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citefactor.org journals indexing

Directory Indexing of International Research Journals

World Journal of Biology and Medical Sciences

Published by Society for Advancement of Science®

ISSN 2349-0063 (Online/Electronic)

Volume 2, Issue- 4, 35-41, October to December, 2015



WJBMS 2/04/45/2015

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A Double Blind Peer Reviewed Journal / Refereed Journal

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RESEARCH PAPER

Received: 03/08/2015

Revised: 18/08/2015

Accepted: 19/08/2015

Stress and its Effects on the Health

Saba Zaidi

Ajmal Khan Tibbiya College, A.M.U., Aligarh, U.P., India

ABSTRACT

Modern life is full of hassles, deadlines, frustrations, and demands. For many people, stress is so common that it has become a way of life. Physiologically stress is the body's reaction to any change that requires an adjustment or response. The body reacts to these changes with physical, mental and emotional responses. The human body is designed to experience stress and their react to it. Stress may be positive, keeping alert and making body ready to avoid dangers. Stress becomes negative when a person faces continuous challenges without relief or relaxation between challenges. As a result, the person becomes overworked, and stressed. Stress that continues without relief can lead to a condition called Distress, a negative stress reaction. Distress can lead to physical symptoms including headaches, upset stomach, elevated blood pressure, chest pain and problems with sleeping.

Keywords: Stress, Distress, Physical symptoms, Headache and Elevated blood pressure.

INTRODUCTION

Stress is an imprecise term. It is usually defined in terms of the internal and external conditions that create stressful situations and the symptoms that people

experience when they are stressed (McGrath, 1976). William and Huber define stress as "a psychological and physical reaction to prolonged internal and/or environmental conditions in which

individual's adaptive capabilities are overextended."(Williams and Huber, 1986).

Claude Bernard noted that the maintenance of life is critically dependent on keeping our internal milieu constant in the face of a changing environment. (Bernard, 1961) Cannon called this "Homeostasis" (Cannon, 1929) Selye used the term "Stress" to represent the effects of anything that seriously threatens homeostasis. The actual or perceived threat to an organism is referred to as the "stressor" and the response to the stressor is called the "stress response". Selye observed that severe and prolonged stress responses might lead to tissue damage and disease (Selye, 1956).

Based on the appraisal of perceived threat, humans and other animals invoke coping responses (Lazarus and Folkman, 1984). Our Central Nervous System (CNS) tends to produce integrated coping responses rather than single, isolated response changes (Hilton, 1975).

Thus, when immediate fight-or-flight appears feasible, mammals tend to show increased autonomic and hormonal activities that maximize the possibilities for muscular exertion (Cannon, 1929 and Hess, 1957). In contrast, during intensive dislike situations in which an active coping response is not available, mammals may engage in a vigilance response that involves sympathetic nervous system (SNS) arousal accompanied by an active inhibition of movement and shunting of blood away from the periphery (Adams et al., 1968).

Types

According to Selye there are four variations of stress. On one axis, there is good stress (eustress) and bad stress (distress). On the other is over stress (hyper stress) and under stress (hypo stress) (Selye 1974). The goal is to balance these as much as possible. The ultimate

goal would be to balance hyper stress and hypo stress perfectly and have as much eustress as possible (Selye Hans, 1983). It is extremely useful for a productive lifestyle because it makes working enjoyable instead of a chore, as seen with distress.

Causes of Stress

The situations and pressures that cause stress are known as stressors. Stressors can be divided into those that arise from within individual (internal) and those that are attributable to the environment (external). Internal sources of stress can arise from an individual's perceptions of an environmental threat, even if no such danger actually exists. Environmental stressors are external conditions beyond an individual's control and work performance can be seriously impaired by external stressors (Bhagat, 1983).

Albrecht argues that nearly all stressors are emotionally induced. Albrecht believes that our society's number one health problem is anxiety and that emotionally induced stress can be classified into four categories 1) time stress 2) anticipatory stress 3) situational stress, and 4) encounter stress (Albrecht, 1979).

French, Kast and Rosenzweig believe that any situation that requires a behavioral adjustment is a source of stress (French et al., 1985). Individuals with high self esteem and a tolerance for ambiguity are less prone to stress related illness (Arnold and Feldman 1986).

Biological Background

Stress can have many profound effects on the human biological system (Schacter et al., 2011). The Central Nervous System (brain and spinal cord) plays a crucial role in the body's stress-related mechanisms. The CNS works closely with the body's endocrine system to regulate these mechanisms. The sympathetic nervous system becomes active during a stress

response, regulating many of the body's physiological functions to make an organism more adaptive to its environment. The brain plays a critical role in the body's perception of and response to stress (**Ulrich-Lai, and Herman, 2009**). Several important brain structures implicated in playing key roles in stress responses pathways are.

Hypothalamus secret hormones into the body's blood stream, having far-reaching and long-lasting effects on physiological processes such as metabolism. During stress response, the hypothalamus secretes various hormones, namely corticotrophin releasing hormone, which stimulates the body's adenohypophysis and initiates a heavily regulated stress response pathway (**O'Connor et al., 2000**).

Amygdala play a role in the processing of emotions, the amygdalae have been implicated in modulating stress response mechanism particularly when feelings of anxiety or fear are involved (**Rooszendaal et al., 2009**).

Hippocampus located bilaterally just below each amygdale (**Maras and Baram, 2012**). During stress, the hippocampus is particularly important, in that cognitive processes such as prior memories can have a great influence on enhancing, suppressing, or even independently generating a stress response. The hippocampus is also susceptible to damage brought upon by chronic stress (**McEwen, 2012**). Prefrontal cortex has important functions to regulate cognitive processes including planning, attention and problem solving through extensive connections with other brain regions. The prefrontal cortex can become impaired during the stress response (**McEwen and Morrison, 2013 and Arnsten, (2009)**).

The locus coeruleus is the principal site of the synthesis of the neurotransmitter norepinephrine which plays an important role in the sympathetic nervous system's

fight-or-flight response to stress. The raphe nucleus is the principal site of the synthesis of the neurotransmitter serotonin, which has an important role in mood regulation, particularly when stress is associated with depression and anxiety.

The Body's Response

Selye was the first to describe the phases that the body goes through in response to a threat. The general adaptation syndrome model states that the body passes through three stages. The first stage is an alarm reaction. The body prepares for a potential emergency. Digestion slows down, the heart beats faster, blood vessels dilate, blood pressure rises and breathing becomes rapid and deep. All bodily systems work together to provide maximum energy for fight or flight. The second stage is resistance. If the stress continues, the body builds up a tolerance to its effects. The body becomes habituated to the effects of the stressor, however, the bodies adaptive energies are being used as a shield against the stressor. The third stage is exhaustion, when the body's adaptive energies are depleted, the symptoms of the alarm reaction reappear, and the stress manifests itself as an illness, such as ulcers, heart ailments, and high blood pressure. During the first or second stages, the removal of the stressors will eliminate the symptoms (**Selye, 1946**).

Reitz writes that individuals in modern society often substitute other psychological reactions for fight-or-flight. Substitutions for fighting include negativism, expression of boredom, dissatisfaction, irritability, anger over unimportant matters, and feelings of persecution. Substitutions for feeling include apathy, resignation, fantasy, forgetfulness, inability to concentrate, procrastination and inability to make decisions (**Reitz, 1986**).

Short-term stress has served a useful purpose in our survival. Long-term stress, however, involves increasingly higher levels of prolonged and uninterrupted stress. The body adapts to the stress by gradually adjusting its baseline to higher and higher levels. Pelletier believes that the deleterious effects of stress are created only by unrelieved long-term stress. ⁽²⁶⁾ Albrecht also believes that the effects of stress are cumulative in nature ulcers do not just happen overnight in a high stress situation **(Albrecht, 1979)**.

Williams and Huber provide a comprehensive list of the symptoms of stress. These are "constant fatigue, low energy level, recurring headaches, gastrointestinal disorders, chronically bad breath, sweaty hands or feet, dizziness, high blood pressure, pounding heart, constant inner tension, inability to sleep, temper outbursts, hyperventilation, moodiness, irritability and restlessness, inability to concentrate, increased aggression, compulsive eating, chronic worrying, anxiety or apprehensiveness, inability to relax, growing feelings of inadequacy, increase in defensiveness, dependence on tranquilizers, excessive use of alcohol, and excessive smoking **(Williams and Huber, 1986)**.

Recent studies have found evidence of dangerous physical changes attributed to prolonged stress. A study reported a twenty gram increase in heart muscles of those suffering from stress. There was a significant "thickening of the heart's left ventricle, or chamber, a condition that often precede coronary heart diseases and heart attacks **(Pieper, 1990)**.

Management

The process of learning to control stress is life-long. Overcoming stress will not only contribute to better health, but it will also increase an individual's ability to succeed. Stress may play a part in making people vulnerable to illness. A physician or

psychologist should be consulted if there are any indications of accompanying medical or psychological conditions, such as heart symptoms, significant pain, anxiety or depression. According to Jick and Payne there are essentially three strategies for dealing with stressing (1) treat the symptoms (2) change the person and (3) remove the cause of the stress? When a person is already suffering from the effects of stress, the first priority is to treat the symptoms. This includes both the identification of those suffering from excessive stress, as well as providing healthcare and psychological counseling services. The second approach is to help individuals build stress management skills to make them less vulnerable to its effects. This includes time management, relaxation techniques, or suggesting changes to one's diet or exercise' **(Jick, and Payne, 1980)**.

There are many other successful ways of dealing with stress. These include stress reduction workshops, tranquilizers, biofeedback, meditation, self-hypnosis and a variety of other techniques designed to relax an individual **(Lawless, 1991)**.

Stress management means trying to control and reduce the tension that occurs in stressful situations. This is done by making emotional and physical changes. Stress management program includes.

Physical activity

- Start a physical activity program. Experts recommend 150 minutes of aerobic activity per week.
- 20 minutes of brisk walking outdoors is enough.
- Decide on a specific type, amount and level of physical activity. Add this into your schedule so it can be part of your routine.

Nutrition

- Eat foods that improve your health and well-being. Eat more fruits and vegetables.
- Use the food plate guide to help you make healthy food choices.
- Eat normal-size portion on a regular schedule.

Social Support

- Try to socialize. Even though you may feel like to avoid people when you are stressed; meeting friends often helps feel less stressed.
- Be good to yourself and others.

Relaxation

- Try relaxation techniques, such as guided imagery, listening to music, or practicing yoga or meditation.
- Listen to your body when it tells you to slow down or take a break.
- Get enough sleep. Good sleep habits are one of the best ways to manage stress.
- Do something that interests you. Take up a hobby (**Larzelere, and Jones, 2008 and Ahmad et al., 2011**).

DISCUSSION

Stress is a central concept for understanding both life and evolution. All creatures face threats to homeostasis, which must be met with adaptive responses. Our future as individuals and as a species depends on our ability to adapt to potent stressors. At an individual level, we live with the insecurities of our daily existence including job stress, marital stress, and unsafe schools and neighborhoods.

A widely used definition of stressful situations is one in which the demands of the situation threaten to exceed the resources of the individual. It is clear that all of us are exposed to stressful situations at the societal, community, and interpersonal level. Acute stress

responses in young, healthy individuals may be adaptive and typically do not impose a health burden. Indeed, individuals who are optimistic and have good coping responses may benefit from such experiences and do well dealing with chronic stressors. In contrast, 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. In this paper I have documented association between stressors and disease and I have also described how psychosocial stressors influence mental health and how psychosocial treatments may ameliorate both mental and physical disorders. There is much we do not yet know about the relationship between stress and health, but scientific findings being made in the areas of cognitive emotional psychology, molecular biology, clinical psychology and medicine will undoubtedly lead to improved health outcomes.

ACKNOWLEDGEMENTS

Author is grateful to Dr. Iqtedarul Hasan Zaidi, Chairman, Department of Tashreeh Wa Munafeul Aza, AKTC, AMU Aligarh, U.P., India for providing all facilities and encouragement during the course of this work.

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Corresponding author: Dr. Saba Zaidi, Assistant Professor, Ajmal Khan Tibbiya College, A.M.U., Aligarh, U.P. India.

Email: sabazaidi437@gmail.com