Chapter IV

Work Stress – An Overview
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4.1 WORK STRESS - AN OVERVIEW

Work related stress is a pattern of physiological, emotional, cognitive and behavioral reactions to some extremely taxing aspects of work content, work organization and work environment. As a result of globalization and sudden technological changes employees have to deal with increasing work related stress. “Globalization has led to growing inequalities and, down prioritization of social dimensions in many parts of the world” (Rantanen, 2000). In theory, globalization intense to provide more jobs to low-income groups and this in turn contributes to the national income. Stress takes many forms. As well as leading to anxiety and depression it can have significant impact on employee’s physical health. ‘Overall, there is much evidence to suggest that poor physical working conditions, in general, can affect both workers’ experience of stress and their psychological and physical health (Warr, 1992). (Broadbent, 1971) has described how noise and sleep loss might interact in relation to task performance, while there is other evidence that exposure to equipment and work station design, in conjunction with poor task design and work organization give rise to work related upper limp disorders (Chatterjee, 1987, 1992).

A survey by the (Canadian mental health association, 1984) found that 56% of residence felt ‘some’ or ‘a great deal of’ interference between their jobs and home lives. Of particular concern were ‘the amount of time that the job demanded’ and the ‘irregularity of working hours’ (including shift work). The interference affected family routines and events, child raring and household responsibilities, made employees moody at home and conflicted with leisure activities and social life. Poor pay may be hazardous to health. While most workers will complain about levels of pay, the extremes of poor pay clearly have an effect on the workers’ ability to remain healthy (Warr, 1992).

Job insecurity and fear of redundancy can be a major source of anxiety, particularly if organizations expect at the same time commitment from their employees. The sense of inequity may exacerbate the experience of stress (Porter, 1990). There is evidence, for example that management behavior and supervisory styles have a
substantial impact on the emotional well being of workers (Landy, 1992; Corey and Wolf, 1992). The evidence that ‘role in organization’ is a potential psychological hazard relates largely to issues of role ambiguity and role conflict (Kahn et al, 1964; Khan, 1973). (Cooper and Smith, 1985) argued that the blue collar and unskilled are at greater risk than the white collar and professionals. Based on mortality data from the United States and other developed countries, they concluded that “blue collar workers seem to be a vulnerable group to occupational stressors and their manifestations”. Perhaps the varieties of stressful working conditions are the sources of stress. For example, repetitive work and shift work (Cox, 1985; Smith, 1985). (Pfeffer, 1998) has emphasized that the key to the long-term success has been and shall remain how organizations manage and keep their employees happy because in the long term it will be the main pillar behind organizational effectiveness.

The Extend of Stress

According to statistics from American Psychological Association (APA) a startling two-thirds of the Americans say that work is a main source of stress in their lives. 30 % of workers surveyed reported ‘extreme’ stress level. Among the workers, who report that they are stressed, 60–90 percent of doctor visits are attributed to stress related illness and symptoms. The Health and Safety Executive UK (HSE, 2012) annual statistic report has found that more than 27 million working days were lost last year, and stress was the root cause of more than a third of them. The research found that a person suffering from work-related stress would, on an average, lose 24 days in the year. In India, (2010) 40% of workers reported their job was very or extremely stressful. 25% view their jobs as the number one stressor in their lives. 29% of workers felt quite a bit or extremely stressful at work. 26% of workers said they were ‘often or very often burned out or stressed by their work’. In the USA some of the main symptoms of stress were analyzed in (2011) and these were found to include irritability or anger, feeling nervous or anxious, fatigue, feeling of sad or depressed and lack of motivation and energy. In Germany, recent reports reveal that one in ten sick days in (2010) was related to psychological illness highlighting the effect of unmanaged stress levels on the workforce and productivity. Emerging economies do not fair much better with women in India reportedly the most stressed globally as they struggle to balance traditional child raring and house keeping roles along side modern work environments pressures.
The Cost of Stress

Emerging studies from around the world indicate the alarming spike in the incidence of reported stress among employees in recent years and its impact on the bottom line of companies. (APA, ComPsych Corporation, 2012) an estimated one million workers miss work each day because of stress, costing companies an estimated $ 602 per employee per year. Job stress is estimated to cost U.S. industry more than 300 billion a year in absenteeism, turn over, diminished productivity and medical, legal and insurance costs (Rosch, 2001). The National Institutes of Mental Health (Canada, 2011) estimates that depression has resulted in $ 23 billion a year in lost working days. And absenteeism is to blame for 26 percent of health-related lost productivity in business. The total cost of occupational deaths and injuries was $ 183 billion in 2008 (National Safety Council, 2010). The European Brain Council (CDBE 2010, 4th October 2011), estimates that the annual cost of brain disorders in Europe has reached € 800 billion and poor occupational health and reduced working capacity of workers reportedly cost up to 10 – 20 % of any countries GNP.

4.2 DEFINITION OF STRESS

(Palmer, 1989) ‘Stress is the psychological, physiological and behavioral response by an individual when they perceive a lack of equilibrium between demands placed upon them and their ability to meet those demands, which, over a period of time, leads to ill health’.

According to (European Commission, DG, guidance on work–related stress, 1999) Work stress is the ‘the emotional, cognitive, behavioral and physiological reaction to aversive and noxious aspects of work, work environments and work organizations. It is a state characterized by high levels of arousal and distress often by feelings of not coping’.

(Comish and Swindle, 1994) ‘Occupational stress, in particular, is the inability to cope with pressures in a job, because of a poor fit between someone’s abilities and his/her work requirements and conditions. It is a mental and physical condition which affect an individual’s productivity, effectiveness, personal health and quality of work’.

According (NIOSH, 2002) working conditions play a primary role in causing work stress. However, the role of individual factors are not ignored. NIOSH is of the
view that exposure to stressful working conditions (called job stressors) can have direct influence on worker safety and health and says that individual and organizational factors may intensify the effects of stressful working conditions.

The Health and Safety Executive (HSE) defines stress as an adverse reaction people have, to excessive pressures or other types of demands placed on them. Work–related stress is thus understood to occur when there is a mismatch between the demands of the job and the resources and capabilities of the individual worker to meet those demands.

4.3 CAUSES / SOURCES OF STRESS AT WORK

Factors that cause stress are called "Stressors. According to (Cartwright and Cooper, 1997) the stressors are as described below.

1. Organisational Stress

(1) Poor physical working environment:

Some environments have physical conditions that place the employee out of their comfort zone. Temperature, noise, air pollution, humidity, chemicals harmful to the skin and fatiguing positions for performing work can all contribute to poor person/environment fit (Russel, 1978). Visits to the psychiatric emergency room of California’s Sacramento Medical Centre were found to be related to environmental condition (Briere, Downes, Spensley, 1983). Visits of psychological problems were higher during periods of high air pollution and there were more emergency visits for depression during cloudy, humid days.

(2) Shift work

‘The term shift work is defined as an arrangement of working hours that uses two or more teams (shifts) of workers, in order to extend the hours of operation of the work environment beyond that of the conventional office hours. (Kobayashi et al, 1999), in their study of night shift among nurses, found that the cortisol and NK cell activity levels were low during the night shift, suggesting that night shift work is highly stressful and may prejudicial to biodefence.
(3) Long hours of work

To enhance productivity and keep abreast of global market demands, workers are under increasing pressure to work longer hours, (Heiler, 1998; Hetrick 2000), work at a faster pace (Bousfield, 1999). Sustained working can cause or be otherwise associated with sleep loss and perceived exertion or fatigue. Performance can be severely compromised by accumulation of sleep debt (Stampi, 1989). Further studies have established an association between increased working hours and impoverished family and social life (Cahn et al. 2000).

(4) Time pressure

The issue of unrealistic time constraints and deadlines is an important stressor. Studies have found a strong relationship between work stress and time factors. The factors are insufficient time for planning, inability to complete the required tasks in the allocated work day resulting in work being taken home, constant interruptions relating to other work demands and unreasonable deadlines (Humphrey, 1998).

(5) Performance pressure

In order to ensure maximum productivity and enhance competitiveness and to maintain high organizational performance, there is a requirement for workers to perform multiple tasks in the workplace to keep abreast of changing technologies (Cascio, 1995). These organizational changes have been found to be potentially detrimental to workers’ health. Recent research has found performance pressure in professionals to be one of the most stressful aspects of their work (Cahn et al, 2000).

(6) Work over load / work under load

Work over load is often described in quantitative terms and can be considered to be excessive when the volume of work exceeds the ability of a worker to meet the demands over a specified period of time (French and Caplan, 1973). Work load, in terms of qualitative terms (Sauter and Murphy, 1995; French and Caplan, 1973) means that the requirement of the work exceeds the skills, abilities and knowledge of a worker. In work under load very little work or too simple work is expected on the part of the employee. Doing less work or jobs of routine and simple nature would lead to monotony and boredom, which can lead to stress.
(7) Work pace and time urgency:

Workload has to be considered in relation to work pace; that is the speed at which work has to be completed and the nature and control of the pacing requirement: Self-systems or machine-paced. Within limits, control may be the decisive factor in determining health (Sauter et al, 1989). There is strong evidence that machine-and systems-paced work, particularly if of high rate, is detrimental to both psychological and physical health. (Bradley, 1989; Cox, 1985a).

(8) Repetitive and monotonous work:

Exposure to repetitive and monotonous work is often associated with the experience of boredom, and, in turn, with anxiety and depression, resentment and generally poor psychological health (Kornhauser, 1965); (Gardell, 1971). For example, Kornhauser (1965) showed that among production workers in a car manufacturing plant in the United States, under-utilization of skill was a particularly strong predictor of poor psychological health. There may also be an increased incidence of postural and musculoskeletal problems; including work related upper limb disorders.

(2) Role in the organization

Stress often thrives where people fully don’t understand their role in a team or section, where they are unclear about their job description, or about the overall goals of the organization. If employees do not know what is expected of them – nor have conflicting demands made on their time - they will feel anxious about their work and the organization.

(2.1) Role Ambiguity

Role ambiguity exists when an individual lacks information about the requirements of his or her role, how those role requirements are to be met, and the evaluative procedures available to ensure that the role is being performed successfully (Beehr and Walsh and Taber, 1976). Role ambiguity has been found to lead to such negative outcomes as reduced confidence, or sense of hopelessness, anxiety and depression. (Jackson & Schuler, 1985; Muchinsky, 1997).
(2.2) Role conflict

Role conflict has been defined as two or more sets of role expectations such that the realisation of one set makes it difficult or impossible to actualize the other (Kahn et. al, 1964). Role conflict can lead to negative job attitudes and behaviours that include decrease in job satisfaction, an increase in anxiety, a reduction of trust and confidence in the organisation and damage interpersonal relations with co-workers and supervisors (Caplan, 1982; Fisher & Gitleson, 1983; Kahn, 1974). (Kahn and his colleagues, 1964) have shown that the greater the role conflict in men, the lower the job satisfaction and greater the job related tension.

(2.3) Role responsibility for people

Responsibility for people has been identified as a potential source of stress associated with role issues. (French and Caplan, 1970) found that responsibility for people was significantly related to heavy smoking, raised diastolic blood pressure and elevated serum cholesterol levels. The literature on burn out (eg: Leiter, 1991) suggest that, in the caring profession at least, responsibility for people is associated with emotional exhaustion and the depersonalisation of relationship with patients.

(3) Interpersonal relationship at work

It has been argued that good relationships amongst workers and members of work groups are essential for both individual and organizational health (Cooper, 1981). Three important sets of relationships have been identified: Relationships with superiors, relationships with subordinates and relationships with colleagues (Sauster et al, 1992). Low interpersonal support at work has been found to be associated with high anxiety, emotional exhaustion, job tension and low job satisfaction and increased risk of cardiovascular disease (Beehr & Newman, 1978; Davison and Cooper, 1981; Pearse, 1977, Warr, 1992).

(3.1) Social relationship

Social support is defined as the existence or availability of people on whom the individual can rely and who are a source of self-validation. (Sarason, Lavine, Bashan & Sarason, 1983). Social relationships both at work and outside the workplace are most
commonly viewed as playing a moderating role and adverse effects of exposure to other psychosocial hazards are more likely or more pronounced when relationships provide little support (Cobb and Kasal, 1977). Research has found that support usually consists of three types, namely practical assistance, emotional comfort or information and advice (House, 1987). Many situations have confirmed that low levels of perceived support are related to higher levels of distress following negative events, both in the short-term (Rogers & Kreutzer, 1984) and in the long-term (Hall et al, 1994).

(3.2) Interpersonal conflict

(Toohey, 1994) defined conflict as a serious, ongoing occurrence of strife between employees or between employee and those in supervisory or management position, that does not include trivial or fleeting matters. Conflict is pervasive across all types of organizations and can manifest itself in a variety of ways including emotional turmoil, increased absenteeism, job turn over, violence and from group conflict perspective, strikes and demonstration (Cooper& Payne, 1988, Toomey, 1994). A study has identified that conflict with supervisors as one of the most significant stressor associated with majority of maladaptive behaviors at the workplace. These include excessive drinking and frustrations out on co-workers (Sulsky and Smith, 1990). A recent Asian study found that workers tend to tolerate unfair treatment and unpleasant work conditions in an attempt to avoid open conflict with their coworkers (Chan et al., 2000).

(4) Career Development

Lack of expected career growth is one of the main sources of work stress. The factors connected with this are poor promotion policies, job insecurity and poor pay in the organization (Severke and Hellgren, 2002), Bosma et al. (1998) reveals that poor promotion prospectus and blocked career may lead to work related stress hazard like coronary heart disease.

(4.1) Job insecurity

The lack of expected career development may be a source of stress, particularly in organizations which emphasize the relationship between career development and competence or worth. (Marshall, 1977) identified two major clusters of potential sources
of stress in this area. First, lack of job security and obsolescence (fear of redundancy and forced early retirement); and, second, status in congruity (under or over promotion and frustration having reached the career ceiling). Poor pay may be hazardous to health. While most workers will complain about pay, the extremes of poor pay clearly have an effect on the worker’s ability to remain healthy (Warr, 1992).

(4.2) Career concern

If an employee feels that he is very much behind in corporate ladder, then he may experience stress and if he feels that there are no opportunities for self-growth he may experience stress. Hence unfulfilled career expectations are a major source of stress.

(4.3) Uncertainty about future:

Uncertainty in work, in the form of lack of feedback on performance, is also a source of stress particularly when it extends across a long period of time (War, 1992). Such uncertainty may be expressed in ways other than lack of performance feedback, and may partly underpin the effects of other hazardous job characteristics; for example, uncertainty about desirable behaviors and uncertainty about future.

(4.4) Job satisfaction

The assumptions that underline the Personal Environment Fit model (Swanson and Fouad, 1999) states that individuals will seek out work environments that are congruent with their characteristics. They search for environments that will enable them to express their skills, abilities, attitudes, values and needs (Holland, 1997). (Lofquist and Dawis, 1984) noted that when an individual’s skills and abilities match those required by the job, the match will result in satisfactoriness. When the individual’s attitudes and values match the rewards that are available in the job then the worker will experience satisfaction. This theory indicates that both satisfactoriness and satisfaction are necessary conditions of work adjustment.

(4.5) Under-utilization of skills:

Under utilization of a worker’s skill-base usually occurs when the worker is performing tasks that are often simple in nature and offer little challenge. The primary cause of under-utilization is the fact that many people are over qualified for the positions
that are available. However, under-utilization can also result from a worker being prevented from undertaking training to acquire new skills. This barrier results in an ability to progress to more complex tasks (Muchinsky, 1997). Under-utilization of work skills and low skill variety are found to be detrimental to the health and well being of the worker (Karasek and Theorell, 1990).

5. Organizational structure and climate

Organizational structure is defined as the level of differentiation, the degree of rules and regulations and where the decisions are made. Excessive rules and lack of participation in decision making that affect an employee are examples of structural variables that might be potential stressors. Organizational leadership represents the managerial style of the organization’s senior executives. Some CEOs create a culture characterized by tension, fear and anxiety. They establish unrealistic pressures to perform in the short run, impose excessively tight controls, and routine they fire employees who fail to measure up. In organizations, frequent causes of stress are task demands, role demands, interpersonal demands, organizational structure, organizational leadership and the organizational life cycle. The fact that working within an organization, as do most workers in Europe (Cox et al, 1990) can be perceived as a ‘threat to individual freedom, autonomy and identity (Hingley & Cooper, 1986).

(5.1) Decision latitude and control:

Decision latitude and control are important issues on job design and work organization. They often reflect the extent to which employees can participate in decision-making affecting their work. The experience of low control at work or of loss control-low decision latitude-has been repeatedly associated with the experience of stress and with anxiety, depression, apathy and exhaustion, low self esteem and increased cardiovascular symptoms (Terry and Jimmieson, 1999).

(5.2) Lack of participation in decision making:

Studies have indicated that the inability to be involved in decisions that affect one’s work is particularly stressful for most workers (Schaubrock et al, 1991) and that non participation in decision making can lead to such negative consequences as lowered self-esteem, job dissatisfaction and emotional distress for the worker (Beeger & Drexler, 1986;
Dawson 1989; Spector, 1986). (French et al, 1982) have reported that lack of participation shows a strong relationship to job satisfaction but that this effect may be mediated by other variables relating to the overall person environment to fit.

(5.3) Workplace violence

Traditionally, workplace violence has been narrowly defined to include only physical assault or homicide that occurs at the workplace (Hales, Seligman, Newman and Timbrook, 1998). More recently, this definition has been expanded to occupational violence and includes behaviors such as verbal threats, sexual and emotional harassment, bullying, and incidence that cause physical or psychological harm (Ellis, 1999; Thomas, 1992). There is strong evidence that exposure to violence in the workplace can cause damage to psychological as well as physical health (Leather et al. 1999). The effects of workplace violence are widespread and have the potential to result in reduced productivity and morale, absenteeism, increased incidents of illness and a propensity to leave (Anshel, 2000; Parker, Griffith & Holdaway, 1999; Stockdale & Dulphs, 1989).

(5.4) Organizational culture

(Schien, 1990) postulated that organizational culture is a system of shared meanings and common understandings. These meanings form a pattern of basic assumptions that are identified or devised by a specific work group as it learns to deal with external difficulties and integrate internal circumstances. It is these shared meanings that distinguish one organization from another. Most organizational cultures consist of a dominant culture that signifies the core of values shared by the majority of the organization’s members, and many sub-cultures that reflect common experiences and difficulties shared by smaller groups of members (Robbins et al. 1994). Subcultures are most likely to be delineated by geographical boundaries or by designations in the workplace. Culture can influence an organization through the socialization of new workers. (Jones & May, 1995) suggested that the broad culture within which an organization operate is defined as the interaction of five major sources, namely, political, legal, economic, societal and technological. Although these forces are not considered to be inherently stressful, (Cherniss, 1991) suggested that it is not uncommon for them to create negative working environments that will engender stress.
6. Non-work pressures

(6.1) Home work interface

The concept of the home-work interface (or “work home interference”, (WHI) relates not only to domestic life and the family but also to the broader domain of life outside of work. (Hingley and Cooper, 1986) have argued that problems relating to the interface between work and the family either involve resolving conflicts of demands on time and commitment, or revolve around issues of support. The difficulties faced in resolving conflicts between work and family appear enhanced if the family has young children; again this may be particularly so for woman workers (Larwood and Wood, 1979). (Handy, 1975) has explored the nature of a number of possible “marriage–role” combinations in a study of executive managers. Consistent with other research, the frequent combination was the ‘thrusting male-caring female’, which was most beneficial to the working husband. The family and work are interrelated and interdependent to the extent that experiences in one area affect the quality of life in the other (Sarantakos, 1996). The family is an integral part of the economic process (Edgar, 1991; Vandenheuval, 1993) and when hiring an employee, employer automatically accepts the worker’s family obligations (Sarantakos, 1996). This phenomenon is known as ‘spill over’. Demands associated with family and finances can be a major source of extra organizational stress that can complicate or even precipitate work-place stress (Lasky, 1995).

(6.2) Dual career

Dual career families are those in which both husband and wife have careers. Dual career families have considerable strain and stress. Job and location of workplace, role conflict due to incompatible work and home expectations, quality of marital relationships, and the mental and physical health of every family member are sources of stress in the family. Often women do too many sacrifices in their personal and professional lives to cope up with the demands of the family. Sometimes lack of recognition, support, care and love are found to be sources of stress. In dual career families traditional role expectations appear to be challenged with the possibility of either or both partners experiencing feelings of threat and anxiety (Hingley and Cooper, 1986).
4.4 SIGNS AND SYMPTOMS OF WORK STRESS

Stress is a normal physical response to events that make us feel threatened or upset our balance in some way. When an individual sense danger—whether it is imagined or real—the body’s defense quick into high gear, in a rapid automatic process known as the ‘fight or flight’ reaction, or the stress response. The problem is that, physiologically, our bodies have the same reactions to all types of stressors. Experiencing stress for longer periods of time, such as lower level but constant stressors at work, activates this system. For many people, everyday stressors keep this response activated, so that it does not have a chance to ‘turn off’. This reaction is called the generalized stress response and consists of the following physiological responses: increased blood pressure, increased metabolism.

Increase in protein synthesis, intestinal movement, immune and allergic response systems, increased production of blood sugar for energy, increased stomach acids, localized inflammations, faster blood clotting, increased cholesterol and fatty acids in blood. When this reaction is continuously activated, the individual begins to display signs and symptoms of stress. These symptoms can be cognitive, physical, psychological or behavioral in nature.

(a) Cognitive symptoms

Memory problems, inability to concentrate, poor judgment, seeing only the negative, anxious or raising thoughts, constant worrying, negative thinking etc.

(b) Physical symptoms

Aches and pains, diarrhea or constipation, nausea, dizziness, chest pain, rapid heartbeat, frequent cold etc.

(c) Emotional symptoms

Moodiness, irritability or short temper, agitation, inability to relax, feeling overwhelmed, sense of loneliness and isolation, depression or general unhappiness.

(d) Behavioral symptoms

Eating more or less, sleeping too much or little, withdrawal from others, Procrastinate or neglect responsibilities, use of alcohol or drugs, impatience, poor job performance, changes in close family relationships.
4.5 CONSEQUENCES OF WORK STRESS

Overall, there is much evidence to suggest that poor physical working conditions, in general, can affect both workers’ experience of stress and their psychological and physical health (WARR. 1992). Everyone suffers from stress on some level and no one is free from it. Sometimes stress levels are comparatively higher and sometimes they are lower. Hence, stress is a normal part of everyday life, and we cannot really avoid it. But it is necessary to be able manage stress, otherwise chronic stress, if left untreated can lead to stress related illness such as hypertension, heart disease, anxiety, depression, memory impairment, panic attacks, digestive disorders, autoimmune diseases and chronic fatigue syndrome (Cooper, 1996, Porth, 1998, Gruner, 2006 and Provino, 2010). (Houtman, 2007) expresses that stress has also been associated with a number of other ill health outcomes such as cardiovascular diseases (Kivimaki et al. 2002), musculoskeletal disorders, particularly back problems (Hoogendoorn et al. 2000) and neck-shoulder-arm-wrist-hand problems (Ariens et al, 2001), as well as absence from work (Houtman et al, 1999). When people are in a state of stress they often feel concerned, less vigilant and less efficient in performing works (Barling et al, 2004). Workplace bullying is a deleterious problem leading to physical, emotional, and psychological damages to employees. Additionally, organizations incur damage such as decrease in performance, employee lack morale, and monetary costs due this problem (Cheryl, 2009). Various manifestations of stresses are physiological, psychological, behavioral and cognitive consequences.

(a) Physical consequences

A large body of data has been accumulated concerning physiological responses in people exposed to stressors in laboratories. Adrenaline and cortisol have become known as ‘stress hormones’ because, in men, levels of both hormones consistently rise in response to stress in laboratory based investigations. If chronically repeated, elevation of adrenaline and cortisol is likely to have long-term consequences for health, especially cardiovascular health, partly via the effects of hormones on blood pressure and serum cholesterol levels (Pollard, 1997). Stress can cause endocrine hypo activity and hyper activity (Lipton, 1976) and alter the balance of autonomic control alerting function in the cardiovascular, respiratory, secretory and visceral systems (Lisander, 1979). It appears to
impair or distort the immune response (Stain et al, 1981; Kawakami & Horatani, 1999). It has been suggested (Cox, 1978) that, under certain circumstances, all physical conditions are potentially susceptible to stress effects. The more susceptible conditions appear to be those relating to the cardiovascular and respiratory systems, the immune system, the gastro-intestinal system and those relating to the endocrine, autonomic and muscular systems.

(b) Psychological consequences

Emotions refer to the feeling aspects of behaviors such as mild irritation, rage, despair, sadness, love and liking. Emotional changes are highly subjective. One can experience them but one cannot express them in words. Often a person may be seething with anger within, but maintain a cool exterior, clearly indicating that emotions are not always observable. In general, emotions are internal states, which are often short lived and can even be experienced in combination. Three identifiable emotional constellations are anxiety, anger and depression. Psychological problems that are associated with stress include feeling of helplessness, mood changes, anger, depression, anxiety, nervousness, irritability, tension and boredom (Dormann & Zapaf, 2002; Moorhead & Griffin, 1989; Luthans, 2002). These psychological problems associated with stress impact job performance.

(c) Behavioral / Emotional consequences

The psychological effects of stress may be expressed in a variety of different ways, and involve changes in cognitive-perceptual function, emotion and behavior. Some of these changes may represent attempts to cope, including health related behaviors. There is evidence that some health-promoting behaviors such as exercise, relaxation, sleep and good dietary habits, are impaired by the experience of stress, while other health risk behaviors such as smoking and drinking are enhanced, social behavior and interpersonal behavior may also be impaired by the experience of stress. A variety of psychological sequelae have been related to exposure to extremely threatening situations such as catastrophes and disasters (Logue, 1980; Logue et al, 1981, Blank, 1981, Milgram, 1982) and terrorism (Bastianns, 1982). Psychological ill health has also been associated with work stress. (Standsfeld et al, 1999)
(d) Cognitive consequences

Moderate levels of stress are considered optimal for mental operations such as attention, learning, problem solving and creativity. At higher levels of stress, cognition may become highly distorted. A few distortions are: greater attention paid to negative aspects of life and work, inability to concentrate due to constant worry and anxiety, over emphasis on self rather than on task, problems in retrieval / recall from memory, extremely difficult to take decisions, reduced responsiveness to incidental data.

4.6 HEALTH AND ERGONOMICS

Ergonomics is defined in wickipedia.org as the study of designing equipment and devises that fit the human body, its movements and its cognitive abilities. The goal of ergonomics in the workplace is to make workspace more comfortable and to improve both health and productivity of the worker. To meet these goals the capabilities and limitations of workers and their tools, equipments and furniture are considered in relation to particular tasks.

(a) Physical Ergonomics

This area of ergonomics is related to physical activity. Topics relevant to this include working postures, material handling, repetitive movements, work-related musculoskeletal disorders, workplace layout, safety and health.

(b) Cognitive Ergonomics

This area of ergonomics is concerned with mental processes, such as perception, memory, reasoning and motor response, since these affect interaction among humans and other elements of a system. Topics of importance are mental workload, decision making, skilled performance, human-computer interaction, human reliability, work stress and training.

(c) Organizational Ergonomics

This part of ergonomics is concerned with optimization of socio-technical systems, including the organizational structures, policies and processes. Topics of importance are communication, crew resource management, work design, design of working paradigms, virtual organizations and quality management.
Environmental factors

Hazards of environmental factors such as heat, light, noise, air pollution, dust, fumes, chemicals, humidity, air movement, radiant temperature, type of clothing worn and activity performed can cause discomfort to the worker. For instance, high levels of noise damage the middle year and the inner year with consequent impairment of hearing (Jones, 1983).

Human factors

The machines, work tools and work stations used by workers have to fit the body size of the users. For example, a machine made to fit one population or nation may not fit another population or nation, because there are differences in body proportions between different populations. For instance, the raising of upper limbs beyond the comfortable level (not higher than the elbow level) naturally cause shoulder and upper limb pain. According to literature, lifting is considered as the most stressful activity in manual material handling and may lead to musculoskeletal disorders among exposed workers and is one of the big concerns in industry (Faber GS, Kingma I, Bakker AJ, Van Dieen JH, 2009; Mital A, Ramakrishnan A. A, 1999; Straker. L, 1997; Andersson ER, 1992). One of the most common musculoskeletal disorders caused by manual material handling is work related low back pain, which is considered as a high-cost and serious problem prevalent at national and international level. It is believed that over-rotation and repetitive movement of waste during manual material handling raises the hazard of being afflicted by backache significantly in workers (Trevelyan FC, Legg SJ, 2006).

Design Ergonomics

Ergonomic considerations are supreme in design processes. To design to fit the user, which is the concept of ergonomics, the design should be user centered. The ergonomic demands in any design have purposes such as efficient performance of the job, not suffer work related injuries, increase speed of performance and achieve higher customer satisfaction. All workstations, environments, machines, products and tools, furniture etc. used by man must be ergonomically designed.
Safety and Ergonomics

Occupational accidents are considered to be one of the most public problems today. Therefore, an ergonomic approach has been adopted based on human limitations when designing equipment and procedures with the objective of reducing human error. Many accidents occur due to errors in design or training.

4.7 WORK STRESS, HEALTH AND SAFETY

Over the past two decades, there has been an increasing belief that the experience of stress necessarily has undesirable consequences for health. It has become a common assumption, if not a ‘cultural truism’ (Leventhal & Tomasken, 1987), that it is associated with impairment of health. It is also obvious that the negative emotional experiences, which are associated with the experience of stress, detract both from the general quality of life and from the general sense of well-being. (Browne, 2000) states that the impacts of poor person-job match are immense, as both the effectiveness of the organization and the individual worker is likely to suffer.

According to (Peterson, 1998) the main causes of stress within the workplace are management issues, such as discord with management and unresolved health and safety issues. (Gandham, 2000) proposed that job requires a clear design and purpose with periodic assessment of the design and the worker. This will identify training and development of needs, assess employ workload and productivity, investigate ergonomic and environmental aspects and examine general health and safety. (Anthony et al, 1993); (Terra, 1995) state that considerable research has confirmed that worker’s health is influenced by the quality of job design. However the design of the job has changed minimally, despite the dramatic move towards the current, highly competitive and technologically powered marketplace.

Employer liability originates in common law. Here, employers are seen to owe a duty of care to their employees. This requires the provision of a safe working environment and their protection from foreseeable risks. The management of Health and Safety at Work Regulations (1999) requires the employers to carry out regular assessment of health and safety risks in the workplace. Such assessments refer not only to physical hazards but also to risks around work-related stress. Manual material handling is one of
the major health and safety hazards in industry. According to (Ali Dormohammadi et al, 2012) the bad effect of manual material handling can be prevented through proper engineering and ergonomic intervention.

(Ali Dormohammadi et al, 2012) conducted an interventional study among the workers of tile manufacturing industry in Hamadan, Iran, to assess the risk factors related to load lifting and identify the high risk jobs, using MAC method and NIOSH lifting equation. The NIOSH lifting equation assessment result, after engineering ergonomic intervention, revealed that the risk levels in all units, that is sanding, glazing, furnace and packing ones, declined from high risk (level 3) to average level (level 2). The result of MAC method assessment of the engineering, ergonomic intervention also demonstrated that the risk levels of load lifting in sanding unit reduced from high (level 3) to low (level 1), and the risk levels of load lifting in glazing, furnace and packing units reduced from high risk level of 3 to the average of 2. The result reveals that after the ergonomic intervention there was a significant reduction in musculoskeletal disorders especially back pain.

According to safety experts, unsafe behaviors are the leading contributors to accidents and injuries in the workplace. According to expert opinion unsafe behavior amount for 80% of the workplace accidents and injuries (Caruso et. al. 2004; Kathryn & Hari, 1998). Therefore focusing only on the physical environment will solve only 20% of the problem. Dr. Leslie Hart, an eminent educator states that when a person is in a negative emotional state, such as feeling nervous, angry, depressed, or stressed out in any way his/her brain works less effectively. This process was labeled ‘Downshifting’ by Dr. Lesli Hart. In a downshifted state, employee’s intellectual, psychological and behavioral responses deteriorate, affects employee performance and vulnerability to accidents and injuries and they become clumsy and awkward in their movements.

Work stress is viewed world-wide as a major challenge to workers health and the healthiness of the organization (ILO, 1986, 1992). Workers who are stressed are also more likely to be unhealthy, poorly motivated, less productive and less safe at work. As health is not merely the absence of disease or infirmity, but a positive state of complete physical, mental and social well-being (WHO, 1996), a healthy working environment is one in which there is not only an absence of harmful conditions, but an abundance of health promoting ones.
4.8 THE LEGAL FRAMEWORK

The UK Health and Safety Executive (HSE) has produced management standards that are intended to help employers both assess, and take specific measures to control, the risks of work-related stress. Importantly, the HSE has the enforcement powers necessary to ensure that employers comply with their obligations under health and safety legislation. If employers do not comply with their duties, there are a variety of enforcement options available. Certainly, cases can be pursued through the courts, in which case employers face criminal prosecution, imprisonment or unlimited fines.

The Health and Safety at Work Act 1974 requires employers to take effective measures to control the risks of stress-related ill-health arising from their work activities. The Act requires employers to ensure the health, safety and welfare of employees whilst at work, and this includes their mental as well as their physical health. Work-related stress is here considered to be a health and safety issue like any other workplace hazard.

The Management of Health and Safety at Work Regulations 1999 requires employers to carry out regular assessment of health and safety risks in the workplace. Such assessments refer not only to physical hazards, but also to risks around work-related stress. Changes to Health and Safety at work etc. Act (1974), Section 69 of the Enterprise and Regulatory Reform Act 2113 (ERRA) came into effect in October 2013 by order of the Secretary of State amending section 47 of the Health and Safety at Work etc. Act 1974 removing general right to claim for injury linked to a breach of legislation.

The Work Health and Safety Act 2011 (WHS Act – Queensland) provides a framework to protect the health, safety and welfare of all workers at work. It also protects the health and safety of all other people who might be affected by the work. All workers are protected by the WHS Act. This includes employees, contractors, subcontractors, outworkers, apprentices and trainees, work experience students, volunteers and employers who perform work. The WHS Act also provides protection for the general public so that their health and safety is not placed at risk by work activities. The WHS Act places the primary health and safety duty on a person conducting a business or undertaking (PCBU). The PCBU must ensure so far as is reasonably practicable, the health and safety of workers at the workplace. Duties are also placed on officers of a PCBU, workers and other persons at a workplace.
Occupational Safety and Health (OSH) is concerned with preserving and protecting human and facility resources in the workplace (Friend and Khon, 2007). The field of OSH has undergone significant change over the past two decades. Some of these reasons are: technological changes that have introduced new hazards in the workplace; proliferation of safety and health legislation and corresponding regulation; increased pressure from regulatory agencies; realization by executives that workers in a safe and healthy workplace are typically more productive; increased pressure from environmental groups; corporate social responsibility and increased pressure from labour organizations’ and employees in general (Goetsch, 2010, Reese, 2009).

In India the Factories act, 1948 is enacted for occupational safety and health and welfare of the workers at the workplaces. The provisions of the act relate to i) Health ii) Safety iii) Welfare facilities iv) Working hours. On 5th Feb 2009, the Union cabinet of India has approved the national policy on Safety, Health and Environment at work place to address the issues of securing health and safety of workers in the country.

The Department of Factories and Boilers, Government of Kerala has formed various rules, known as Kerala Factory rules 1951, Under Factories act 1948 for ensuring safety, health and welfare of the workers.

National Safety Council (NSC) was set up by Ministry of Labour, Government of India (GOI) on 4th March 1966 to generate, develop and sustain voluntary movement on safety, health and environment at the national level. The various activities of NSC include organizing and conducting specialized training courses, conferences, seminars and workshops, conducting consultancy studies such as safety audits, hazard evaluation, risk assessment, designing and developing HSE promotional materials etc.