

Causes and Prevention of Occupational Stress

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Abstract: Occupational stress can lead to one's physical or mental state in response to workplace that pose a challenge to that employee. Causes of occupational stress include environments, organizational climate, and a conflict arises from the job demands of the employees. Physical symptoms of stress include fatigue, increased blood pressure, rapid heart rate, dizziness, headaches, jaw pain, back pain, inability to concentrate and confusion, immunosuppression and chronic pain. Psychologic disorders may lead to poor work performance, higher absenteeism, less work productivity even injury. Stressful working conditions can lead to behavioral, physical, and psychological strains. Adverse health effects include psychological disorders, cardiovascular disease, gastrointestinal disease, diabetes, hypertension, weak immune system, increased risk of occupational injury and health service utilization. Interventions to eliminate or reduce the occupational stress should be both at organizational and individual levels. National Institute of Occupational Safety and Health (NIOSH) guidelines on organizational change to prevent occupational stress is useful.

Keywords: Occupational stress, Employees stress, Prevention, Stress management.

I. Introduction

Occupational or workplace stress can be defined as the change in one's physical or mental state in response to workplace that pose an appraised challenge or threat to that employee [1]. Stress has been defined as the change in one's physical or mental state in response to situations (stressors) that pose challenge or threat [2,3]. The human body has a natural chemical response to a threat or demand, commonly known as "flight or fight reaction, which includes the release of adrenalin. Once the threat or demand is over the body can return to its natural state. A stressor is an event or set of conditions that cause a stress response. Stress is the body's physiological response to the stressor, and Strain is the body's longer-term reaction to chronic stress [4]. Stress is divided into two categories: eustress also known as a good stress and distress is the stress reactions to those stressors appraised as being negative [5]. In general individuals will have a cognitive, behavioral, emotional, and physical response to both eustress and distress [6]. Various sources of stress include toxic work environment, negative work load, isolation, types of working hours, role conflict & role ambiguity, lack of autonomy, difficult relationship with coworkers, managerial bullying, harassment and organizational climate (environments) [1]. Stress can also occur when a conflict arises from the job demands of the employees itself [7]. Frequent physical symptoms of acute stress include fatigue, increased blood pressure (temporarily), rapid heart rate, dizziness, headaches, jaw pain, back pain, inability to concentrate and confusion, heart disease, hypoadrenia, immunosuppression, and chronic pain [1]. Administrative interventions include (a) altering the working conditions (b) workers to improve his or her transaction with the environment and (c) to identify the stressful relationship between the individual or group and the work setting [8-10]. A combination of organizational change and stress management is often the most useful approach for preventing stress at work [11]. van Dessel and colleagues advocate non-pharmacological interventions for somatoform disorders and medically unexplained physical symptoms (MUPS) in adults [12]. The paper reviews the current literature, causes and prevention of occupational stress.

II. Type Of Stress Models

Workplace stress results from the complex interactions between a large system of interrelated variables, there are several psychological theories and models that address occupational stress [13,14].

Fit model is relatively comprehensive and clearly places much emphasis on the individual's subjective interaction with the environment. Other models focus more on interactions with the work environment in an effort to understand the stress response [15]. This model suggests that the match between a person and their work environment is key in influencing their health. For healthy conditions, it is necessary that employees' attitudes, skills, abilities and resources match the demands of their job, and that work environments should meet workers' needs, knowledge, and skills potential. Lack of fit in either in this domain can cause problems, and the greater the gap or misfit (either subjective or objective) between the person and their environment, the greater the strain

as demands exceed abilities, and need exceeds supply. These strains can relate to health related issues, lower productivity, and other work problems. Defense mechanisms, such as denial, reappraisal of needs, and coping, also operate in model, to try and reduce subjective misfit [14].

Job model. The model “focuses on the important aspects of job characteristics, such as skill variety, task identity, task significance, autonomy, and feedback. These characteristics are proposed to lead to ‘critical psychological states’ of experienced meaningfulness, and experienced responsibility and knowledge of outcomes. It is proposed that positive or negative work characteristics give rise to mental states which lead to corresponding cognitive and behavioral outcomes, e.g. motivation, satisfaction, absenteeism, etc. In conjunction with the model Hackman and Oldham (1980) developed the Job Diagnostic Survey, a questionnaire for job analysis, which implies key types of job-redesign including combining tasks, creating feedback method, job enrichment, etc.” [14].

Stress model. The model looks at behaviors as a susceptibility burden together with stress from life experiences [16]. It is useful to distinguish stressful job conditions or stressors from an individual’s reactions or strains [17]. Strains can be mental, physical or emotional. Occupational stress can occur when there is a discrepancy between the demands of the environment/workplace and an individual’s ability to carry out and compete these demands [11,18]. Often a stressor can lead the body to have a physiological reaction than can strain a person physically as well as mentally. A variety of factors contribute to workplace stress such as excessive workload, isolation, extensive hours worked, toxic work environments, lack of autonomy, difficult relationships, among coworkers and management, management bullying, harassment and lack of opportunities of motivation to advancement in one’s skill level [1].

Job demand resource model. This model posits that strain are a response to imbalance between demands of one’s job and the resources he or she has to deal with those demands [19].

Effort reward imbalance model (ERI). The model focuses on the reciprocal relationship between efforts and rewards at work. “more specifically, the ERI Model claims that work characterized by both high efforts and low rewards represents a reciprocity deficit between high ‘costs’ and low ‘gains’, which could elicit negative emotions in exposed employees. The accompanying feeling may cause sustained strain reactions. So, working hard without receiving adequate appreciation or being treated fairly are examples of a stressful effort-reward imbalance. It is assumed that employees characterized by a motivational pattern of excessive job-related commitment and a high need for approval (i.e. over commitment) will respond with more strain reactions to an effort-reward imbalance, in comparison with less over committed people” [20].

No model is comprehensive or capable of explaining the stress experience with great accuracy. Despite this situation, a great deal can still be said regarding specific workplace and environmental conditions that produce stress, the effects of stress on the individual and the organization, and methods that may control, or alleviate stress in the work setting [15].

III. Etiology And Epidemiology

Stress is derived from the Latin word “strictus” that translates into taut, meaning stiffly strung [21]. Stress comes from any situation or circumstances that require behavioral adjustment. Any change, either good or bad, is stressful, and whether it’s a positive or negative change, psychological response is the same”. The sensation and perception of stress requires the use of our body’s energy and defensive resources [22]. Three levels of stress are acute stress, episodic stress, and chronic stress. Each level of stress has associated emotional and physiological symptoms.

Acute stress occurs when new demands, pressure, and expectations are placed on an individual and these demands place their arousal levels above their threshold of adaptability. These demands can be in the form of receiving unrealistic work demands, unexpected meetings that thwart attempts to get work completed, and other situations that might cause frustration but generally last a short period of time. Symptoms of acute stress include emotional disturbances such as increased anxiety, worry, frustration, and hostility [22]. With acute stress there is clear onset and offset of symptoms [3].

Episodic stress includes the criteria for acute stress; however, the stress is experienced more frequently and consistently-in multiple episodes. The person who experiences episodic stress will tend to exhibit aggressiveness, low tolerance, impatience, and a sense of time urgency. Along with the symptoms stated in the acute stress, persons experiencing episodic stress are at risk for heart disease, chest pain, asthma, hypertension, and persistent headaches [22].

Chronic stress is characterized by the accumulation of stressors that persist and are long-standing. Chronic stress is associated with family problems, poverty, long term illness [22], and job strain, is described a three stage general pattern of physical responses as a result of chronic stressors[23,24].

Stage 1 is the Alarm reaction stage. This stage is a generally short acting where the individual is physiologically prepared to ward off the stressors. The body natural energy and defensive resources are activated through the hypothalamus, which communicates to the sympathetic nervous system to activate the adrenal functions, which increase heart rate, increased blood flow to muscles, heart, and brain, and prepare the individual for *fight or flight*. The problem occurs when the body is in a prolonged state of distress because the stressor has not been removed but the body's resources are becoming depleted [1].

Stage 2-Resistance, is the stage where body adapts to the continuing presence of the stressor, because of the parasympathetic intervention to stabilize bodily functions and decrease of adrenal output [3,5],

Stage 3-exhaustion is the characterized by a resurgence of the alarm stage will last for a very short time while powerful response from the autonomic system attempts to regulate the hormone response. During this stage the body's vital resources have been depleted from the immune system (immunosuppressant), leaving the individual to vulnerable to illness and even death. In essence, the body has experienced hypoadrenia-a state in which body does not have the capacity to adapt to stress. This can lead to irritable bowel syndrome, hyperinsulinism, high blood pressure, heart attacks, chronic fatigue, psychosis, tiredness, and symptoms of depression [3].

Epidemiology. Work-related stress has aroused growing interest across Europe in recent years due to use of new information and communication technologies, growing diversity in the workplace and an increased mental workload[25]. In the pursuit of organizational excellence, sometimes managers, officers, and workers need to work under high stressful circumstances, as a result they have been found to be experiencing high stress in the manufacturing sector[26]. There are many challenges in the work environments, such as, competition, continuous technological development, lack of space, lack of time, more uncontrollable factors, conflicting demands from organizational stakeholders[27], increased use of participatory management and computerization, greater uncertainty, and others have resulted in higher occupational stress[28].

Distress is a prevalent and costly problem in today's workplace. About one third of workers report high levels of distress, 20-30% of workers in different sectors of the European Union reported in 2007 that they believed work-related stress was potentially affecting their health[11,29]. Three quarters of employees believe the work has more on-the job stress than a generation ago[30]. In Great Britain, a sixth of the workforce experiences occupational stress every year[29]. Evidence also suggests that distress is the major cause of turnover in organizations[11]. With continued distress at workplace, workers will develop psychological and physiological dysfunctions and decreased motivation in excelling in their position[1]. Increased levels of job stress are determined by the awareness of having little control but lots of demands in the work area[31]. Occupational stress and its sequelae represent the majority of work-related illnesses causing missed work days[29]. Those in protective services, transportation and materials moving, building grounds cleaning and maintenance, and healthcare are more susceptible to both work injuries and illnesses, as well as work-related stress[32].

IV. Causes Of Stress

Job stress results from various interactions of the worker and the environment of the work they perform their duties. Location, gender, environment and other factors contribute to the buildup of stress. Stress results from the interactions the worker and the conditions of work. Views differ on the importance of worker characteristics versus working conditions as the primary cause of job stress [1]. In general, occupational stress is caused by a mismatch between perceived effort and perceived reward, and/or a sense of low control in a job with demands. Low social support at work and job insecurity can also increase occupational stress [29]. Psychological stressors are a major cause of occupational stress [33].

Working conditions. The importance of individual differences cannot be ignored, scientific evidence suggest that certain working conditions are stressful to most people. Such evidence argues for a greater emphasis on working conditions as the key source of job stress, and for job redesign as a primary prevention strategy [1]. Large surveys of working conditions, including conditions recognized as risk factors for job stress, were conducted in member states of the European Union in 1990, 1995, and 2000. Results showed a time trend suggesting an increase in work intensity. In 1990, the percentage of workers reporting that they worked at high speeds at least one-quarter of their working time was 48%, increasing to 54 % in 1995 and to 56 % in

2000. Similarly, 50% of workers reported they work against tight deadlines at least one-fourth of their working time in 1990, increasing to 56% in 1995 and 60% in 2000 [34].

Workload. In an occupational setting, dealing with workload can be stressful and serve as a stressor for employees, that include (a) Quantitative workload or overload—having more work to do than can be accomplished comfortably (b) Qualitative workload—performing task that is too difficult (c) Underload—having work that fails to use a worker's skills and abilities [35]. As a work demand, workload is also relevant to the job demands-resources model of stress that suggests that jobs are stressful when (e.g. workload) exceed the individual's resources to deal with them [36].

Extended working hours. A substantial percentage of Americans work very long hours. By one estimate, more than 26% of men and more than 11% of women worked 50 hours per week or more in 2000. These figures represent a considerable increase over the previous three decades, especially for women. According to the Department of Labor, there have been a rise in increasing amount of hours in the work place by employed women, an increase in extended work week (>40 hours) by men, and a considerable increase in combined working hours among working couples, particularly couples with young children. [37,38].

Position in the workplace. A person's position or status in the workplace can also affect levels of stress. Workplace stress has the potential to affect employees of all categories, those who have very little influence to those who make major decisions for the company. However, less powerful employees (that is, those who have less control over their jobs) are more likely to suffer stress than powerful workers. Managers as well as other kinds of workers are vulnerable to work overload [39].

Financial factors that employees are facing in the 21st century have been linked to increased stress levels. Researchers and social commentators have pointed out that the computer and communications revolutions have made companies more efficient and productive than ever before. This boon in productivity however has caused higher expectations and greater completion, putting more stress on employee. Financial factors that may lead to workplace include (a) pressure from investors, who can quickly withdraw their money from company stocks (b) lack of trade and professional unions in the workplace (c) intercompany rivalries caused by the efforts of companies to compete globally and (d) willingness of companies to swiftly lay off workers to cope with changing business environments [40].

Narcissism and psychopathy in the work place also lead to stress. Thomas suggests that there tends to be higher level of stress with people who work or interact with a narcissist, which in turn increases absenteeism and staff turnover [41]. Boddy finds the same dynamic where there is corporate psychopath in the organization [42].

Workplace conflict and Bullying. Interpersonal conflict among people at work has been shown to be one of the most frequently noted stressors for employees [43]. Conflict has been noted to be an indicator of the indicator of the broader concept of workplace harassment [44]. Bullying in the workplace can also contribute to stress. This can be divided into five different categories, that include threat to professional status, threat to personal status, isolation, excess work and destabilization i.e. lack of credit for work, meaningless tasks etc. [1]. This effect can create a hostile work environment for the employees that, which in turn, can affect their work ethic and contribution to the organization [45].

Sexual harassment. Women are more likely than men to experience sexual harassment, especially for those working in traditionally masculine occupations. In addition, a study indicated that sexual harassment negatively affects workers' psychology well-being [46]. Another study found that level of harassment at workplaces lead to differences in performance of work related tasks. High levels of harassment were related to the worst outcomes, and no harassment was related to least negative outcomes. In other words, women who had experienced a higher level of harassment were more likely to perform poorly at workplaces [47].

Side effects of stress. Stressful working conditions can lead to three types of strains: [48,49].
a) Behavioral (e.g., absenteeism or poor performance). (b) Physical symptoms that may occur because of occupational stress include fatigue, headache, upset stomach, muscular aches and pains, weight gain or loss, chronic illness, and sleep disturbances (c) Psychological and behavioral problems that may develop include anxiety, irritability, alcohol and drug use, feeling powerless and low morale.
Those in blue-collar or manual labor jobs are more likely to develop heart disease compared to those in white collar jobs [50]. Prolonged occupational stress can lead to occupational burnout, and it can also disrupt relationships [29,33]. Occupational stress has negative effects for organizations and employers. Occupational

stress is the cause of approximately 40% of turnover and 50% of workplace absences. The annual cost of occupational stress and its effects in US is estimated to be over 60 billion to employers and 250 to 300 billion to the economy [33].

V. Stress, Health And Disease

Stress affects health and may lead to disease. There have been significant research efforts attempting to clarify the links between stress and disease. While there is good epidemiologic evidence associating occupational stress with a number of disease states, the pathophysiological mechanisms often remain obscure, and in most situations, a true causal relationship has not been demonstrated [15]. There are ongoing research efforts to establish the physiologic pathways through which stress may produce disease. Neurologic, immunologic, and endocrine mediators of disease have been established. The hypothalamic-pituitary axis, the autonomic nervous system and catecholamine response are often cited as stress sensitive systems [15]. Frequent adverse health effects include psychological disorders, cardiovascular disease, and gastrointestinal disease and, high levels of health service utilization etc.

Psychological disorders. Stress related disorders encompass a broad array of conditions, including psychological disorders (e.g., depression, anxiety, post-traumatic stress disorder) and other types of emotional strain (e.g. dissatisfaction, fatigue, tension, etc), maladaptive behaviors (aggression, substance abuse), and cognitive impairment (e.g., concentration and memory problems). In turn, these conditions may lead to poor work performance, higher absenteeism, less work productivity or even injury [1,29]. If untreated consistently high stress can become a chronic condition, which can exacerbate existing mental health conditions and chronic physical conditions (diabetes, hypertension, weak immune system). Consistently high levels of stress increase the risk of occupational injury. A study of light/short haul truckers, a group that experiences high rates of injury and mental health issues, found that frequent stress increased the odds of occupational injury by 350% [32].

Cardiovascular disease. Job stress is also associated with various biological reactions that may lead ultimately to compromised health, such as cardiovascular disease [29,51] or in extreme cases death. Due to high pressure and demands in the work place the demands have been shown to be correlated with increased rates of heart attack, hypertension and other disorders. In New York, Los Angeles, and London, among other municipalities, the relationship between job stress and heart attacks is acknowledged [46].

Gastrointestinal disease. Peptic ulcer disease has historically been associated with stress, although there is limited recent epidemiologic information in this area. The identification of *Helicobacter pylori* as a causative factor in peptic ulcer disease has not eliminated consideration of stress as a possible factor [52]. Other occupations that involve responsibility for others-physicians and air traffic controllers- are also associated with high rates of peptic ulcer disease. Gastric acid secretion in response to catecholamine stimulation may also be a contributing factor, although there is conflicting evidence on its significance. Stress may have an impact on wound healing as well as immune function. The etiologic importance of these factors in ulcer disease should be further explored [52].

Health service utilization. High levels of stress are associated with substantial increases in health service utilization [11]. Workers who report experiencing stress at work also show excessive health care utilization. In a 1998 study of 46,000 workers, health care costs were nearly 50% greater for workers reporting high levels of stress in comparison to "low risk" workers. The increment rose to nearly 150%, increase of more than \$1,700 per person annually, for workers reporting high levels of stress and depression. Additionally, periods of disability due to job stress tend to be much longer than disability for other occupational stress injuries and illness [53,54].

Physiological reaction. Researchers have been studying how stress affects the cardiovascular system, as well as how work stress can lead to hypertension and coronary heart disease. These diseases, along with stress induced illnesses tend to be quite common in American work-places [40]. There are four main physiological reactions to stress [55].

- Blood is shunted to the brain and large muscle groups, and away from extremities, skin, and the organs that are not currently serving the body.
- An area near the brain stem, known as the reticular activating system, goes to work, causing a state of keen alertness as well as sharpening of hearing and vision.
- Energy providing compounds of glucose and fatty acids are released into the blood stream.
- The immune and digestive systems are temporarily shut down

VI. Prevention

A combination of organizational change and stress management is often the most useful approach for preventing stress at work [11], Both organization and employees can employ strategies at organizational and individual levels[29].

Organizational level.NIOSH offers some general guidelines on organizational change to prevent occupational stress:(i)Adjust workload to workers' abilities(ii)Define role and responsibilities clearly(iii)Design jobs that are meaningful, stimulating, and allow workers to use their abilities(iv)Promote interaction among workers(v)Facilitate worker participation in decisions regarding their tasks and how their job is accomplished and(vi)Establish good communication about workplace issues[56].

Individual level.Most stress management approaches focus on the individual attempt to teach coping skills for management or reduction of stress [15].

Stress management techniques include:(a) Biofeedback (b)Deep breathing exercises(c)Exercise/physical activity(d)Meditation(e) Progressive relaxation exercise(f) Stress- inoculation training and(h)Yoga[57].

Stress coping skills includes:* Assertiveness training * Conflict resolution * Decision making and problem - solving skills * Goal and priority setting and * Time management [57].

VII. Conclusion

Stress is an integral part of human life. Stress can occur due to workplace environments, and organizational climate. Long term stress may lead to physical, psychological disorders, and negative health effects that include cardiovascular disease, gastrointestinal disease and health service utilization. Stress prevention should be at organizational and individual level.

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