CHAPTER I

INTRODUCTION

1.1 INTRODUCTION TO STRESS

Modern living has brought with it, not only innumerable means of comfort, but also a plethora of demands that tax human body and mind. Now-a-days everyone talks about stress. It is cutting across all socio-economic groups of population and becoming the great leveler. Not only just high pressure executives are its key victims but it also includes labourers, slum dwellers, working women, businessmen, professionals and even children. Stress is an inevitable and unavoidable component of life due to increasing complexities and competitiveness in living standards.

The speed at which change is taking place in the world today is certainly overwhelming and breathe taking. In the fast changing world of today, no individual is free from stress and no profession is stress free. Everyone experiences stress, whether it is within the family, business, organization, study, work, or any other social or economical activity. Thus in modern time, stress in general and job stress in particular has become a part of the life and has received considerable attention in recent years. Stress has become the core concern in the life of everyone, but everybody wants stress-free life. Stress is a subject which is hard to avoid. Stress is a part of day-to day living. Every individual is subjected to stress either
knowingly or unknowingly. Stress, long considered alien to Indian lifestyle, is now a major health problem / hazard.

To a scientist, stress is any action or situation that places special physical or psychological demands upon a person, anything that can unbalance his individual equilibrium. And while the physiological response to such demand is surprisingly uniform, the forms of stress are innumerable. Stress may be even but unconscious like the noise of a city or the daily chore of driving the car. Perhaps the one incontestable statement that can be made about stress is that it belongs to everyone-to businessmen and professors, to mother and their children, to factory workers. Stress is a part of fabric of life. Nothing can isolate stress from human beings as is evident from various researches and studies. Stress can be managed but not simply done away with. Today, widely accepted ideas about stress are challenged by new research, and conclusions once firmly established may be turned completely around. The latest evidence suggested (Ogden Tanner, 1979): Some stress is necessary to the well being and a lack can be harmful. - Stress definitely causes some serious ailments. Severe stress makes people accident-prone.

1.2 THE UNDERSTANDING OF STRESS

Stress has different meanings to different people. From a lay person's perspective, stress can variously be described as feeling tense, anxious, worried, or having the blues. Scientifically these feelings are manifestations of the stress experienced in intriguingly complex programmed response to the perceived threat that can have both positive
and negative results. There is general consensus however, that stress is a physical, mental or emotional reaction resulting from an individual's response to environmental tensions, conflicts, pressures and similar stimuli. As commonly understood, stress is a pattern of disruptive, physiological and psychological reactions to events that threaten a person's ability to cope.

The term “stress” was first introduced into the fields of Personality traits as predictors of stress among female teachers in Osun state teaching service Popoola, B. I. & Ilugbo, E. A.

Stress can also be defined as, “the condition that results when person environment transaction lead the individual to perceive a discrepancy - whether real or not- between the demands of a situation and the resources of a person's biological, psychological and social systems”.

Schermerhorn, Hunt and Osborn (2005) defined stress as a state of tension experienced by individuals facing extraordinary demands, constraints, or opportunities.

Also, Gibson, John and James (1988) defined the concept as a person’s adaptive response to a stimulus that places excessive psychological and physical demands on the person. This definition implies two components: first, is the notion of adaptation, which means that people adapt to stressful circumstances in any of several different ways. Second is the role of the stimulus. The stimulus is generally called a stressor. A stressor is anything that induces stress. Teacher stress is
specifically defined as a condition of negative effects, such as frustration and anxiety, which results from aspects of the job.

Stress is a complex phenomenon. It is very subjective experience. That may be challenge for one will be a stressor for another. It depends largely on background experiences, temperament and environmental conditions. Stress is a part of life and is generated by constantly changing situations that a person must face. The term stress refers to an internal state, which results from frustrating or unsatisfying conditions. A certain level of stress is unavoidable. Because of its complex nature stress has been studied for many years by researchers in psychology, sociology and medicine.

Stress is a term that is commonly used today but has become increasingly difficult to define precisely. It shares, to some extent, common meanings in both the biological and psychological sciences. Stress typically describes a negative concept that can have an impact on one’s mental and physical well-being, but it is unclear what exactly defines stress and whether or not stress is a cause, an effect, or the process connecting the two. With organisms as complex as humans, stress can take on entirely concrete or abstract meanings with highly subjective qualities, satisfying definitions of both cause and effect in ways that can be both tangible and intangible.

The term stress had none of its contemporary connotations before 1920s. It is a form of the Middle English distress, derived via old French from the Latin stringer, “to draw tight.” It had long been in use in physics to refer to the internal distribution of a force exerted on a material body, resulting in strain.
In the 1920s and 1930s, the term was occasionally being used in biological and psychological circles to refer to a mental strain, unwelcome happening, or, more medically, a harmful environmental agent that could cause illness.

Walter Cannon used it in 1926 to refer to external factors that disrupted what he called homeostasis. Homeostasis is a concept central to the idea of stress. In biology, most biochemical processes strive to maintain equilibrium, a steady state that exists more as an ideal and less as an achievable condition. Environmental factors, internal or external stimuli, continually disrupt homeostasis; an organism’s present condition is a state in constant flux wavering about a homeostatic point that is that organism’s optimal condition for living. Factors causing an organism’s condition to waver away from homeostasis can be interpreted as stress. A life-threaten situation such as a physical insult or prolonged starvation can greatly disrupt homeostasis.

On the other hand, an organism’s effortful attempt at restoring conditions back to or near homeostasis, oftentimes consuming energy and natural resources, can also be interpreted as stress. In such instances, an organism’s fight-or-flight response recruits the body’s energy stores and focuses attention to overcome the challenge at hand. The ambiguity in defining this phenomenon was first recognized by Hans Selye in 1926 who loosely described stress as something that “in addition to being it were also the cause of itself, and the result of itself.”
1.3 NIOSH APPROACH TO OCCUPATIONAL STRESS

On the basis of experience and research, NIOSH favors the view that working conditions play a primary role in causing Occupational stress. However, the role of individual factors is not ignored.

According to the NIOSH view, exposure to stressful working conditions (called Occupational stressors) can have a direct influence on worker safety and health. But as shown below, individual and other situational factors can intervene to strengthen or weaken this influence. Theresa's need to care for her ill mother is an increasingly common example of an individual or situational factor that may intensify the effects of stressful working conditions. Examples of individual and situational factors that can help to reduce the effects of stressful working conditions include the following:

- Balance between work and family or personal life
- A support network of friends and coworkers
- A relaxed and positive outlook

1.4 THE DIFFERENT KINDS OF STRESS

1.4.1 Acute stress

Acute stress is the most common form of stress. It comes from demands and pressures of the recent past and anticipated demands and pressures of the near future. Acute stress is thrilling and exciting in small doses, but too much is exhausting. A fast run down a challenging ski slope,
for example, is exhilarating early in the day. That same ski run late in the day is taxing and wearing. Skiing beyond your limits can lead to falls and broken bones. By the same token, overdoing on short-term stress can lead to psychological distress, tension headaches, upset stomach, and other symptoms.

Fortunately, acute stress symptoms are recognized by most people. It's a laundry list of what has gone awry in their lives: the auto accident that crumpled the car fender, the loss of an important contract, a deadline they're rushing to meet, their child's occasional problems at school, and so on.

Because it is short term, acute stress doesn't have enough time to do the extensive damage associated with long-term stress. The most common symptoms are:

- emotional distress - some combination of anger or irritability, anxiety, and depression, the three stress emotions;
- muscular problems including tension headache, back pain, jaw pain, and the muscular tensions that lead to pulled muscles and tendon and ligament problems;
- stomach, gut and bowel problems such as heartburn, acid stomach, flatulence, diarrhea, constipation, and irritable bowel syndrome;
- Transient over arousal leads to elevation in blood pressure, rapid heartbeat, sweaty palms, heart palpitations, dizziness, migraine headaches, cold hands or feet, shortness of breath, and chest pain.
- Acute stress can crop up in anyone's life, and it is highly treatable and manageable.
1.4.2 Episodic Acute Stress

There are those, however, who suffer acute stress frequently, whose lives are so disordered that they are studies in chaos and crisis. They're always in a rush, but always late. If something can go wrong, it does. They take on too much, have too many irons in the fire, and can't organize the slew of self-inflicted demands and pressures clamoring for their attention. They seem perpetually in the clutches of acute stress.

It is common for people with acute stress reactions to be over aroused, short-tempered, irritable, anxious, and tense. Often, they describe themselves as having "a lot of nervous energy." Always in a hurry, they tend to be abrupt, and sometimes their irritability comes across as hostility. Interpersonal relationships deteriorate rapidly when others respond with real hostility. The work becomes a very stressful place for them.

The cardiac prone, "Type A" personality described by cardiologists, Meter Friedman and Ray Rosenman, is similar to an extreme case of episodic acute stress. Type A's have an "excessive competitive drive, aggressiveness, impatience, and a harrying sense of time urgency." In addition there is a "free-floating, but well-rationalized form of hostility, and almost always a deep-seated insecurity." Such personality characteristics would seem to create frequent episodes of acute stress for the Type a individual. Friedman and Rosenman found Type A's to be much more likely to develop coronary heat disease than Type B's, who show an opposite pattern of behavior.
Another form of episodic acute stress comes from ceaseless worry. "Worry warts" see disaster around every corner and pessimistically forecast catastrophe in every situation. The world is a dangerous, unrewarding, punitive place where something awful is always about to happen. These "awfulizers" also tend to be over aroused and tense, but are more anxious and depressed than angry and hostile.

The symptoms of episodic acute stress are the symptoms of extended over arousal: persistent tension headaches, migraines, hypertension, chest pain, and heart disease. Treating episodic acute stress requires intervention on a number of levels, generally requiring professional help, which may take many months.

Often, lifestyle and personality issues are so ingrained and habitual with these individuals that they see nothing wrong with the way they conduct their lives. They blame their woes on other people and external events. Frequently, they see their lifestyle, their patterns of interacting with others, and their ways of perceiving the world as part and parcel of who and what they are.

Sufferers can be fiercely resistant to change. Only the promise of relief from pain and discomfort of their symptoms can keep them in treatment and on track in their recovery program.

1.4.3 Chronic Stress

While acute stress can be thrilling and exciting, chronic stress is not. This is the grinding stress that wears people away day after day, year after
year. Chronic stress destroys bodies, minds and lives. It wreaks havoc through long-term attrition. It's the stress of poverty, of dysfunctional families, of being trapped in an unhappy marriage or in a despised job or career. It's the stress that the never-ending "troubles" have brought to the people of Northern Ireland; the tensions of the Middle East have brought to the Arab and Jew, and the endless ethnic rivalries that have been brought to the people of Eastern Europe and the former Soviet Union.

Chronic stress comes when a person never sees a way out of a miserable situation. It's the stress of unrelenting demands and pressures for seemingly interminable periods of time. With no hope, the individual gives up searching for solutions. Some chronic stresses stem from traumatic, early childhood experiences that become internalized and remain forever painful and present. Some experiences profoundly affect personality. A view of the world, or a belief system, is created that causes unending stress for the individual (e.g., the world is a threatening place, people will find out you are a pretender, and you must be perfect at all times). When personality or deep-seated convictions and beliefs must be reformulated, recovery requires active self-examination, often with professional help.

The worst aspect of chronic stress is that people get used to it. They forget it's there. People are immediately aware of acute stress because it is new; they ignore chronic stress because it is old, familiar, and sometimes, almost comfortable. Chronic stress kills through suicide, violence, heart attack, stroke, and, perhaps, even cancer. People wear down to a final, fatal breakdown. Because physical and mental resources are depleted through long-term attrition, the symptoms of chronic stress are difficult to treat and
may require extended medical as well as behavioral treatment and stress management. Specific e-newsletters also include blogs, questions and answers with Mayo Clinic experts, and other useful information that will help you manage your health.

1.5 EFFECTS OF STRESS ON YOUR BODY, FEELINGS AND BEHAVIOR

Stress is considered as a human response to dangerous situation. When we face situation which our brain is incapable of handling, it puts the body on alert by producing hormones which are required in fight or flight situation, which are:

- Increase Blood Pressure.
- Repaid Heartbeat.
- Reduce blood supply to skin
- Cessation of digestive activities.
- Increase perspiration.
- Additional release of sugar and fast into the system to coup up with the additional energy requirement.

All these actions which are mentioned above have a very long lasting negative effect if these stressful situations are to become frequently occurring feature. They may lead to the following serious and even fatal conditions:

- Depression and anxiety.
- Drug Dependency.
- Congenital heart diseases.
- Stress related Diabetes.
Stress symptoms may be affecting your health, even though you might not realize it. You may think illness is to blame for that nagging headache, your frequent insomnia or your decreased productivity at work. But stress may actually be the culprit.

Indeed, stress symptoms can affect your body, your thoughts and feelings, and your behavior. Being able to recognize common stress symptoms can give you a jump on managing them. Stress that's left unchecked can contribute to health problems such as high blood pressure, heart disease, obesity and diabetes.

Also, if you have chest pain, especially if it occurs during physical activity or is accompanied by shortness of breath, sweating, dizziness, nausea, or pain radiating into your shoulder and arm, get emergency help immediately. These may be warning of a heart attack and not simply stress symptoms.

Table 1.1 Common effects of stress

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<tr>
<td><strong>On your body</strong></td>
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<tr>
<td>Headache</td>
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<td>Muscle tension pain</td>
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<tr>
<td>Chest pain</td>
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<tr>
<td>Fatigue</td>
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<td>Change in sex</td>
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● Stomach upset
● Sleep problems

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

If you do have stress symptoms, taking steps to manage your stress can have numerous health benefits. Explore stress management strategies such as:

• Physical activity
• Relaxation techniques
• Meditation
• Yoga
• Tai chi

1.6 CLINICAL SYMPTOMS AND DISORDERS

Symptoms Signs of stress may be cognitive, emotional, physical, or behavioral.

Cognitive symptoms

• Memory problems
• Inability to concentrate
• Poor judgment
• Pessimistic approach or thoughts
• Anxious or racing thoughts
• Constant worrying

**Emotional symptoms**

• Moodiness
• Irritability or short temper
• Agitation, inability to relax
• Feeling overwhelmed
• Sense of loneliness and isolation
• Depression or general unhappiness

**Physical symptoms**

• Aches and pains
• Diarrhea or constipation
• Nausea, dizziness
• Chest pain, rapid heartbeat
• Loss of sex drive
• Frequent colds

**Behavioral symptoms**

• Eating more or less
• Sleeping too much or too little
• Isolating oneself from others
• Procrastinating or neglecting responsibilities
• Using alcohol, cigarettes, or drugs to relax
• Nervous habits (e.g. nail biting, pacing)
1.7 HEALTH RISK FACTORS

Both negative and positive stressors can lead to stress. The intensity and duration of stress changes depending on the circumstances and emotional condition of the person suffering from it (Arnold, E and Boggs, K. 2007). Some common categories and examples of stressors include:

- Sensory input such as pain, bright light, noise, temperatures, or environmental issues such as a lack of control over environmental circumstances, such as food, air and/or water quality, housing, health, freedom, or mobility.
- Social issues can also cause stress, such as struggles with nonspecific or difficult individuals and social defeat, or relationship conflict, deception, or break ups, and major events such as birth and deaths, marriage, and divorce.
- Life experiences such as poverty, unemployment, clinical depression, obsessive compulsive disorder, heavy drinking, or insufficient sleep can also cause stress. Students and workers may face performance pressure stress from exams and project deadlines.
- Adverse experiences during development (e.g. prenatal exposure to maternal stress, poor attachment histories, and sexual abuse) are thought to contribute to deficits in the maturity of an individual's stress response systems. One evaluation of the different stresses in people's lives is the Holmes and Rahe stress scale.
1.8 GENERAL ADAPTIVE SYNDROME

Figure 1.1 A diagram of the General Adaptation Syndrome model


For the purpose of this research, Seyle’s definition is focused on, as it encompasses the notion that stress is caused by physiological, psychological and environmental demands. Seyle (1974) indicated that when confronted with stressors, the body creates extra energy and it is when all the energy available is not utilised, that stress is a consequence.

This reaction to stress was first described in 1936 and was coined the General Adaptive Syndrome (GAS), which includes three distinct stages (Seyle, 1974; 1980):

1. Alarm reaction,
2. Stage of resistance, and
3. Stage of exhaustion.
Response to stress is therefore deemed to be invariant to the nature of the stressor and followed a universal pattern- three stages, i.e. an alarm stage, a resistance stage and an exhaustion stage. Figure 1.1 provides an overview of this process.

1.8.1 Alarm Phase

The alarm reaction is the immediate psycho-physiological response and at this time of the initial shock, resistance to stress is lowered. This process includes the secretion of hormones from the endocrine glands, causing for example, increased heart rate and blood pressure, muscle tension and a decrease in maintenance functions, e.g. digestion and sexual responsiveness. In cases where the stressor is continuous, the resistance phase starts where the body triggers the needed bodily system to deal with the stressor (Steenkamp, 2003). The body is alerted and activated and stress levels are at its highest during this stage (Hubert, 1984).

1.8.2 Resistance Phase

According to Goldberger and Breznitz (1982, cited in Steenkamp, 2003) the resistance stage is characterised by an adaptation response of the body that is manifested with “fight or flight” responses. The body endeavours to remedy the shock caused by the stress and to return the homeostasis of the body. If the stressors continue, the body will persevere in defending itself, thereby impeding any possibility of rest and repair.

1.8.3 Exhaustion Phase

In the exhaustion phase, there is a resistance to a continued stressor, and where the adaptation response and/or return to equilibrium replace the
alarm reaction. If the alarm reaction is elicited too intensely or too frequently over an extended period of time, the energy required for adaptation becomes depleted, and the final stage of exhaustion, collapse or death occurs. It is during this stage that physical and mental breakdown occurs, the individual performance plummets and illness develops (Hubert, 1984).

1.9 POST-TRAUMATIC STRESS DISORDER (PTSD)

PTSD is a severe anxiety disorder that can develop after exposure to any event that results in psychological trauma. This event may involve the threat of death to oneself or to someone else, or to one's own or someone else's physical, sexual, or psychological integrity, overwhelming the individual's ability to cope. As an effect of psychological trauma, PTSD is less frequent and more enduring than the more commonly seen acute stress response. Diagnostic symptoms for PTSD include re-experiencing the original trauma(s) through flashbacks or nightmares, avoidance of stimuli associated with the trauma, and increased arousal – such as difficulty falling or staying asleep, anger, and hyper vigilance. Formal diagnostic criteria (both DSM-IV-TR and ICD-10) require that the symptoms last more than one month and cause significant impairment in social, occupational, or other important areas of functioning.

1.9.1 The areas of the brain affected in post-traumatic stress disorder

Sensory input, memory formation and stress response mechanisms are affected in patients with post-traumatic stress disorder (PTSD). The regions of the brain involved in memory processing that are implicated in
PTSD include the hippocampus, amygdala and frontal cortex. While the heightened stress response is likely to involve the thalamus, hypothalamus and locus coeruleus.

1.9.2 Memory

Cortisol works with epinephrine (adrenaline) to create memories of short-term emotional events; this is the proposed mechanism for storage of flash bulb memories, and may originate as a means to remember what to avoid in the future. However, long-term exposure to cortisol damages cells in the hippocampus; this damage results in impaired learning. Furthermore, it has been shown that cortisol inhibits memory retrieval of already stored information.

1.9.3 Atrophy of the hippocampus in posttraumatic stress disorder

There is consistent evidence from MRI volumetric studies that hippocampal volume is reduced in posttraumatic stress disorder (PTSD). This atrophy of the hippocampus is thought to represent decreased neuronal density. However, other studies suggest that hippocampal changes are explained by whole brain atrophy and generalised white matter atrophy is exhibited by people with PTSD.

1.10 CAUSES OF OCCUPATIONAL STRESS

Work Related Stress; Job stress has been associated with poor mental and physical health. A useful model for understanding how the work environment affects individual health and well-being is provided by (Levi, 1996). In this model there are the following components:
1. **Stressors:** These are aspects of the working environment that cause stress for the individual.

2. **Appraisal:** The way a stressor is appraised will vary between individuals depending on such things as personality, customs and attitudes.

3. **Stress:** Stress is produced when the stressor interacts with the individual’s appraisal of it to induce emotional, behavioral and physiological reactions. Emotional reactions include anxiety, depression, restlessness and fatigue. Behavioral reactions include increased smoking, overindulgence in food or drink and taking unnecessary risks. Physiological reactions include increased blood pressure, increased or irregular heartbeat, muscular tension and associated pain and heartburn.

4. **Disease:** The above reactions may result in suffering, illness and death (e.g. through suicide, diseases of the heart and blood vessels, or cancer). This sequence of events may be promoted or counteracted by interacting variables such as coping repertoire, social support, physical environment and nutrition. This process is summarized in figure below.

1.11 **THE SYMPTOMS AND SIGNS OF STRESS**

The symptoms and signs of stress may be cognitive, emotional, physical, or behavioral.

i). **Cognitive symptoms**

- Memory problems
- Inability to concentrate
- Poor judgment
- Pessimistic approach or thoughts
- Anxious or racing thoughts
- Constant worrying

ii). Emotional symptoms

- Moodiness
- Irritability or short temper
- Agitation, inability to relax
- Feeling overwhelmed
- Sense of loneliness and isolation
- Depression or general unhappiness

iii). Physical symptoms

- Aches and pains
- Diarrhea or constipation
- Nausea, dizziness
- Chest pain, rapid heartbeat
- Loss of sex drive
- Frequent colds

iv). Behavioral symptoms

- Eating more or less
- Sleeping too much or too little
- Isolating oneself from others
- Procrastinating or neglecting responsibilities
- Using alcohol, cigarettes, or drugs to relax
- Nervous habits (e.g. nail biting, pacing)
1.12 EFFECTS OF STRESS

Stress is difficult for scientists to define because it is a highly subjective phenomenon that differs for each of us. Things that are distressful for some individuals can be pleasurable for others. We also respond to stress differently. Some people blush, some eat more while others grow pale or eat less. There are numerous physical as well as emotional responses as illustrated by the following list of common signs and symptoms of stress.

1. Frequent headaches, jaw clenching or pain.
2. Gritting, grinding teeth.
3. Stuttering or stammering.
4. Tremors, trembling of lips, hands
5. Insomnia, nightmares, disturbing dreams
6. Difficulty concentrating, racing thoughts
7. Trouble learning new information
8. Forgetfulness, disorganization, confusion.
9. Neck ache, back pain, muscle spasms
10. Difficulty in making decisions.
11. Light headedness, faintness, dizziness
12. Feeling overloaded or overwhelmed.
13. Ringing, buzzing or popping sounds
14. Frequent crying spells or suicidal thoughts
15. Frequent blushing, sweating
16. Feelings of loneliness or worthlessness
17. Cold or sweaty hands, feet
18. Little interest in appearance, punctuality
19. Dry mouth, problems swallowing
20. Nervous habits, fidgeting, feet tapping
21. Frequent colds, infections, herpes sores
22. Increased frustration, irritability, edginess
23. Rashes, itching, hives, "goose bumps"
24. Overreaction to petty annoyances
25. Unexplained or frequent "allergy" attacks
26. Increased number of minor accidents
27. Heartburn, stomach pain, nausea
28. Obsessive or compulsive behavior
29. Excess belching, flatulence
30. Reduced work efficiency or productivity
31. Constipation, diarrhea
32. Lies or excuses to cover up poor work
33. Difficulty breathing, sighing
34. Rapid or mumbled speech
35. Sudden attacks of panic
36. Excessive defensiveness or suspiciousness
37. Chest pain, palpitations
38. Problems in communication, sharing
39. Frequent urination
40. Social withdrawal and isolation
41. Poor sexual desire or performance
42. Constant tiredness, weakness, fatigue
43. Excess anxiety, worry, guilt, nervousness
44. Frequent use of over-the-counter drugs
45. Increased anger, frustration, hostility
46. Weight gain or loss without diet
47. Depression, frequent or wild mood swings
48. Increased smoking, alcohol or drug use
49. Increased or decreased appetite
50. Excessive gambling or impulse buying

As demonstrated in the above list, stress can have wide ranging effects on emotions, mood and behavior. Equally important but often less appreciated are effects on various systems, organs and tissues all over the body, as illustrated by the following diagram.

Figure 1.2 Effects on various systems, organs and tissues all over the body
There are numerous emotional and physical disorders that have been linked to stress including depression, anxiety, heart attacks, stroke, hypertension, immune system disturbances that increase susceptibility to infections, a host of viral linked disorders ranging from the common cold and herpes to AIDS and certain cancers, as well as autoimmune diseases like rheumatoid arthritis and multiple sclerosis. In addition stress can have direct effects on the skin (rashes, hives, atopic dermatitis, the gastrointestinal system (GERD, peptic ulcer, irritable bowel syndrome, and ulcerative colitis) and can contribute to insomnia and degenerative neurological disorders like Parkinson's disease. In fact, it's hard to think of any disease in which stress cannot play an aggravating role or any part of the body that is not affected (see stress effects on the body stress diagram) or. This list will undoubtedly grow as the extensive ramifications of stress are increasingly being appreciated.

1.12.1 Immune response

Cortisol is a steroid hormone, belonging to a broader class of steroids called glucocorticoids, produced by the adrenal gland and secreted during a stress response. Its primary function is to redistribute energy (glucose) to regions of the body that need it most (i.e., the brain and major muscles during a fight-or-flight response). As a part of the body’s fight-or-flight response, cortisol also acts to suppress the body’s immune system.

Norepinephrine is a neurotransmitter released from locus coeruleus when stimulated by the hypothalamus during a stress response. Norepinephrine serves as the primary chemical messenger of the central nervous system’s sympathetic branch that prepares the body for fight-or-flight response.
1.12.2 Effect of stress on the immune system

Stress is the body’s reaction to any stimuli that disturb its equilibrium. When the equilibrium of various hormones is altered the effect of these changes can be detrimental to the immune system. Much research has shown a negative effect stress has on the immune system, mostly through studies where participants were subjected to a variety of viruses. In one study, individuals caring for a spouse with dementia, representing the stress group, saw a significant decrease in immune response when given an influenza-virus vaccine compared to a non-stressed control group. A similar study was conducted using a respiratory virus. Participants were infected with the virus and given a stress index. Results showed that an increase in score on the stress index correlated with greater severity of cold symptoms. Studies with HIV have also shown stress to speed up viral progression. Men with HIV were 2–3 times more likely to develop AIDS when under above average stress.

1.12.3 Effects of chronic stress

Chronic stress is defined as a “state of prolonged tension from internal or external stressors, which may cause various physical manifestations; for example, asthma, back pain, arrhythmias, fatigue, headaches, irritable bowel syndrome, ulcers, and suppress the immune system”. Chronic stress takes a more significant toll on your body than acute stress does. It can raise blood pressure, increase the risk of heart attack and stroke, increase vulnerability to anxiety and depression, contribute to infertility, and hasten the aging process. For example, results of one study demonstrated that individuals who reported relationship conflict lasting one month or longer have a greater risk of developing
illness and show slower wound healing. Similarly, the effects that acute stressors have on the immune system may be increased when there is perceived stress and/or anxiety due to other events. For example, students who are taking exams show weaker immune responses if they also report stress due to daily hassles.

1.12.4 Mechanisms of chronic stress

Studies revealing the relationship between the immune system and the central nervous system indicate that stress can alter the function of white blood cells involved in immune function, known as lymphocytes and macrophages. People undergoing stressful life events, such as marital turmoil or bereavement, have a weaker lympho-proliferative response. After antigens initiate an immune response, these white blood cells send signals, composed of cytokines and other hormonal proteins, to the brain and neuroendocrine system. Cytokines are molecules involved with cell signaling. Cortisol, a hormone released during stressful situations, affects the immune system greatly by preventing the production of cytokines. During chronic stress, cortisol is over produced, causing fewer receptors to be produced on immune cells so that inflammation cannot be ended. A study involving cancer patient’s parents confirmed this finding. Blood samples were taken from the participants. Researchers treated the samples of the parents of cancer patients with a cortisol-like substance and stimulated cytokine production. Cancer patient parents’ blood was significantly less effective at stopping cytokine from being produced.
1.12.5 Chronic stress and wound healing

The immune system also plays a role in stress and the early stages of wound healing. It is responsible for preparing tissue for repair and promoting recruitment of certain cells to the wound area. Consistent with the fact that stress alters the production of cytokines, Graham et al. found that chronic stress associated with care giving for a person with Alzheimer’s Disease leads to delayed wound healing. Results indicated that biopsy wounds healed 25% more slowly in the chronically stressed group, or those caring for a person with Alzheimer’s disease.

1.12.6 Chronic stress and development

Chronic stress has also been shown to impair developmental growth in children by lowering the pituitary gland's production of growth hormone, as in children associated with a home environment involving serious marital discord, alcoholism, or child abuse.

1.12.7 Chronic stress and memory

Chronic stress is seen to affect parts of the brain where memories are processed through and stored. When people feel stressed, stress hormones get over-secreted, which affects the brain. This secretion is made up of glucocorticoids, including cortisol, which are steroid hormones that the adrenal gland releases.

1.12.8 Stress and visceral fat

Studies of female monkeys at Wake Forest University (2009) discovered that individuals suffering from higher stress have higher levels of visceral fat in their bodies. This suggests a possible cause-and-effect link between the two, wherein stress promotes the accumulation of visceral
fat, which in turn causes hormonal and metabolic changes that contribute to heart disease and other health problems.

1.13 EUSTRESS AND DISTRESS

Selye published in 1975 a model dividing stress into eustress and distress. Where stress enhances function (physical or mental, such as through strength training or challenging work), it may be considered eustress. Persistent stress that is not resolved through coping or adaptation, deemed distress, may lead to anxiety or withdrawal (depression) behavior.

The difference between experiences that result in eustress and those that result in distress is determined by the disparity between an experience (real or imagined) and personal expectations, and resources to cope with the stress. Alarming experiences, either real or imagined, can trigger a stress response.

1.14 MOTIVATION FOR THE STUDY

The system of engineering education as practiced in India has given raise to a number of issues, the major one being the problems of the engineering teachers. However, the policy makers and the researchers have neglected this field. The Government policies are tailored to enhance the education of children of self-financing engineering colleges, but very few of the policies focus the engineering teachers who take care of students of self-financing engineering colleges. These teachers have largely been
clubbed together with teachers of regular colleges. Therefore, the issues of self-financing engineering college teachers have always been a neglected field in India. To meet the educational requirements of Tamil Nadu has round about 550 engineering colleges. The number of required qualified teaching staff is not available in most of the self-financing engineering colleges in accordance with the student strength. Apart from this, people with different behaviours, characters and cultures are provided education and training in different settings such as regular theory classes, practical classes, tutorial classes, project, special classes, seminars, paper presentations, paper publications, higher studies, research and so on.

Hence the number of engineering teachers working in the country is numerous. However, the problems of engineering teachers of self-financing engineering colleges have hardly been the focus of empirical studies. Hence, here an attempt is made to study the sources, effects and coping patterns used by engineering teachers of self-financing engineering colleges.

The present investigation is an introductory study to analyse the stress pattern of engineering teachers of self-financing engineering colleges in and around Chennai, Tamil Nadu. Hence the aim of the study is: To analyse the sources, effects, and coping strategies of professional stress among teachers of self-financing engineering colleges in and around Chennai of Tamil Nadu.
1.15 AIMS AND OBJECTIVES

The aim of present study was to investigate the causes of stress among the self financing engineering college teachers in and around Chennai city, Tamil Nadu. Benefits of this study include that the government can make appropriate policies and administration for improving the performance of the engineering teachers at the self financing engineering college teacher’s level in and around Chennai city, Tamil Nadu, India. Future researchers can also find other ways to improve the capabilities of the teachers at the engineering college level, and motivation level of the engineering teachers can be increased.

The present study was designed to analyze the factors influencing stress and coping strategies among the self financing engineering college teachers, in and around Chennai city, Tamil Nadu with following specific objectives:-
1. To study the factors influencing stress and the stressors among the self financing engineering college teachers.
2. To analyse the level of stress among the self financing engineering college teachers.
3. To study the coping strategies adopted by the self financing engineering college teachers.
4. To know whether gender difference exists with regards to stress and coping strategies.
5. To suggest ways and means to solve the problems faced by the stress of teaching professionals.
1.16 NEED OF THE STUDY

If the professional stress of teachers cannot be resolved on the job, it is often resurrected at home. In the survey mentioned above, the three home problems most often cited by the physicians surveyed were: (1) conflict with their spouse; (2) dissatisfaction with their sexual activity; and (3) problems with their children. If the physician is unaware of the cause of such problems, he may attribute them to the family relationship. In such a case the entire family begins to suffer.

1.17 SIGNIFICANCE OF THE STUDY

Professional stress can be inadvertently linked to success or failure at one’s profession. The general impression about Professional stress of teachers is the feeling of failure due to work overload. But if this is the case and so simple a problem then merely by reducing the amount of work, Professional stress could have been done away with. However the problem is not that easy to pinpoint. It is here that a comparative investigation of the reasons of stress in different designations of engineering teachers becomes important. Herein lays the most crucial significance of the study. To combat a problem the awareness of the conditions, which lead to it, are very important.

Stress is a part of everyone’s daily life. It means that the person cannot cope with the demands put forward by his or her work, which is opposite to their expectations of rewards and success. It affects both the person concerned and the relationships he or she forms in the society be it with family or friends. Although the importance of individual differences
cannot be ignored, scientific evidence suggests that certain working conditions are stressful to most people. The excessive workload demands and conflicting expectations and puts a greater emphasis on working conditions as the key source of job stress, and for job redesign as a primary prevention strategy. In jobs where work overload is the cause of the stress, the workers find that they have to take time off to deal with the stress, only to return to work to find that the already unmanageable workload has substantially increased in their absence, thereby increasing the source of the stress and fuelling a vicious cycle which may ultimately lead to a complete breakdown in health.

At times the professional stress becomes so extreme that the workers grow aversive of it and they try to avoid it by withdrawing either psychologically (through disinterest or lack of involvement in the job etc.) or physically through absenteeism, frequently reporting late for work and even while working an attitude of lethargy persists. In this present era of cut-throat competition the idea of being perfect becomes very necessary to strive and become successful. The worker has to be perfect in his job or else he will be replaced or at least lag behind in his work leading to stress.

In India the problem of stress management is gaining more and more importance due to the new privatized nature of the economy. People are leaving behind the cozy atmosphere of government jobs and joining the private sector where there is no end to the amount of work that a person can undertake. In this environment coping with stress becomes very important. One has to be aware of the problem well in advance to be able to deal with it. The study becomes very important to be aware of the
problems of the present, then build strategies for the future, and also consider the problems that may arise. Stress factor of males and females according to the age of the worker, designations and the kind of work that he performs are key areas to identify the problems.

1.18 SCOPE OF THE STUDY

The study covers the Engineering Colleges in and around Chennai city. The Professors, Associate Professors and Assistant professors of self-financing Engineering Colleges are taken for the study.

1.19 PERIOD OF STUDY

The Study covers a period of five years from 2007 to 2011.

1.20 LIMITATIONS OF THE STUDY

The study is entirely depending on the response of 513 teaching professionals from various self-financing Engineering Colleges. Currently they must have at least one year of working experience in an engineering college environment. Though there are lots of Engineering Colleges in India, the researcher cannot take all the colleges for the study. So the study is limited to the Self-financing Engineering colleges in and around Chennai city. By using a convenience, non-random sample of Self-financing Engineering college teachers, specific generalizations cannot be made about the total population because this sample is not representative of all Self-financing Engineering college teachers. The participants in this study will possess a great deal of knowledge about the teaching profession.
which may affect the outcome of the results. Participants may also have a much greater interest in the subject matter, which may also lead to results that are nonconforming of other Self-financing Engineering college teachers. Since participants will be asked to respond to items that review past experiences of stress, the way in which they respond may be affected by their memory recall. Also, participants may have a tendency to under report undesirable results because they do not want to portray the teaching profession in a negative way.

1.21 SCHEME OF REPORTING

The study is presented in the following manner. The relevant topics are grouped and classified in proper order for easy reading and reference. Therefore the chapters included are:

The first chapter deals with “Introduction”, is intended to provide the subject matter of the thesis, need and significance of the study, scope of the study, objectives of the study, methodology, limitations of the study and chapter classification.

The second Chapter deals with “The Review of literature”, an attempt has been made to take cognizance of previous studies on the subject before embarking upon making a fresh study, which has relevance to present problem. The review was intended to provide a background to the study that followed and it was thought that such an attempt would be of great help for the formation of hypothesis.
The third Chapter deals with “Engineering education and professional stress – an overview”, addressing the number of challenges posed by this rapidly growing engineering education with increasing societal, organizational and professional student’s demands. This has a direct effect on the academics who are constantly striving to find ways to improve the effectiveness of their teaching. Also, addressed the needs of high quality faculty members in turn to improve the teaching and learning of engineering subjects, necessitating the environments for effective professional development.

The fourth Chapter deals with “Coping strategies with stress”, explains in detail the most common coping strategies used by teachers; however, this literature does not clarify why teachers choose particular coping strategies. There is a need to investigate the reasons as to why teachers choose particular coping strategies as a way of handling stress. Understanding why these strategies are used will provide teachers with the opportunity to better understand how to cope with stress and provide the tools and resources for effective stress management programs designed to alleviate attrition.

The fifth Chapter deals with “Methodologies to measure and evaluate stress”, focuses on the rationale, objectives and aims of this research study. The first part will lay the foundation for the study and present the various research hypotheses and objectives that were developed to test the predicted relationships between the above mentioned constructs. The second part of this chapter will focus on the research methodology, sampling, participants and details regarding the intervention. Threats to
this study’s validity will be comprehensively discussed as well as the measurement instruments that were utilised. Descriptive statistics obtained for each measurement instrument utilised in this study will also be presented.

The sixth Chapter deals with “Data analysis and interpretation”, a detailed analysis of the collected data has been attempted as per the objectives stated earlier. Hypotheses were also tested based on the findings of the study, interpretations and conclusions were drawn. Also the following statistical techniques for the analysis of the data gathered for the present study viz., Descriptive analysis and Inferential statistics etc.

The seventh Chapter deals with “Summary and findings”, the prominent findings of the research will be discussed and where relevant research is available, reference is made to it. The discussion focuses on the causes of stress within an inclusive education environment, relationships between biographical characteristics and stress, differences in stress and access to training and developmental support. Conclusions are drawn from the results obtained and recommendations for future research are identified and suggested.

The eighth chapter “conclusions, recommendations and suggestions” resumes consolidations of all the observations made in the previous chapters.