



Stress and Human Body System Reaction – A Review

Hiral Borikar
Research Scholar,
Management,
Gujarat Technological University,
Ahmedabad, Gujarat (India)

Prof. Dr K N Sheth
Director Operations- Adani Institute of Infrastructure and
Dean (Interdisciplinary Research)
Gujarat Technological University,
Ahmedabad, Gujarat (India)

Abstract: *An attempt has been made in this paper to review the acute and chronic impacts of stress on human body. When the body is under stress, the stressful conditions largely give rise to certain remarkable changes in the human organ systems that may exhibit strange behavior and psychological disorders. Body reaction to stress is predictable and can be analyzed and relaxation strategies exist to mitigate such impacts. The Stress may give signals to human physiological systems to produce the hormones which may give energy to run from danger but if it prolonged, it may give rise to irreversible effect on human body leading to serious disorders.*

In India, no legal remedy is available to managerial stress leading to disastrous conditions. It is essential that some legal framework is designed to reduce if not prevent the casualties due to stress at the work place in India.

Key Words: *Managerial stress, Effect of stress on body, Body reactions during stress.*

I. INTRODUCTION

Stress is motivational to achieve goals, to accomplish task more efficiently and work like a memory booster if it is in small dose.

When person's all functions like attention, perception, remembering, thinking, reasoning and creativity etc., are working in a normal way, we can say he is emotionally balanced. Normally, emotionally balanced person can solved all problems of life successfully.

Normally, when we have a lot of work to do and we are not able to complete the work, we experience a sense of anxiety, unfulfillment, dissatisfaction and worry. This affects our psychological and mental state and ultimately the capacity to perform. When the demands on a person from the environment are more and his output is less, because of failure he suffers from anxiety and stress. But a person, who on the contrary fails to do so, is said to have an unsound personality and is affected frequently by stress etc.; sometimes job conditions, socio environmental factors may also contribute significantly to organizational stress. The employees of various organizations have to spend their time under heavy pressure of conflicting demands and work situations. They perform critical managerial functions under very compelling situations.

II. MANAGERIAL STRESS AT WORKPLACE

Stress at managerial level manifests itself because they do not have control over certain situations but they are accountable for the outcome. They are having Conflicts for power, adverse decisions affecting the employees, unhealthy and excessive competition, lots of pressure in work, instability in organizational structure, frequent transfers, misbehavior from the management and colleagues, unhealthy personal relationship with co-employees, frequent quarrels and back biting, increased mechanization and boredom among young and old, the tendency to revolt against the management due to gap in communication, excessive desire for power, prestige, recognition, desire for self-esteem and status, lack of job feedback and job security.

Apart from these professional issues, employees have other personal problems like: family problems, divorce, no children, unfavorable relationship families etc... Thus the life style of the employees become very complex, complicated their mental health is affected with anxiety, frustration and stress.

Body responds to such kind of stress by releasing hormones and increasing heart and breathing rates. Brain gets more oxygen, giving an edge in responding to a problem. In short, stress helps in cope up with tough situations.

It is remarkable how much of an influence the mind has over the body. Individuals can make their bodies do incredible things with willpower; but on the other hand, depression, stress, and anxiety can also have quite a negative impact on physiological system.

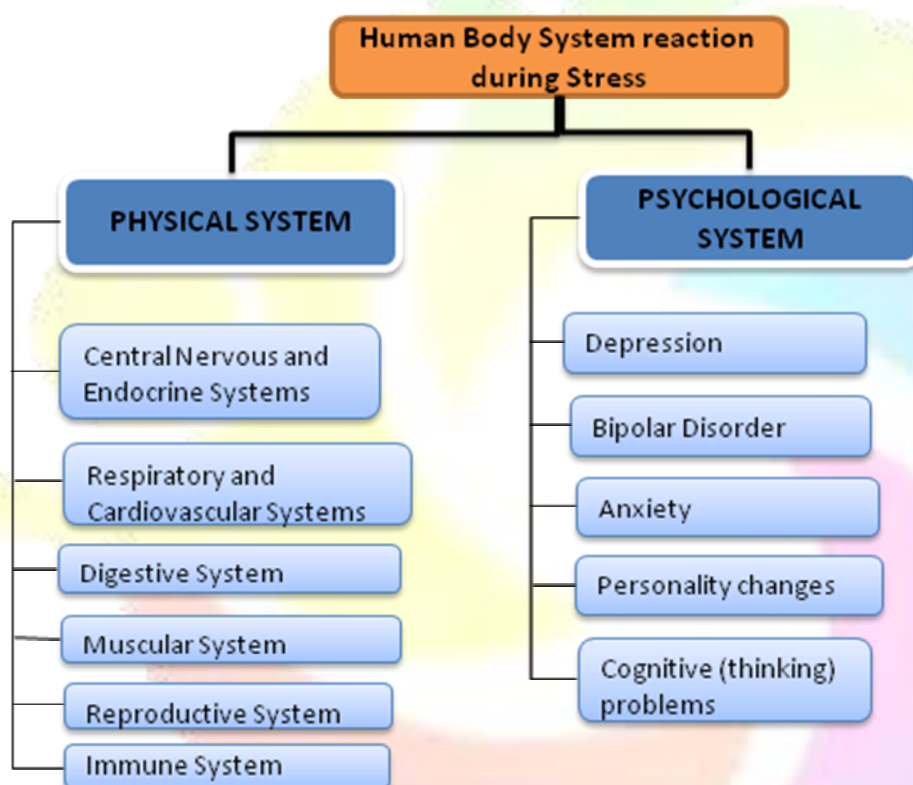
Due to different environmental condition, stressor's organism responds to Physiological or Biological Stress. Stress is a body's method of reacting to a challenge. According to the stressful event, the body develops way to respond to stress is by sympathetic

nervous system (SNS – also called fight or flight activation, is the segment prepares body for emergencies) activation where body cannot keep this state for long periods of time, the parasympathetic system (PSS – also called rest and digest activation, is the segment that assists with normal, autonomic functions) returns the body's physiological conditions to normal. In humans, stress typically describes a negative condition or a positive condition that can have an impact on a person's mental and physiological situation. Behind the wide range of both physiological and mental reactions to stress are a number of hormones that are in charge of adding fuel to the fire.

III. REVIEW ON IMPACT OF STRESS ON BODY SYSTEM REACTION

Stress, either severe, acute stress or chronic low-grade stress may induce abnormalities in the different systems of body:

1. Physiological System
2. Psychological System



Below Table indicating the effects of stress on body, mood, and behavior.

Common effects of stress ...		
... On your body	... On your mood	... On your behavior
• Headache • Muscle tension or pain • Chest pain • Fatigue • Change in sex drive • Stomach upset • Sleep problems	• Anxiety • Restlessness • Lack of motivation or focus • Irritability or anger • Sadness or depression	• Overeating or under-eating • Angry outbursts • Drug or alcohol abuse • Tobacco use • Social withdrawal

Source: American Psychological Association's "Stress in America" report, 2010

1. Physiological System:

Every one might notice that when person has stressful day, he may passes through tension and develop headache or having difficulties in eating or eat too much or have an increased heart palpitations. Stress can penetrate various systems of body. Whether anyone believe it or not, the mind and body are intertwined and affect one another significantly and finally resolved with the help of related medicines. But finally it affect badly on different systems of our body. Below mentioned systems are affected due to stress.

- **Central Nervous and Endocrine Systems**

- Responsible for integrating sensory information and responding accordingly and different hormones produced by glands

- **Respiratory and Cardiovascular Systems**

- Responsible for transporting oxygen, nutrients, hormones and cellular waste product throughout the body

- **Digestive System**

- Responsible for conversion of food into nutrients and energy

- **Muscular System**

- Responsible for movement of body

- **Reproductive System**

- Responsible for creation of new life

- **Immune System**

- Responsible for developing immunity



Central Nervous and Endocrine Systems

The nervous system is a delicate balance of several features — there is the central nervous system which includes the spinal cord and brain, as well as the “peripheral division” which involves the autonomic (ANS) and somatic nervous systems. The autonomic system is divided into the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). The SNS is responsible for creating the fight-flight response during stressful times, which braces the body to fight off a threat or danger. Essentially, the SNS is responsible for causing all the above changes to occur in various bodily systems — from the release of stress hormones to an increased heart rate and digestive system. This is why chronic stress can be such a long-term drain — the constant ups and downs of stress responses can take a toll on body.

Irritability, anxiety, and depression can be symptoms of chronic stress. It may possible that stressor suffer from headaches or insomnia and behavior like overeating or not eating enough, alcohol or drug abuse, or social withdrawal.

Respiratory and Cardiovascular Systems

Stress hormones have impact on respiratory and cardiovascular systems. During the stress response, breathe faster in an effort to distribute oxygen and blood quickly to body. Stress hormones affect on respiratory and cardiovascular systems. During this process, heart also pumps faster. Stress hormones cause blood vessels to constrict and raise blood pressure. All that helps get oxygen to brain and heart so body gets more strength and energy to take action. If person has preexisting respiratory problems like asthma or emphysema, stress can make it harder to breathe.

Chronic stress can ultimately cause damage to person cardiovascular system. Continual stress experienced over a prolonged period of time, can contribute to long-term problems for heart and blood vessels, the American Psychological Association explains, continual increase in heart rate and increased level of hormones and blood pressure can ultimately lead to hypertension, heart palpitations, heart attack, or stroke.

Digestive System



Under stress, liver produces extra blood sugar (glucose) to give a boost of energy to body. Unused blood sugar is reabsorbed by the body. If anyone is under chronic stress, body may not be able to keep up with this extra glucose surge, and person may be at an increased risk of developing diabetes.

The rush of hormones, rapid breathing, and increased heart rate can upset digestive system. Stressor may have more risk of heartburn or acid reflux. Stress doesn't cause ulcers but stress may cause existing ulcers to act up.

One may have experience of nausea, vomiting, or a stomachache. Stress can affect the way food moves through body, leading to diarrhea or constipation.

Stress can also impact what nutrients body digestive tract absorbs, and how fast food moves through system. According to the American Psychological Association, person might have faced problems either with diarrhea or constipation depending on level of stress.

The fact is, stress over a long period of time can truly take a toll on body and immune systems, which ultimately leads to an increased chance of getting ill.

Muscular System

Under stress, muscles tense up to protect themselves from injury. One may have experience muscles tighten up and release again once it gets relax. If person who is constantly under stress, his muscles don't get the chance to relax. Tight muscles cause headaches, back and shoulder pain, and body aches. Over a period of time, person may stop exercising and turn to pain medication, setting off an unhealthy cycle. When person is stressed, his adrenaline goes up, making us more likely to jump or be anxious about looming danger. This is why muscles reflexively react to stress by tensing up — as a way to protect us from injury. Though it appears the body has good intentions, tense muscles can be quite painful if they last a while.

Reproductive System

Stress is exhausting for the body and for the mind. It is not unusual to lose desire for sex when person is under chronic stress. However, men may produce more of the male hormone testosterone during stress, which may increase sexual arousal in the short term.

For women, stress can affect the menstrual cycle. She might have irregular or no menstruation, or heavier and more painful periods. The physical symptoms of menopause may be magnified under chronic stress.

If stress continues for a long time, a man's testosterone levels begin to drop. That can interfere with sperm production and cause erectile dysfunction or impotence. Chronic stress may make the urethra, prostate, and testes more prone to infection.

Immune System

Initially Stress stimulates the immune system and we can consider thus as a Health Bonus. It helps person stave off infection and heal wounds. Over a period of time, cortisol compromises body immune system, inhibiting histamine secretion and inflammatory response to foreign invaders. People under chronic stress are more susceptible to viral illnesses like influenza and the common cold. It increases risk of other opportunistic diseases and infections. It can also increase the time it takes to recover from illness or injury.

2. Psychological System:

According to Harry Mills, due to communication between immune system and nervous system, chronic stress can lead to different disorders such as:

- Depression—common and serious illness affect negatively
- Bipolar Disorder—severe fluctuations in mood
- Anxiety—feeling of fear or panic
- Cognitive (thinking) problems – effect on learning, perception and problem solving
- Personality changes – shift in way of thinking, act or feel

Depression

By products of stress hormones can act as sedatives. Under chronic stress, such hormone byproducts occur in large amounts, they may contribute to a sustained feeling of low energy or depression. Habitual patterns of thought which influence appraisal and increase the likelihood that a person will experience stress as negative. And person feel depressed.

It is normal to experience a range of moods, both high and low, in everyday life. While some "down in the dumps" feelings are a part of life. Symptoms of Major Depression may include: sleep problems, fatigue, appetite changes, feelings of worthlessness, self-hate, and guilt an inability to concentrate or make decisions, agitation, restlessness, and irritability, withdrawal from typical pleasurable activities, and feelings of hopelessness and helplessness. Depression is also associated with an increase in suicidal thinking and suicidal actions, and may make a person more vulnerable to developing other mental disorders.

Bipolar Disorder



Chronic and/or severe stress can also negatively affect people with Bipolar Disorder. This illness, also known as manic depression or bipolar affective disorder, involves dramatic shifts in mood, energy level, and behavior from the highs of mania to the lows of major depression.

Mania is characterized by a euphoric (joyful, energetic) mood, hyper-activity, a positive, expansive outlook on life, an inflated sense of self-esteem, and a sense that most anything is possible. When in a manic state, individuals with bipolar disorder tend to experience a decreased need for sleep, racing thoughts and heightened distractibility. Manic individuals typically show poor judgment and impulsivity, and are prone to engaging in risky or dangerous behaviors and activities.

Bipolar individuals who are in a depressed state often lose interest in things that used to give them pleasure, develop sleep problems, constantly feel tired and fatigued, and have distressed, negative, and unhappy moods, irritability, a short temper, and/or agitation. In addition, anger, guilt, failure and hopeless feelings may be experienced.

Anxiety

People who are stressed may show relatively mild outward signs of anxiety, such as biting their fingernails, tapping their feet, etc. In other people, chronic activation of stress hormones can contribute to severe feelings of anxiety like racing heartbeat, nausea, sweaty palms, etc.

Anxiety or dread feelings that persist for an extended period of time, which cause people to worry excessively about upcoming situations which lead to avoidance and cause people to have difficulty coping with everyday situations may be symptoms of one or more Anxiety Disorders.

Cognitive (thinking) problems

The continuous presence of stress hormones in the body may alter the operation and structure of some aspects of the nervous system. Stress hormones may decrease the functioning of brain cells in a region of the brain called hippocampus which is a part of the brain and is important for laying down new long-term memories and the part of the brain that is necessary for paying attention, filtering out irrelevant information, and using judgment to solve problems. Due to this, people who are chronically stressed may experience confusion, difficulty concentrating, trouble learning new information, and/or problems with decision-making.

Personality changes

Each individual's personality is thought to be influenced by temperament and by their interactions with the environment. Some people experience personality changes in response to stress hormones, which are part of their internal environment. The following changes in personality are common to observe in people who are stressed:

- Anger
- Aggressive feelings and behavior
- Decreased interest in appearance
- Decreased concern with punctuality
- Excessive defensiveness or suspiciousness
- Frustration
- Hostility
- Impulsivity
- Irritability
- Lying or making excuses to cover up poor work
- Obsessive/compulsive behavior
- Problems in communication
- Reduced work efficiency or productivity
- Social withdrawal and isolation

IV. SUMMARY AND CONCLUSION

It is evident from the review made that the impact of the human body may vary depending upon the gravity of the stress. In a case the stress continues for a prolonged period it may lead to irreversible damage. The managerial stress needs to be addressed as many cases have been noticed leading to physiological and psychological disorders. The person who has been responsible to give rise to stress and such disorders must be treated severally as he has no such right over any employee to create such condition at the work place. In India, no legal remedy is available to managerial stress leading to disastrous conditions. It is essential that some legal framework is designed to reduce if not prevent the casualties due to stress at the work place in India.

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