

The Effect of Cognitive Behavior Therapy (C.B.T.) on Stress- A Review

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ABSTRACT

Prevalence of Stress is common condition affecting 60- 90% general population. Stress is the behavioral response unable to cope with mental or emotional pressure and physical tension. It affects day time cognitive functioning, psychological behavior, personality alterations and quality of life. The questionnaires are designed based on various factors on the basis of pre-data gathered, like daily hassles/ threats, happiness scale, perception of the present and the future by an individual, personality traits, depressive life events and so on. These questionnaires with certain scoring methods can assess the degree of stress involved with root cause analysis. The Perceived stress scale (PSS) and Ardell wellness stress test (AWST) for measuring and treating Stress without medicinal interventions with the help of C.B.T. economically.

Keywords: *Stress, Anxiety, CBT, PSS, AWST.*

The impact of stress on mental health i.e. cognitive, psychological, personality alterations and with physical health has remained largely unexplored.

Anxiety is a feeling of apprehension or fear, but Stress is the combination of psychological, physiological, and behavioral reactions that people have in response to events that threaten or challenge them. Worldwide epidemiological studies assessed the prevalence and chronicity increases with age, hypertension, diabetes, lack of general need for life e.g., appetite etc. and is more common in women. Chronic insomnia interferes with personal functioning and causes distress, fatigue, poor cognitive functioning, and mood disturbance.^[1] Stress is a global problem with:

- 91 percent of Australians feeling stressed about one or more important parts of their life.
- About 450,000 workers in Britain believing their stress was making them ill.
- 86 percent of Chinese workers reporting stress.

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The most common symptoms of stress and the percentage of people who experienced them include:

- **Irritability and anger:** 45 percent of people
- **Fatigue or low energy:** 41 percent
- **Lack of motivation or interest in things:** 38 percent
- **Anxiety, nervousness or worry:** 36 percent
- **Headaches:** 36 percent
- **Feeling sad or depressed:** 34 percent
- **Indigestion, acid reflux or upset stomach:** 26 percent
- **Muscle tension:** 23 percent
- **Appetite changes:** 21 percent

Stress affects the entire body and is linked to many co-occurring mental and physical health problems, like:

- Heart disease
- High blood pressure
- Diabetes
- Depression
- Anxiety
- Insomnia

Cognition Behavior Therapy aim to improve behavioral etiquette, sleep habits by identifying and changing thought. CBT often focuses on replacing negative automatic thoughts that can occur in generalized anxiety disorder, stress and may be used alone or in combination with medications.

DISCUSSION

Stress

Stress can be good or bad. Sometimes, stress is helpful, providing people with the extra energy or alertness they need. The good kind of stress is called eustress. Unfortunately, stress is often not helpful and can even be harmful when not managed effectively. Moreover, stress can increase the risk of developing health problems, such as cardiovascular disease and anxiety disorders. The bad kind of stress is called distress.

Stressors are events that threaten or challenge people. They are the sources of stress. Most widely studied stressors in children and adolescents are: Poverty, abuse, trauma, violence, marital conflicts, unemployment, accident, business failure, natural disasters, war and terrorism, medical illness, sexual- physical- emotional neglect/ assault, provocative behavior, the avoidance of intimacy, disturbances in attachment. Stress responses are psychological, physiological, and behavioral reactions to stressors. Stress-related outcomes also vary according to personal and environmental factors. Levels of neuroticism, emotionality, and reactivity correlate with poor interpersonal relationships as well as “event proneness.” Protective factors that have been identified include, coping, resources (e.g., social support, self-esteem, optimism), and finding meaning. Anxiety, depression, concentration difficulties, and muscle tension are all examples of stress responses. Children of divorced parents have more reported antisocial behavior, anxiety, and depression than their peers (Short 2002).

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Stress feelings generally of three categories

Acute stress: Following the perception of an acute stressful event; there is cascade of changes in the nervous, cardiovascular, endocrine and immune systems. We may notice blood pressure and heart rate, followed by feelings of irritability, sadness, and anxiety. Some people also experience headaches, back pain, and gastrointestinal issues. Acute stress may also occur if made significant changes to your bedroom or sleep area e.g. sharing their bedroom with their baby. Children may also have sleep problems immediately after they begin sharing their room with a sibling^[2].

Episodic acute stress: Frustrations through unhealthy behaviors, clinical depression and heart disease, as well as poor performance at work and relationship problems.

Chronic stress: Many factors can contribute to chronic stress, including poverty, abuse, and trauma, socio-psychological behavior and diseases related to cardiovascular, gastrointestinal, musculoskeletal, reproductive, respiratory and nervous systems.

How Does Stress Affect Sleep?

Insomnia is a common sleep disorder^[3] derived from stress. Insomnia is defined as persistent difficulty with sleep onset, excessive daytime sleepiness, fatigue, irritability and other impairments. Current estimates suggest ^[4]10-30% of adults live with insomnia. Insomnia due to constant stress, with anxiety disorder are at higher risk of experiencing insomnia symptoms:

- Feelings of fatigue and malaise
- Difficulty paying attention, concentrating, or accessing memories
- Impaired performance in social, family, professional, or academic settings
- Irritability and mood disturbances
- Hyperactivity, aggression, impulsivity, and other behavioral issues
- Decreased energy and motivation
- Increased risk for errors and accidents
- Interpersonal relationship issues
- Work-related problems
- Financial loss

Does Sleep Help Stress?

Getting enough sleep on a nightly basis can alleviate stress quite effectively. Unfortunately, a good night's rest can be elusive if you're stressed out – especially if sleep problems are a major source of your day-to-day anxieties.

There are other measures you can take to relieve stress. These include regularly exercising and maintaining a healthy support network of friends and family. However, keeping stress at bay often demands adequate sleep. National Sleep Foundation guidelines ^[5] advise that healthy adults should sleep between seven and nine hours each night.

Tan and Pertschuk, (1978) Systematic desensitization require that insomniac patients first construct a hierarchy of anxiety producing situations. Then, a counter conditioning program is established for each level of the hierarchy.

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Albert the Great. (1890) investigate the more theoretically discussed the role of worries or anxieties in the production of dreams. Various types of worries could affect sleep, including solicitude over one's family and possessions.

Summers-Bremner E. (2007) Probably the most common association between anxiety and sleep lay (and perhaps still lies) in the recognition that the former could impede the latter.

Moran and Stoudemire, (1992), a wide range of disorders should be considered in the search for an underlying cause of insomnia and stress. Several etiologies may exist at the same time.

Episodic acute stress: Frustrations through unhealthy behaviors, clinical depression and heart disease, as well as poor performance at work and relationship problems.

Chronic stress: Many factors can contribute to chronic stress, including poverty, abuse, and trauma, socio-psychological behavior and diseases related to cardiovascular, gastrointestinal, musculoskeletal, reproductive, respiratory and nervous systems.

JL Short (2002) investigate the effect of stressors are events that threaten or challenge people.

D. H. Barlow, (2007), conducted the study about daily life style. Rapid changes in technology and society are bringing unavoidable stress to everyday human life.

H. Lee, J.-K. Song (2010) investigates the study, when a mental or a physical challenge is presented, a stress response is triggered and several hormones are secreted, including adrenaline, immunoglobulin A (IgA), and cortisol.

Brindley & Rollan (1989), concluded other hormone about stress effect that the Epinephrine and norepinephrine have a lot in common. Epinephrine (also called adrenaline), nor-epinephrine, and dopamine make up a small but important hormone family called catecholamines.

Wood et al., (2000) conducted the study about memory in the brain. 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.

Asalgoo et al., 2015 also said that however, hippocampus; an area of the brain that has the highest density of glucocorticosteroid receptors and also represents the highest level of response to stress.

Lupien and Lepage, (2001) various studies have shown that stress can cause functional and structural changes in the hippocampus section of the brain and neurogenesis disorders

Elizabeth Scott, (2022) investigate the Stress can sometimes be mistaken for anxiety, and experiencing a great deal of stress can contribute to feelings of anxiety.

Stress and anxiety contribute to nervousness, poor sleep, high blood pressure ^[5], muscle tension, and excess worry. In most cases, stress is caused by external events, while anxiety is

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caused by your internal reaction to stress. Stress may go away once the threat or the situation resolves, whereas anxiety may persist even after the original stressor is gone.

Chi JS, Kloner RA (2003) in some study Serious acute stress, can trigger heart attacks, arrhythmias, and even sudden death.

Salvagioni DAJ (2007), conducted the study in High levels of stress may place you at a high risk of burnout.

According to Selye (1956) any external events or any internal drive which threaten to upset the organism equilibrium is stress.

H.K.Chopra. "Stress is an essential part of everybody life. Without stress, there will be no progress. Thus stress, should be taken up as a challenge to perform better in life".

Yerkes Dodson law (1908), Yerkes- Dodson law, developed by Robert Yerkes (1879-1956) and John Dodson (1879-1955) quite independently of the studies conducted by Canon and Selye. In 1908 at Harvard University Yerkes and Dodson conducted experiments with mice to test relationship between the strength of stimulus and habit formation.

Myers (1999), just with world war first, his recognition of psychological trauma.

Richard Lazarus theory

Lazarus & Folkman, (1984), the concept of cognitive appraisal was advanced in 1966 by psychologist Richard Lazarus in the book Psychological Stress and Coping Process.

Some scales are measuring the stress that given below:

In other study of stress, The COPSOQ (Copenhagen Psychosocial Questionnaire) was, originally developed and validated by **T.S. Kristensen and V. Borg of the Danish** National Institute for Occupational Health in Copenhagen. In a study of the DASS-21 is the shortened version of the DASS developed by **Lovibond and Lovibond** to assess symptoms of depression, anxiety and stress among adults. In other study The Perceived Stress Scale (PSS) was developed by Sheldon Cohen, its most widely used psychological instrument for measuring the perception of stress.

Donald B. Ardell was developed The "Ardell Wellness Stress Test" and now incorporates physical, mental, emotional, "spiritual" (i.e., meaning and purpose) and social aspects of health.

Causes

- Causes of Non **clinical/ Extrinsic** include:
 - Stress related to big life events, like a job loss or change, the death of a loved one, divorce, or moving.
 - Things around you like noise, light, or temperature, humidity, dryness, sex, food [7], Physical exertion, uncomfortable bed, Age related, Accident, Quarrelsome.
 - Changes to your sleep schedule like jet lag, a new shift at work, or bad habits you picked up when you had other sleep problems.
- Causes of **Clinical/ Intrinsic** include:
 - Mental health issues like depression, Psychiatric disorder and anxiety.
 - Medications for colds, allergies, depression, high blood pressure, and asthma

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- Inflammation/ Pain or discomfort at night.
- Caffeine, tobacco, or alcohol use.
- Hyperthyroidism and other endocrine problems.
- Irritable Bowel Syndrome (IBS), Ulcerative Colitis, Crohns disease, Alzheimers/ Dementia.
- Dyspnea, Diabetes mellitus/ Polyurea, RTI, UTI, Obesity.
- Other sleep disorders, like sleep apnea or restless legs syndrome.

Pathophysiology-Acute Stress Responses

According to American Psychological Association. (2020), there is a cascade of changes in the nervous, cardiovascular, endocrine, and immune systems. The HPA Axis, Hypothalamic Pituitary Gonadal Axis (HPG), Hypothalamic Pituitary Thyroid Axis (HPT), Hypothalamic Neurohypophyseal system (HPS) are 04 neuroendocrine system. The network known as the hypothalamic-pituitary-adrenal (HPA) axis ^[8] regulates stress and many body's hormonal response or processes that includes digestive and immune system, mood, emotions, sexuality, energy storage and expenditure. The hypothalamus – a cluster of nuclei located in the brain – will instruct the anterior pituitary gland to release hormone-ACTH which influence GH(STH), Cortisol, TSH, FSH, LH, MSH, Prolactin hormones, while posterior pituitary gland secretes- ADH(Vasopressin), Oxytocin ^[9]. Thus, pituitary gland signals the adrenal glands to produce steroid hormones called glucocorticoids. Two of these glucocorticoids are cortisol (produced by zona fasciculata of adrenal cortex) and epinephrine produced (adrenal medulla & medulla oblongata) involved in visceral functions (e.g., respiration), which are also known as stress hormones.

About the Catecholamines

Epinephrine and norepinephrine have a lot in common. Epinephrine (also called adrenaline), norepinephrine, and dopamine make up a small but important hormone family called catecholamines. Together, catecholamines and cortisol increase available sources of energy by promoting lipolysis and the conversion of glycogen into glucose (i.e., blood sugar). Lipolysis is the process of breaking down fats into usable sources of energy (i.e., fatty acids and glycerol; Brindley & Rollan 1989).

Epinephrine and norepinephrine are the hormones behind your “fight-or-flight” response (also called the fight, flight, or freeze response). When you experience stress, these two hormones leap into action. They also play roles in some of your everyday bodily functions.

Dopamine- Dopamine is a neurotransmitter, a chemical messenger in your brain. This chemical controls your responses to sensory information. When you yank your hand back from a hot stove or when you find yourself craving something sugary in the candy aisle, that's dopamine at work. Dopamine's roles spread far and wide, including:

- Motor control
- Emotions (pleasure or dislike)
- Thought-processing

A dopamine imbalance can lead to a loss of motor control (such as Parkinson's disease), addiction, ADHD, and schizophrenia.

Epinephrine and norepinephrine. These two hormones work together in stressful situations to increase blood flow throughout your body.

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You may think of adrenaline as a mysterious chemical that makes you focused and strong enough to lift a car. When you experience stress, your heartbeat quickens, you start to sweat, and you feel the need to get away. This is the fight-or-flight response, at the heart of which is adrenaline. **Where epinephrine is produced.** Like the other catecholamine hormones, adrenaline is produced in the adrenal glands. Within minutes of experiencing stress, adrenaline is sent into your blood toward other organs to cause certain responses. These effects of adrenaline include:

- Dilations of your air passages to take in more oxygen
- Contracting blood vessels to redirect blood flow to important muscles and organs, such as the heart and lungs
- Reduced ability to feel pain
- Increase in strength and physical performance
- Heightened awareness and focus
- Epinephrine for Anaphylaxis

Epinephrine injections. Adrenaline shots are commonly used to treat a life-threatening allergic reaction or anaphylaxis. Epinephrine injection is an injection system that is prefilled with a liquid solution of the hormone epinephrine.

Treating anaphylaxis. Symptoms of a mild allergic reaction include hives, itching, and swelling. Symptoms of anaphylaxis are much more severe, can be life-threatening, and vary between each occurrence. Some symptoms of anaphylaxis include:

- Swelling or tightening of the throat
- Difficulty breathing
- Shortness of breath
- Wheezing or coughing
- Lightheadedness or fainting
- Abdominal cramps
- Nausea, vomiting, or diarrhea

Epinephrine injection is the first line of treatment for anaphylaxis. Epinephrine's roles regarding blood flow and oxygen intake help fight the symptoms of anaphylaxis. However, epinephrine injection isn't the final treatment option, and further medical assistance is necessary.

About Norepinephrine

Norepinephrine (sometimes referred to as noradrenaline) is a neurotransmitter and hormone that responds to stress and low blood pressure. It also plays a role in managing your ability and your ability to focus.

Fight or flight. When working alongside adrenaline, norepinephrine supports the fight-or-flight response by increasing your heart rate, breaking down fat, and increasing glucose levels. It gives your brain and body the energy it needs to take action.

Biorhythms. Norepinephrine works to maintain your sleep-wake cycles. It helps you wake up in the morning, improves your attention, and helps you focus throughout the day.

Norepinephrine imbalances. An imbalance of norepinephrine (too much or too little) can have an impact on your mental and emotional health. Conditions such as depression,

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anxiety, addiction, substance abuse, and post-traumatic stress disorder are caused by an imbalance of norepinephrine. A surge of norepinephrine can cause feelings of happiness and euphoria. However, a surge can also lead to panic attacks, raised blood pressure, and hyperactivity. A lack of norepinephrine can cause lethargy, fatigue, lack of focus, attention deficit hyperactivity disorder (ADHD), and depression.

Norepinephrine as Treatment

You will often find norepinephrine at work treating low blood pressure (hypotension) due to a life-threatening complication or alongside serotonin in antidepressants. Serotonin and norepinephrine reuptake inhibitors (SNRIs) are an antidepressant. SNRIs work by altering the brain chemistry of your serotonin (a “feel good” hormone) and norepinephrine neurotransmitters. This process helps to regulate your mood and relieve depression symptoms.

Getting norepinephrine naturally. You can help your body and brain produce more serotonin and norepinephrine through exercise, sleep, feeling accomplished, enjoying music, and meditation.

Inflammation, Cytokine Production, and Mental Health

In addition to its effects on physical health, prolonged pro-inflammatory cytokine production may also adversely affect mental health in vulnerable individuals. During times of illness (e.g., the flu), proinflammatory cytokines feed back to the CNS and produce symptoms of fatigue, malaise, diminished appetite, and listlessness, which are symptoms usually associated with depression. The body naturally produces cortisol after we wake up and gradually decreasing throughout the day.

COGNITION BEHAVIOR THERAPY AND OTHER TECHNIQUES

According to the National Institutes of Health in the USA that only two treatment options is there first is cognitive behavioral therapy (CBT) and other is approved hypnotic drugs have sufficient evidence to support their use for the treatment of insomnia and stress.

Bhaskar, S., Hemavathy, D., & Prasad, S. (2016), told that Insomnia is a common sleep disorder derived from stress. **Morin, Charles M.; Rodrigue, Sylvie; Ivers, Hans (2003)**, observed that stress play important role in insomnia, chronic insomniacs experienced a great number of stressful life events compared with previous or subsequent years.

In study **Dr. Aaron T. Beck was pioneered Cognitive Behavior Therapy (CBT), (1960s)**, designed and carried out several experiments to test psychoanalytic concepts of depression.

Ramakrishna K et al. (2007) have presented the study that is good evidence supporting the effectiveness of cognitive behavior therapy. Eels, 1997 conducted the study on CBT; the ‘cognitive model’ is used as a framework in which to understand a person’s mental distress or presenting problem.

Rupke SJ, Blecke D, Renfrow M, (2006), have giving the treatment on patients with chronic depression, the combination of CBT and antidepressant medication is more effective than either intervention alone. Behavioral treatments are also recommended for older children in Attention deficit hyperactivity disorder (ADHD), especially if they have a poor response or adverse effects on medication. Behavioral therapy interventions include parent

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training and behavioral classroom management with a focus on setting clear rules and expectations for the child with appropriate rewards and punishments and daily feedback.

Jacobson developed the Progressive relaxation technique that teaches the patient to relax systematically. (**Ribordy and Denney, 1977; Bootzin and Nicassio, 1978; Bootzin, 1976; Schultz and Luthe, 1959**) Autogenic therapy is derived from the observation.

Woolfolk, (1975) Meditation training: Various forms of meditation involve focusing attention on a repetitive stimulus or mantra with the aim of inducing inner calmness and tranquility, reducing cortical excitation, and lowering metabolic rate. **Siegel JM (2011)**, suggested the Progressive muscle relaxation techniques. **Jacobson Visualizations and guided imagery techniques**, This type of relaxation is a systematic practice of generating detailed mental images and visualization of peaceful, pleasant, and beautiful scenes. Actually, it is a suggestion to the body and unconscious mind that the scenes are real and act accordingly. It results in relaxation and stress reduction which leads to good sleep ^[11].

In a study by HJ Tsai (2015) on evaluate the relaxation therapy. Relaxation therapies (RTs) are based on the observation that insomnia patients often display high levels of physiological and cognitive arousal.

Different types of relaxation techniques are ^[10]:

Diaphragmatic Breathing- Deep breathing helps to reduce the patient's level of physiological and cognitive arousal.

Progressive muscle relaxation- In this technique, the patients progressively produce tightening and relaxing-specific groups of muscles of the whole body one by one to reduce stress and anxiety ^[11].

Visualization and guided imagery- This type of relaxation is a systematic practice of generating detailed mental images and visualization of peaceful, pleasant, and beautiful scenes. Actually, it is a suggestion to the body and unconscious mind that the scenes are real and act accordingly. It results in relaxation and stress reduction which leads to good sleep. This can be done alone or with Jacobson's progressive muscular relaxation.

Thoresen, Burnett et al, 1980; Bootzin and Nicassio, (1978) sleep stimulus control procedures are predicated upon the principle that the sleep of insomniacs is not appropriately associated with environmental stimuli (bed or bedroom), these treatments attempt to eliminate or reduce bedroom activities that are not compatible with sleep and to associate the bed and bedroom only with sleep.

According to M.Delay, (2009) Seligman drew attention to the possibility that a patient may believe that a particular treatment would be beneficial.

CONCLUSION

All creatures face threats, which must be met with adaptive responses and our ability to adapt to potent stressors. The prevalence of stress is higher than in general population. Individuals who are optimistic and have good coping responses may well dealing with chronic stressors. If stressors are too strong and too persistent in individuals who are biologically vulnerable because of age, genetic, or constitutional factors, stressors may lead to disease. It impairs cognitive, psychological and physical functioning and is associated

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with wide range of impaired daytime functioning across a number of emotional, social, and physical domains.

With this study the knowledge about regulation of stress, anxiety and their management with cognition and personality. CBT is a treatment that uses psychological and behavioral methods such as relaxation techniques stress regulation, stimulus control, and education about. CBT is highly effective for treating stress, and will not carry risks of adverse side effects, and will have long-lasting benefits by making individual trained about CBT relaxation exercises, It is advantageous compared with drug treatment and cost effective.

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Conflict of Interest

The author(s) declared no conflict of interest.

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