupt sleep patterns.

3. Irritability

People under stress often react aggressively or negatively to the slightest of bother due to irritability and mood swings. Irritability from stress can strain personal and professional relationships and further increase stress levels.



Fig.5- Signs and Symptoms of Stress

4. Anxiety

Stress can cause feelings of constant fear and concern, which eventually leads to anxiety disorders. As per the National Institute of Mental Health, nearly 19% of adults in the U.S. suffer from an anxiety disorder linked to stress.

5. Panic Attacks

Panic attacks are triggered by intense stress, which can further lead to fear, tension, and rapid heartbeat. These attacks can also lead to shortness of breath which may cause sudden drops in energy levels.

6. Digestive Problems

Stress can also lead to digestive issues like constipation, diarrhea, stomach aches, and irritable bowel syndrome. Stress levels strongly connect with gastrointestinal disorders, which explains the digestive problems.

7. Stress Rash

Prolonged stress also causes skin rash or reactions, such as rash or hives, which appear as red and itchy patches. According to the Journal of Investigative Dermatology, a direct relation was found between psychological stress and skin conditions, including stress rashes (32).

- Causes of stress: -



Fig.6- Causes of stress

- Natural Therapies to Reduce Stress:

Mind-body medicine has also been shown to reduce stress and enhance well-being. These mind-body techniques help change the way individuals think about the problem, which gives them more control over their responses made to the stress. This enables individuals to manage and even reduce their stress because they can assert control over their reactions and behaviors to the stress (33). Also, when individuals realize their ability to control their behaviors and, more importantly, their attitudes, they have more

control over their stress overall. It becomes essential for individuals to learn how to control their thoughts, attitudes, and behaviors when encountering stressful situations. Following are some natural therapies to reduce stress.

- Relaxation techniques
- Exercise
- Breathing
- Yoga
- Meditation
- Division of labor

- Assertiveness
- Alcohol and drugs
- Caffeine
- Nutrition
- Time management
- Seek professional help

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