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Stress And There Comorbid Condition

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Abstract :

Stress is a pervasive phenomenon in modern society, and it has been strongly linked to a myriad of comorbid conditions. This comprehensive review aims to explore the intricate relationship between stress and its comorbidities, taking into account various aspects such as psychological, physiological, and behavioral factors. The review delves into the multifaceted impact of stress on mental health, including its role in the development and exacerbation of anxiety disorders, depression, and post-traumatic stress disorder. Furthermore, it uncovers the intricate interplay between stress and physical health, shedding light on how chronic stress can contribute to cardiovascular disease, immune system dysregulation, and metabolic disorders.

In addition, the review examines the behavioral repercussions of stress, exploring its influence on substance abuse, addictive behaviors, and disrupted sleep patterns. Special attention is given to the neurobiological pathways through which stress exerts its effects, including the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system.

Furthermore, the review discusses the important early intervention and effective stress management strategies in mitigating the risk of comorbid conditions. It highlights the role of cognitive-behavioral therapy, mindfulness-based interventions, pharmacological approaches in addressing stress and its associated comorbidities.

By synthesizing evidence from diverse fields, this review presents a comprehensive understanding of the complex relationship between stress and comorbid conditions. It underscores the imperative for tailored interventions that consider the intertwined nature of stress and its comorbidities, aiming to pave the way for more effective therapeutic approaches and improved health outcomes.

➤ Keywords :

Mental health, sleep disturbances, substance abuse and addiction, chronic pain, stress and memory.

➤ Introduction :

Any intrinsic or extrinsic stimulus that evokes a biological response is known as stress. The compensatory response to these stresses are known as stress responses. Based on the type, timing and severity of the applied stimulus, stress can exert various actions on the body ranging from alternations in homostasis to life threatening effects and death. In many cases, the pathophysiological complications of disease arise from stress and the subjects exposed to stress. Stress can be either a triggering factor for many diseases and pathological conditions.

1. Mental health disorders :

Chronic stress is strongly linked to the development of mental health conditions such as anxiety disorders, depression, and post-traumatic stress disorder. Prolonged exposure to stress hormones like cortisol can disrupt the balance of chemicals in the brain, leading to these conditions.

2. Stress and the brain function complications :

For a long time, researchers suggested that hormones have receptors just in the peripheral tissues and do not gain access to the central nervous system. However, observations have demonstrated the effect of anti-inflammatory drugs (which are considered synthetic hormones) on behavioral and phenomenon called "steroid psychosis". In the early sixties, neuropeptides were recognized as compounds devoid of effects on the peripheral endocrine system. However, it was determined that hormones are able to elicit biological effects on different parts of the CNS and play an important role in behavior and cognition. In 1968, McEwen suggested for the first time that the brain of rodents is capable of responding to glucocorticoid (as one of the operators in the stress cascade). This hypothesis that stress can cause functional changes in the CNS was then accepted.

3. Cardiovascular issues :

High levels of stress can contribute to high blood pressure, heart disease, and stroke. Chronic stress activates the body's fight-or-flight response, causing an increase in heart rate and blood pressure. Over time, this can damage the cardiovascular system. Stress, whether acute or chronic, has a deleterious effect on the function of the cardiovascular system. The effects of stress on the cardiovascular system are not only stimulatory, but also inhibitory in nature. It can be postulated that stress causes autonomic nervous system activations of the cardiovascular system. If these effects occur upon activation of the sympathetic nervous system, then it mainly results in an increase in heart rate, strength of contraction, vasodilation in the arteries of skeletal muscles, a narrowing of the veins, contraction of the arteries in the spleen and kidneys, and decreased sodium excretion by the kidneys. Sometimes, stress activates the parasympathetic nervous system. Specifically, if it leads to stimulations of the limbic system, it results in a decrease, or even a total stopping of the heart beat decreased contractility, reduction in the guidance of impulses by the heart stimulus-transmission network, peripheral vasodilatation, and a decline in blood pressure. Finally, stress can modulate vascular endothelial cell function and increase platelet aggregation.

4. Immune system dysfunction :

Stress can dampen the immune response, making individuals more susceptible to infections and illnesses. Prolonged stress can impair the immune system's ability to fight off antigens, making it easier to get sick. The relation between stress and the immune system has been considered for decades. The prevailing attitude between the association of stress and immune system response has been that people under stress are more likely to have an impaired immune system and, as a result, suffer from more frequent illness. Also, old anecdotes describing resistance of some people to severe disease using the power of the mind and their thought

processes, has promoted this attitude declared that melancholic women are more likely to have cancer than women who were more positive and exposed to less stress this may be the first recorded case about the relationship between the immune system and stress. An old study in the early 1920's researchers found that the activity of phagocytes in tuberculosis decreases when emotional stress was induced. In fact, it was also suggested that living with stress increase the immune system. Following this study, other researchers suggested that the probability of the disease appearance increases following a sudden, major, and extremely stressful life style change.

5. Stress and the Endocrine System:

There is a broad and mutual relationship between stress and the endocrine system. On one hand, stress has many subtle and complex effects on the activity of the endocrine system, while on the other hand, the endocrine system has many effects on the response to stress. Stress can either activate, or change the activity of, many endocrine processes associated with the hypothalamus, pituitary and adrenal glands, the adrenergic system, gonads, thyroid, and the pancreas. In fact, it has been suggested that it is impossible to separate the response to stress from the function of the endocrine system. This premise has been advanced due to the fact that even a minimal amount of stress can activate the hypothalamus-pituitary- adrenal axis, which itself is intricately involved with the activation of several different hormone secreting system. In different locations throughout the article, we have hormones and various endocrine factors and, they will not be further addressed.

6. Sleep Disturbances :

Stress can disrupt sleep patterns, leading to insomnia, nightmares, and other sleep disorders. Lack of quality sleep can further exacerbate stress levels, creating a vicious cycle that can be difficult to break.

7. Substance abuse and addiction :

Many people turn to alcohol, tobacco, other drugs as a way to cope with stress. This can lead to substance abuse issues, addiction and a range of associated health problems.

8. Chronic pain :

There is a strong relationship between stress and chronic pain condition such as migraines, tension headaches, and fibromyalgia. Stress can exacerbate pain make it more difficult to manage.

9. Stress and memory :

Memory is one of the important functional aspects of the CNS and it is categorized as sensory, short term and long term. Short term memory is dependent on the function of the frontal and parietal lobes, while long term memory depends on the function of large areas of the brain. However, total function of memory and the conversion of short term memory to long term memory are dependent on the hippocampus; an area of the brain that has the highest density of glucocorticosteroid receptors and also represents the highest level of response to stress.

10. Stress, cognition and learning :

Cognition is another important feature of brain function. Cognition means reception and perception of perceived stimuli and its interpretation, which includes learning decision making, attention, and judgment stress has many effects on cognition that depend on its intensity, duration, origin and magnitude. Similar to memory, cognition is mainly formed in the hippocampus, amyglada, and temporal lobe. The net effect of stress

on cognition is a reduction in cognition and thus, it is said that any behavioral steps undertaken to reduce stress leads to increase in cognition. In fact stress activates some physiological system, central neurotransmitter and neuropeptide system, and the hypothalamus-pituitary-adrenal axis, which have direct effects on neural circuit in the brain involved with data processing. Activation of stress results in the production and release of glucocorticosteroids. Because of the lipophilic properties of glucocorticosteroids, they can diffuse through the blood-brain barrier and exert long term effect on processing and cognition.

11. Stress and Gastrointestinal complications

The effects of stress on nutrition and the gastrointestinal system can be summarized with two aspects of GI function.

First, stress can affect appetite. This effect is related to involvement of either the ventral tegmental area or the amygdala via N-methyl-D-aspartate glutamate receptors. However, it should also be noted that nutrition patterns have effects on the response to stress and this suggests a bilateral interaction between nutrition and stress.

Second, stress adversely affects the normal function of GI tract. There are many studies concerning the effect of stress on the function of the GI system. For instance, studies have shown that stress affects the absorption process, intestinal permeability, mucus and stomach acid secretion, function of ion channels, and GI inflammation. Stress also increases the response of the GI system to inflammation and may reactivate previous inflammation and accelerate the inflammation process by secretion of mediators such as substance P. As a result, there is an increase in the permeability of cells and recruitment of T lymphocytes.

Lymphocyte aggregation leads to the production of inflammatory markers, activates key pathways in the hypothalamus, and results in negative feedback due to CRH secretion, which ultimately results in appearance of GI inflammatory disease. This process can reactivate previous silent colitis.

Mast cells play a crucial role in stress-induced effects on the GI system, because they cause neurotransmitter and other chemical factors to be released that affect the function of GI system.

➤ **Psychological stress :**

There's a good chance we can all identify negative stress, but did you know that stress can also be positive?

Good stress, called eustress, can actually be beneficial to you. Unlike bad stress, or distress, good stress can help with motivation, focus, energy, and performance. For some people, it can also feel exciting. On the other hand, bad stress typically causes anxiety, concern and a decrease in performance. It also feels uncomfortable, and it can lead to more serious issues if not addressed.

➤ **Psychological stress effects :**

The long-term effects of distress can damage our health.

Stress has ability to negatively impact our lives. It can cause physical conditions, such as headaches, digestive issues, and sleep disturbances. It can also cause psychological and emotional strains, including confusion, anxiety, and depression. It can also contribute to the development of obesity and heart disease.

➤ **Psychological stress signs:**

There's a distinction between a stressor and actual stress. A stressor can be a person, place, or situation that's causing you stress. stress is the actual response to one or a combination of those stressors.

There are any number of situations that can cause stress.

- Relationship conflicts at home
- New or increasing work responsibilities
- Increasing demands
- Financial strain
- loss of a loved one
- Health problems
- Moving to a new locations
- Exposure to one or more traumatic incidents, such as a car accident or a violent crime
- Knowing how to spot the signs of stress is the first step in developing ways to manage its adverse effects.
- Some of the more common physical, psychological, and emotional signs of chronic stress include:
 - Rapid heart rate
 - Elevated blood pressure
 - Feeling overwhelmed
 - Fatigue
 - Difficulty sleeping
 - Poor problems-solving
 - Fear that the stressor won't go away
 - Persistent thoughts about one or more stressors
 - Changes in behavior, including social withdrawal, feelings of sadness, frustration, loss of emotional control, inability to rest, and self-medication.

➤ **Ways to manage stress :**

- Find a balance
- Be kind to yourself
- Lean on the people you trust
- Keep a journal
- Eat well-balanced, regular meals
- Exercise regularly
- Get plenty of rest
- Practice relaxation exercises
- Schedule your worry
- Working with a professional

Therapies for stress :

- Cognitive behavioral therapy(CBT) for short- term help
- Psychodynamic therapy
- Behavioral therapy
- Exposure therapy
- Group therapy

➤ Method and material

Vetiver zizanioides indeed known for its potential benefits in stress relief and relaxation. It is a tropical grass with a pleasant, earthy, and woody aroma, commonly used in traditional medicine and aromatherapy practices for its claming and grounding properties. Here are several ways in which vetiver is used to alleviate stress :

1 : Aromatherapy:

Vetiver Essential oil is frequently used in aromatherapy to promote relaxation and reduce stress and anxiety. The oil is diffused or diluted and used in massage oils, baths, or applied to pulse points to help calm the mind and body.

2 : Relaxing Properties:

The aroma of vetiver is often described as grounding, soothing, and complex, making it a popular choice for diffusers or oil blends aimed at creating a tranquil atmosphere and promoting relaxation.

3 : Emotional Balance:

Vetiver oil is believed to have a stabilizing effect on emotions and can be used to support emotional well-being during time of stress, nervousness or tension.

4 : Sleep Aid:

The calming and sedation effects of vetiver oil are thought to help improve sleep quality and aid in managing insomnia and sleep-related issues, which are often linked to stress and anxiety.

5 : Stress Reduction:

Some studies indicate that vetiver essential oil may have potential anxiolytic (anxiety-reducing) effects, making it beneficial for individuals experiencing stress and tension.

• Conclusion :

Altogether, stress may include both beneficial and harmful effects. The beneficial effects of stress involved preserving homeostasis of cells/species, which leads to continued survival. However, in many cases, the harmful effects of stress may receive more attention or recognition by an individual due to their role in various pathological condition and diseases. As has been discussed in this review, various factors, for example, hormones, neuroendocrine mediators, peptides and neurotransmitters are involved in the body's response to stress. Many disorders originate from stress, especially if the stress is severe and prolonged. The community needs to have a greater appreciation for the significant role that stress may play in various disease and then treat the patient accordingly using both pharmacological therapeutic interventions. Important for the physician providing treatment for stress is the fact that all individuals vary in their response to stress, so a particular

treatment for stress is the fact that all individuals vary in their response to stress, so a particular treatment strategy or intervention appropriate for one patient may not be suitable or optimal for different patient.

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