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Effect of Progressive Muscle Relaxation Technique on Stress among Computer Professionals

Arun. M
Senior Lecturer, Psychiatric Department,
K.V.M. College of Nursing, Kerala, India

ABSTRACT

This study investigated the Effect of progressive muscle relaxation technique on stress among computer professionals working in selected private companies, Ernakulam district. The objectives of the study were to assess the level of stress experienced by computer professionals, to assess the effect of progressive muscle relaxation technique on stress among computer professionals and to find out the association of pre-test level of stress experienced by the computer professionals with their selected demographic variables. The study is based on Roy`s Adaptation Model. The research design selected for the study is - One group pretest-posttest pre-experimental research design. The present study was done in the selected private company in Ernakulam district, among 60 computer professionals and consecutive sampling technique was used to select the sample. Data was collected with the help of work stress scale. The progressive muscle relaxation technique was demonstrated to the participants in a group by the investigator and the participants were asked to practice progressive muscle relaxation for a period of two weeks, 30 mins daily under the supervision of the investigator, followed by the assessment of stress level with same tools after two weeks. The study revealed that there is a significant reduction in the stress level of subjects after the practice of progressive muscle relaxation.

Keyword: Effect, Progressive Muscle Relaxation (PMR), Stress and Computer Professionals.

INTRODUCTION

Mental Health is "The successful adaptation to stressors from the internal or external environment, evidenced by thoughts, feelings, and behaviour that are age-appropriate and congruent with local and cultural norms."[1]

Mental illness is defined as "maladaptive responses to stressors from the internal or external environment, evidenced by thoughts, feelings, and behaviours that are incongruent with the local and cultural norms and interfere with the individual's social, occupational, and/or physical functioning."[1]

Stress is a part of our everyday lives. It can be positive or negative, but it cannot be eliminated. Keeping stress at a manageable level is a lifelong process.[1] Stress, frequently described as 'the black plague of the eighties or the modern epidemic' has become an important feature and major problem of everyday life, threatening the individual, organization and societal health[2].

The foundation of the modern concept of stress can be traced back to the assertion that maintenance of life is critically dependent on keeping the internal environment constant in the face of a changing external environment and that physical challenges to the integrity of the organism elicited responses to deal with those changes[3].

In the present lifestyle, stress and anxiety have become part and parcel of everyone's day to day life. The emphasis is on getting many things done as quickly and efficiently as possible, even at the sacrifice of one's physical and emotional health. With the continuous introduction of new technology comes the expectation that projects should be completed even more quickly and more efficiently, and it seems that stress levels may only continue to increase, especially in the workplace[4].

Indeed, stress has found a firm place in our modern lexicon as iPods; CD's and carbon footprint. People use the term casually to describe a wide range of aches and pains resulting from our hectic pace of work and domestic life. "I feel really stressed," someone says to describe a vague yet often acute sense of disquiet. "She's under a lot of stress", people say when trying to understand a colleague's irritability. "It's a high-stress job", someone says, awarding an odd sort of prestige to his or her occupation. But to

those whose ability to cope with day-to-day matters is at crisis point, the concept of stress is no longer a casual one; for them, stress can have significant health consequences[5].

Job stress may be caused by a complex set of reasons.[6]

Job Insecurity: Organized workplaces are going through metamorphic changes under intense economic transformations and consequent pressures. Reorganizations, takeovers, mergers, downsizing and other changes have become major stressors for employees, as companies try to live up to the competition to survive.[6]

High Demand for Performance: Unrealistic expectations, especially in the time of corporate reorganizations, which, sometimes, puts unhealthy and unreasonable pressures on the employee, can be a tremendous source of stress and suffering. Increased workload, extremely long hours and intense pressure to perform at peak levels, all the time, for the same pay, can actually leave an employee's physically and emotionally drained. Excessive travel and too much time away from family also contribute to an employee`s stressors.[6]

Technology: The expansion of technology (computers, pagers, cell phones, fax machines and the Internet) has resulted in heightened expectations for productivity, speed, and efficiency, increasing pressure on the individual worker to constantly operate at peak performance levels. Workers working with heavy machinery are under constant remain alert. In this case, both the worker and their family members live under constant mental stress. There is also the constant pressure to keep up with technological breakthroughs and improvisations, forcing employees to learn about new software all the times.[6]

Workplace Culture Adjusting to the workplace culture, whether in a new company or not, can be intensely stressful. Making oneself adapt to the various aspects of workplace culture such as communication patterns, hierarchy, dress code if any, workspace and most importantly working and behavioral patterns of the boss as well as the co-workers can be a lesson of life. Maladjustment to workplace cultures may lead to subtle conflicts with colleagues or even with superiors. In many cases, office politics or gossip can be major inducers6

Personal or Family Problems: Employees going through personal or family problems tend to carry their worries and anxieties to the workplace. When one is in a depressed mood, his unfocused attention or lack of motivation affects his ability to carry out job responsibilities[6]

People at work are exposed to high quantitative as well as high qualitative demands and too hard compensation caused by a global economy, multinational companies, and increased demands for efficiency. Most adults spend a large part of their life at the workplace. As a consequence, conditions at the workplace are likely to be of considerable importance for peoples' mental health as well as physical wellbeing. Work has a central role in people's lives, and a stimulating job may contribute to a more meaningful life, to a higher sense of self-esteem, to social ties and economic independence, conditions that characterize positive human health. Work also creates a time structure in daily life and is a major determinant of the individual's socioeconomic status. Negative psychosocial conditions at work, such as low job satisfaction and lack of influence or control, are known to be associated with health risks[7].

'Techno stress' has been suggested as a term to describe the state of mental and physical arousal observed in certain employees who are heavily dependent on computers in their work for a long period of time which results in mental fatigue, headache, restlessness, irritation, and depression[7].

Stress often carries a negative connotation with it; however, not all stress is the result of a bad situation and not all stress involves negative outcomes[8]. When an upcoming test or major project deadline approaches, stress can keep an individual on his or her toes, helping him or her work harder and respond more quickly.

BACKGROUND OF THE PROBLEM

There is a rapid technological transformation occurring in both work and social life. The consequences of information technology such as mobile, telephones, computers and electronic networks have been looked upon as the key to solving the problems of the industrialized world. Numerous studies have shown that the great majority of computerization projects fail to meet their deadlines with the originally specified functionality mainly because human factors are not sufficiently taken into account during the planning and implementation phase of the project. Increasingly, employees in modern office environments report suffering from psychosomatic symptoms.

Studies of employees in high-technology industries suggest that psychosomatic symptoms are related in part to high perceived mental demands in combination with lack of sufficient skills. Employees with symptoms more commonly report that they are not sufficiently recognized by their employer, as compared with non-symptomatic peers. Low perceived organizational efficiency correlates with high mental stress among employees[9]. In a controlled stress management program, Arnetz observed lower mental stress levels among participants, as compared with controls, and lower physiological arousal, measured as circulating levels of prolactin and suggested that organizational re-engineering and the introduction of information technologies constitute potential

stressors challenging employees' cognitive resources. It is predicted that psychosomatic syndromes in the workplace will most likely increase in the foreseeable future due to the rapid changes currently transcending working life[9].

The deleterious effects of occupational stress on worker's health and well-being have been described in numerous reports for a wide range of workgroups. Work overload, deadline pressures, role stressors, underutilization of abilities, and physical discomfort have been identified as work factors associated with increased stress symptom reporting[10].

Work-related stress is the second most commonly reported work-related ill- a health problem, with just over half a million workers expressing they have experienced stress at a level that makes them ill. Stress, depression, and anxiety accounted for an estimated loss of 12.8 million working days in 2004-2005. Work-related stress not only causes high levels of sickness related absence but also contributes to a high turnover of staff and reduced performance in organizations[4].

These excessive pressures in the workplace are very costly to business. In 2004, the Chartered Institute of Personnel found for the first time that workplace stress accounted for the largest amount of long-term sickness absence in the UK economy than from any other cause. If some of the other stress-related categories are added (poor workplace morale, the impact of long hours, personal problems) it was the most significant bottom line cost to UK[5]. The estimates by the Sainsbury Centre (2007) for Mental Health and others of the costs of stress-related absenteeism and presenters (employees being present at work but not contributing to the bottom-line) range from £2 billion to over £20 billion depending on whether they are direct (e.g. job absence) and/or indirect costs (e.g. lack of added value to products and services). In addition, 40% of incapacity benefit from work in the UK is due to mental ill health and stress in the workplace, which amounts to approximately £5b per annum[5].

The stress an individual experience is a direct result of the physiological responses of the body to overwhelming physical or psychological demands[11]. For example, the alarm reaction is defined as the body's physical response to the presence of a threat. Muscles tense and the heart rate, along with breathing, increase. The hormones released as part of the fight-or-flight response prepare the body to respond to the existing threat. The second physiological mechanism is the adaptation phase in which the body recognizes that a threat no longer exists and returns to a normal physical state. When an individual fails to progress to the adaptation phase or experiences repeated alarm reactions, he or she may begin to experience problems with his or her physical and mental health, relationships, and professional life[11].

Short-lived or infrequent episodes of stress pose little risk. But when stressful situations go unresolved, the body is kept in a constant state of activation, which increases the rate of wear and tears to biological systems. Ultimately, fatigue or damage results and the ability of the body to repair and defend itself can become seriously compromised. As a result, the risk of injury or disease escalates [11].

In the past 20 years, many studies have looked at the relationship between job stress and a variety of ailments. Mood and sleep disturbances, upset stomach, headache and disturbed relationships with family and friends are examples of stress-related problems that are quick to develop and are commonly seen in these studies. These early signs of job stress are usually easy to recognize. But the effects of job stress on chronic disease are more difficult to see because chronic diseases take a long time to develop and can be influenced by many factors other than stress. Nonetheless, the evidence is rapidly accumulating to suggest that stress plays an important role in several types of chronic health problems- especially cardiovascular disease, musculoskeletal disorders and psychological disorders[4].

The organizations also should have a responsibility to manage the pressures currently experienced by their employees in a changing workplace culture. For the prevention and management of stress at work, the following three approaches could provide a comprehensive strategic framework: primary (e.g. stress reduction), secondary (e.g. stress management) and tertiary prevention (e.g. employee assistance programs/workplace counseling)[2].

Primary prevention is concerned with taking action to modify or eliminate sources of stress inherent in the work environment and thereby reducing their negative impact on the individual. The focus of primary interventions is in adapting the environment to 'fit' the individual. Possible strategies to reduce workplace stress factors include: Redesigning the task, Redesigning the working environment, Establishing flexible work schedules, Encouraging participative management, Including the employee in career development, Analysing work roles and establishing goals, Providing social support and response, Building cohesive teams, Establishing fair employment policies and Sharing rewards[2, 12].

Secondary prevention is concerned with the prompt detection and management of experienced stress. This can be done by increasing awareness and improving the stress management skills of the individual through training and educative activities. Individual factors can alter or modify the way employees, exposed to workplace stress, perceive and react to their environment. Each individual has his or her own personal stress threshold, which is why some people thrive in a certain setting and others suffer[5]. Awareness activities and skills training programs, designed to improve relations techniques, cognitive coping skills and work/lifestyle modification skills (e.g. time management courses or assertiveness training), have an important part to play in extending the individual's physical and psychological resources[2, 12].

Progressive muscle relaxation is a simple exercise to manage stress. It is cost effective for the employers and enables the employees to control their stress perception. Progressive muscle relaxation is a method developed in the 1930s in which muscle

groups are tightened and then relaxed in succession. This method is based on the idea that mental relaxation will be a natural outcome of physical relaxation. Although muscle activity is involved, this technique requires no special skills or conditioning, and it can be learned by almost anyone. Progressive muscle relaxation is generally practiced for 10-20 minutes a day. With the relaxation response, practice and patience are required for maximum benefits [13].

Tertiary prevention is concerned with the treatment, rehabilitation and recovery process of individuals who have suffered, or are suffering, from serious ill health as a result of stress. Intervention at the tertiary level typically involves the provision of counseling services for employee problems in the work or personal domain. Such services are provided either by in-house counselors or outside agencies, which provide counseling, information and/or referral to appropriate treatment and support services. There is evidence to suggest that counseling is effective in improving the psychological well-being of employees and has considerable cost benefits[2].

The methods of stress management under an individual's control vary from highly specific techniques or general strategies. The individual methods include identifying personal stress signals, eliminating or modifying the stressor, practice methods of relaxation. Organizational methods of reducing and preventing stress include reducing stressful condition, practicing participative decision-making, providing emotional support to employees and participating in employee assistance programs[14].

NEED AND SIGNIFICANCE OF THE STUDY

Stress is a biological term for the consequences of the failure of a human to respond appropriately to emotional or physical threats to the organism, whether actual or imagined.[15]

Work-related stress is a relatively new phenomenon of modern lifestyles. The nature of work has gone through drastic changes over the last century and it is still changing at whirlwind speed.[6]

Stress is one of the biggest health issues at work today. Over half a million people have their physical or mental health damaged as a result of stress at work. In a computer world survey, 1478 information systems executives reported that they were experiencing higher levels of stress than ever before, primarily because of increased workload, mounting business demands and budgetary constraints[4].

Computers have reached nearly every corner of our lives, whose impacts are inevitably wide-spread and profound. The prolonged use of computers in the workplace has brought about the development a number of psychological health concerns and many individuals who work at a computer report a high level of work-related stress and it affects the mental health of an individual.[18]

Worldwide, approximately 90 million adults use computers regularly and it is estimated that 15%- 25% of computer users are already suffering from computer-related stress and its consequences. In India, nearly 6 million computer users have stress.[21]

Psychological stress has a direct impact on the person's wellbeing. It weakens the person's resources to come up with solutions or reassess the situation. It interferes with productivity, learning and interpersonal relationships. There is a resultant mental fatigue, headache, restlessness, irritation, moodiness, and difficulty in concentrating leading to decreased subjective well-being. If the stress increases, the individual becomes less and less able to handle even minor stress. The ability to interact with and understand other people is also disrupted. The individual exhausts his or her adaptive energy and becomes more susceptible to disease [16].

As an individual experiences stress, his or her performance at work may also suffer[8,11,17]. Days absent from work may increase while satisfaction with work decreases. Conflicts with employers and colleagues may become more frequent[19]. Counter work behaviors (CWB), or negative behaviors carried out in the workplace with the intent of hurting the organization and its members, is a behavior phenomenon noted in the research[20]. They stated that Counter Work Behavior is in response to workplace stressors that create negative emotional reactions. These symptoms and behaviors not only affect the individual himself or herself, but they also affect both the employer and colleagues, demonstrating that stress extends beyond the individual experiencing it[20].

In a perfect world, employers would be able to restructure the environment and eliminate stress for employees completely; however, this is not a perfect world. Workplace stressors are often due to individual factors relating to one's role in an organization or individual career development, relationships at work, and organizational climate[8,11]. Research has noted many types of interventions for workplace stress, ranging from corporate to individual interventions and individual counseling interventions to social interventions. National Institute for Occupational Safety and Health favors a combined approach with both organizational and individual interventions[4].

Counseling intervention for stress is often considered stress management training, which includes relaxation and cognitive-behavioral techniques, and has been found to be effective in promoting employee psychological health[2, 12]. Relaxation aims to help an individual relax physically and/or mentally, whereas cognitive behavioral techniques focus on changing negative thoughts and reinforcing positive coping skills[5].

a study conducted on the effectiveness of relaxation techniques on occupational stress in the United States found that work stress was the major contributing factor to absenteeism, disease, injury and lowered productivity. In general, stress management programs in the workplace that include relaxation therapies, exercise, and biofeedback have been shown to reduce the physiological

symptoms such as hypertension, and increase job satisfaction and job performance. Strategies to implement a successful stress management program include incorporating the coping activities into one's daily schedule, monitoring one's symptoms and stressors, and being realistic in setting up a schedule that is relevant and attainable. A short form of meditation, daily exercise program and the use of heart rate or thermal biofeedback can be helpful to a worker experiencing occupational stress[20].

The common problems noted among the I.T professionals were feeling constantly under strain, unable to enjoy daily activities, edgy & bad tempered, not satisfied with tasks, and not feeling in good health. Depressive features were less commonly reported. The rate of psychiatric morbidity (36%) was higher than that reported for the general population in India and suggested a need for health promotion activities in the IT sector[22].

In the Indian context especially, research has focused on investigating the efficacy of various existing interventions for e.g., relaxation. I.T field is a very hectic area where there are no specific scheduled work timings and the professionals can convert each second into rupees. So it is very difficult for them to choose any traditional stress relief techniques like yoga or meditation and practice that in a particular time especially early in the morning. In this case, the progressive muscle relaxation technique plays a significant role, it can be practiced in any situation either in sitting or lying down position.

Progressive muscle relaxation technique is a method of deep-muscle relaxation which is based on the premise that the body responds to anxiety-provoking thoughts and events with muscle tension. Each muscle group is tensed for 5 to 7 seconds and then relaxed for 20 to 30 seconds, during which time the individual concentrates on the difference in sensations between the two conditions. Soft, slow background music may facilitate relaxation.[1]

In the modern age, the computer is inseparable and stress also inseparable. However, stress management is needed as a boost to overcome the stressors and to lead a healthy life. The investigator, in his personal experience, has witnessed many patients seeking psychiatric consultation in order to manage their work-related stress. Majority of these patients were computer related professionals. Hence the investigator personally felt the need to implement some simple interventions which will help these patients to overcome their stress.

STATEMENT OF THE PROBLEM

A pre-experimental study to assess the effect of progressive muscle relaxation technique on stress among computer professionals working in a selected private company, Ernakulam district.

Objectives:

1. Assess the level of stress experienced by computer professionals
2. Assess the effect of progressive muscle relaxation technique on stress among computer professionals.
3. Find out the association of pre-test level of stress experienced by the computer professionals with selected demographic variables.

OPERATIONAL DEFINITION

Effect: Refers to the extent to which the progressive muscle relaxation technique has brought intended result in terms of the significant difference in pre and posttest stress scores which is measured by statistical measurements.

Progressive Muscle Relaxation (PMR): Progressive Muscle Relaxation (PMR) refers to a stress-reducing technique that involves the systematic tension and relaxing of specific muscle groups which will be demonstrated by the investigator and further practiced by the participants. (Appendix- 6)

Stress: Refers to the physical and psychological imbalance associated with workplace among computer professionals which will be measured using Work Stress Scale (WSS)[23] (Appendix- 5)

Computer professionals: Computer professionals are those qualified people working in front of a computer for more than 6 hours per day.

Hypotheses:

H_1: There is a significant level of stress experienced by computer professionals working in the selected private company.

H_2: There is significant level of difference in pre-test and post-test level of stress score among computer professionals (at 0.05 level of significance)

H_3: There is a significant association of pre-test level of stress score among computer professionals with their selected demographic variables.

CONCEPTUAL FRAMEWORK

Roy`s adaptation model:

Roy (1984) stated that the recipient of nursing care may be the person, a family, a group, a community, or a society. Each is considered by the nurse as a holistic adaptive system. According to Roy "a person is a bio-psycho-social being, in constant interaction with a changing environment". The person as a living system is wholly made up of parts or subsystems that function as unity for some purpose".[24]

The idea of an adaptive system combines the concepts of system and adaptation as follows.

System:

In her model, Roy conceptualizes the person as a holistic perspective. Individual aspects of parts act together to form a unified being. Additionally, on living systems, persons are in constant interaction with their environment. Between the system and the environment occurs an exchange of information, matter, and energy. Characteristics of a system include input, control process and feedback[24, 25].

In this study, the system was computer professionals and the environment was their work setting. Both will have constant interaction with each other.

Input:

The adaptive system has the input of stimuli and adaptation level, output as behavioral responses that serve as feedback, control process known as coping mechanisms.

Focal stimuli: The internal or external stimulus most immediately confronting the person, the object or event that attracts one's attention "a degree of change that precipitates adaptive behavior, stimulus most immediately confronting the person, the one to which he must make an adaptive response, stressor[24, 25].

Contextual stimuli: All other stimuli of the person's internal and external world that can be identified as having a positive or negative influence on the situation.

Residual stimuli: Internal (or) external factors having an indeterminate effect on the person's behavior that effect has not (or) cannot be validated. Environmental factors within (or) outside the person whose effects in the current situation are unclear, possible yet uncertain, influencing stimuli, includes beliefs, attitudes, experience (or) trails, knowledge level, strengths and/or limitations[24,25].

Demographic variables of the computer professionals such as age, sex, education, years of experience, type of placement (internal factors) and religion, marital status, area of residence, type of family, income (external factor) precipitate the coping mechanism of the computer professionals reflected either as adaptive or maladaptive responses. Because of internal and external factors interaction, most of the computer professionals will have stress and reduced coping abilities. Stress levels were assessed by work stress scale.

COPING MECHANISMS

Roy had used the term coping mechanism to describe control processes of the person as an adaptive system, which is called the "Regulator" and "Cognator".

Regulator subsystem: A regulator subsystem is a coping mechanism which response automatically through neural chemical endocrine processes. In this study, the researcher has not measured the Regulator subsystem[24,25].

Cognator subsystem: A cognator subsystem is a coping mechanism which response through complex perception and information processing through learning, judgment, and emotion. The maladaptive pattern of stress response alters both regulator and cognator subsystem. The changes in regulator subsystem can be noted as palpitation, shallow breathing, sweating, poor appetite, poor sleep pattern. The changes in cognator subsystem can be noted as reduced concentration, poor memory, irritability etc. There is an imbalance of regulator and cognator subsystem because of maladaptive stress response. It is balanced by practicing progressive muscle relaxation technique. Progressive muscle relaxation technique was given to the group of computer professionals by demonstration for 30 minutes. Progressive muscle relaxation technique is the coping mechanisms which help to reduce the level of stress among computer professionals.

EFFECTORS/ADAPTIVE MODES

Although cognator and regulator processes are essential to the adaptive responses of the person, these processes are not directly observable. The adaptive modes are the physiological self-concept, role function, and interdependence modes. By observing the person's behavior in relation to the adaptive modes, the nurse can identify adaptive or ineffective responses in relation to health & illness[24,25].

The four adaptive modes for assessment are as follows.

Physiological mode: The physiological mode represents a physical response to environmental stimuli and properly involves the regulator subsystem. The basic need of this mode is physiologic integrity comprised of the needs associated with oxygenation, nutrition, elimination, activity and rest, and protection. The complex processes of this mode are associated with all senses, fluids and electrolytes, neurological function and endocrine functions.

The adaptive responses in physiological mode are normal heartbeat, normal breathing pattern, maintaining normal sleep and appetite, in role function mode increased social interaction.

Role function mode: It involves behaviour based on a person's position in society. It is dependent on how a person interacts with others in a given situation.

The adaptive responses in role function mode are increased concentration, able to make decisions independently, job responsibilities, reduced level of anxiety, increased family, job satisfaction.

Self-concept mode: The self-concept mode relates to the basic need of psychic integrity. It is focused on the psychological and spiritual aspects of the person.

The adaptive response in self-concept mode is increased self-esteem and decreased the feeling of inadequacy.

Interdependent mode: Interdependent mode is where affection needs are met.

The adaptive response in interdependent mode is to maintain social integrity.

Output and feedback

Adaptive responses are those, which promotes the integrity of the person.

Practicing progressive muscle relaxation technique may increase the coping mechanisms which reflect in the reduction of stress that is assessed through Work Stress Scale[23]. Computer professionals with a moderate and severe level of stress will gain knowledge and ability to practice progressive muscle relaxation technique to reduce the level of stress under the guidance of researcher and it is followed regularly by the computer professionals. Those who are exhibiting a low level of stress also encouraged and motivated to practice progressive muscle relaxation technique continuously.

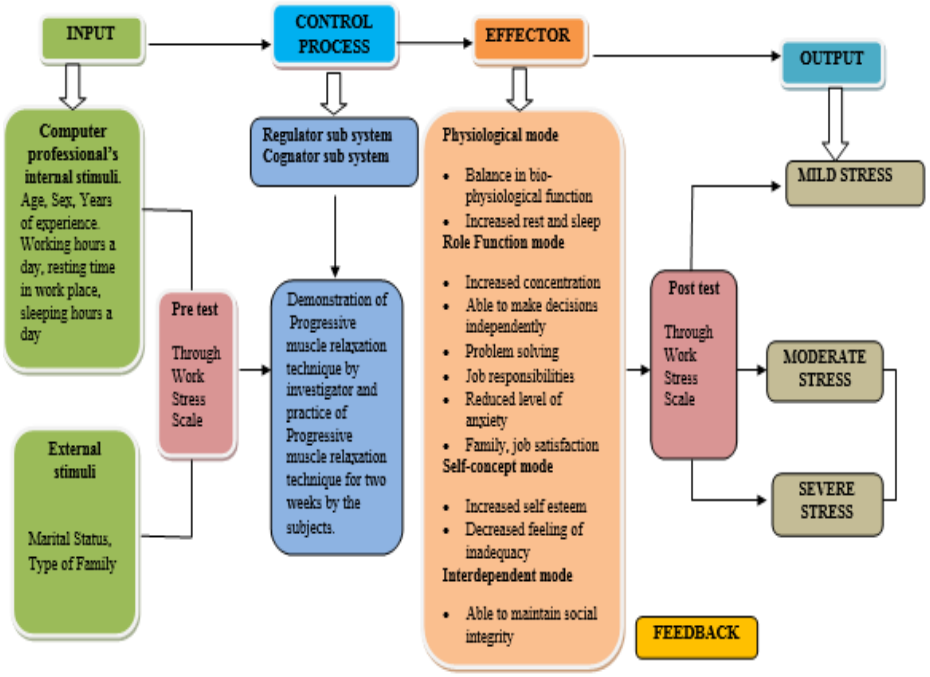

Figure 1: Conceptual framework based on Roy's adaptation Model

CHAPTER 2
REVIEW OF LITERATURE

INTRODUCTION
Stress
Occupational Stress
Effect of Stress
Intervention Strategies for work stress management

REVIEW OF LITERATURE

INTRODUCTION

A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period. In this chapter an attempt was made to conduct an extensive review of literature related to occupational stress of information technology personnel from related journals, books, from electronic databases like Medline, Pub med, EBSCOHOST, Ovid, Pro quest, Science Direct and Cochrane by using terms like occupational stress, work stress among I.T professionals and work stress management. The various reviewed studies were classified under the three following sections.

- Stress
- Occupational Stress:
- Effect of Stress
- Intervention Strategies for work stress management

Stress

Stress can be described as a circumstance that disturbs, or is likely to disturb, the normal physiological or psychological functioning of a person. In the 1920s, Walter Cannon conducted the first systematic study of the relation of stress to disease. He demonstrated that stimulation of the autonomic nervous system, particularly the sympathetic system, readied the organism for the fight or flight response characterized by hypertension, tachycardia, and increased cardiac output. This was useful in the animal who could fight or

flee; but in the person who could do neither by virtue of being civilized, the ensuing stress resulted in disease (e.g., produced a cardiovascular disorder) [26].

Stress is simply a fact of nature forces from the outside world affecting the individual. The individual responds to stress in ways that affect the individual as well as their environment. Hence, all living creatures are in a constant interchange with their surroundings (the ecosystem), both physically and behaviourally. In general, stress is related to both external and internal factors[27].

(i) External factors include the physical environment, including job, relationships with others, home and all the situations, challenges, difficulties, and expectations you're confronts on a daily basis.

(ii) Internal factors determine the body's ability to respond to and deal with, the external stress-inducing factors. Internal factors which influence one's ability to handle stress include nutritional status, overall health and fitness levels, emotional well-being, and the amount of sleep and rest one gets.

Hans Selye considered stress as a nonspecific bodily response to any demand caused by either pleasant or unpleasant condition. Selye believed that stress, by definition, need not always be unpleasant. He called unpleasant stress, distress. Accepting both types of stress requires adaptation. The body reacts to stress in this sense defined as anything (real, symbolic, or imagined) that threatens an individual's survival by putting into motion a set of responses that seek to diminish the impact of the stressor and restore homeostasis. Much is known about the physiological response to acute stress, but considerably less is known about the response to chronic stress. Many stressors occur over a prolonged period of time or have long-lasting repercussions. For example, the loss of a spouse may be followed by months or years of loneliness and a violent sexual assault may be followed by years of apprehension and worry. Neuroendocrine and immune responses to such events help explain why and how stress can have deleterious effects[1, 26].

STAGES OF STRESS

Stress is how the body reacts to a stressor, real or imagined, a stimulus that causes stress. Acute stressors affect an organism in a short-term; chronic stressors over the longer term.

Han`s Selye labeled this universal response to stressors as the general adaptation syndrome or GAS into 3 stages[1];

(i) The alarm is the first stage. When the threat or stressor is identified or realized, the body's stress response is a state of alarm. During this stage, adrenaline will be produced in order to bring about the fight-or-flight response. There is also some activation of the HPA axis, producing cortisol.

(ii) Resistance is the second stage. If the stressor persists, it becomes necessary to attempt some means of coping with the stress. Although the body begins to try to adapt to the strains or demands of the environment, the body cannot keep this up indefinitely, so its resources are gradually depleted.

(iii) Exhaustion is the third and final stage in the GAS model. At this point, all of the body's resources are eventually depleted and the body is unable to maintain normal function. At this point, the initial autonomic nervous system symptoms may reappear (sweating, raised heart rate etc.). If stage three is extended, long-term damage may result as the capacity of glands, especially the adrenal gland, and the immune system is exhausted and function is impaired resulting in decompensation[1].

STRESS MANAGEMENT TECHNIQUES

If methods of coping with stress aren't contributing to greater emotional and physical health, it's time to find healthier ones. There are many healthy ways to manage and cope with stress, but they all require change. One can either change the situation or change One's reaction. When deciding which option to choose, it's helpful to think of the four as avoid, alter, adapt, or accept[27].

Strategy 1: Avoid unnecessary stress

Not all stress can be avoided, and it's not healthy to avoid a situation that needs to be addressed.

- Learn how to say "no" – Know your limits and stick to them. Whether in your personal or professional life, refuse to accept added responsibilities when you're close to reaching them
- Avoid people who stress you out
- Take control of your environment
- Avoid hot-button topics
- Pare down your to-do list – Analyze your schedule, responsibilities, and daily tasks.

Strategy 2: Alter the situation:

If you can't avoid a stressful situation, try to alter it. Figure out what you can do to change things so the problem doesn't present itself in the future. Often, this involves changing the way you communicate and operate in your daily life.

- Express your feelings instead of bottling them up.
- Be willing to compromise
- Be more assertive
- Manage your time better

Strategy 3: Adapt to the stressor:

If you can't change the stressor, change yourself. You can adapt to stressful situations and regain your sense of control by changing your expectations and attitude.

- Reframe problems. Try to view stressful situations from a more positive perspective
- Look at the big picture. Take the perspective of the stressful situation. Ask yourself how important it will be in the long run.
- Adjust your standards. Perfectionism is a major source of avoidable stress. Stop setting yourself up for failure by demanding perfection. Set reasonable standards for yourself and others, and learn to be okay with "good enough.
- Focus on the positive.

Strategy 4: Accept the things you can't change:

Some sources of stress are unavoidable. You can't prevent or change stressors such as the death of a loved one, a serious illness, or a national recession. In such cases, the best way to cope with stress is to accept things as they are. Acceptance may be difficult, but in the long run, it's easier than railing against a situation you can't change.

- Don't try to control the uncontrollable.
- Look for the upside. As the saying goes, "What doesn't kill us makes us stronger." When facing major challenges, try to look at them as opportunities for personal growth
- Share your feelings
- Learn to forgive.

Strategy 5: Make time for fun and relaxation:

- Set aside relaxation time.
- Connect with others. Spend time with positive people who enhance your life.
- Do something you enjoy every day.
- Keep your sense of humor.

Strategy 6: Adopt a healthy lifestyle:

Exercise regularly. Physical activity plays a key role in reducing and preventing the effects of stress. Make time for at least 30 minutes of exercise, three times per week. Nothing beats aerobic exercise for releasing pent-up stress and tension.

- Eat a healthy diet.
- Reduce caffeine and sugar.
- Avoid alcohol, cigarettes, and drugs.
- Get enough sleep. Adequate sleep fuels your mind, as well as your body.

OCCUPATIONAL STRESS

Job stress is defined as "a situation in which some characteristics of the work situation are thought to cause poor psychological or physical health, or to cause risk factors making poor health more likely."

Occupational stress is a major hazarded for many workers. Increased workloads, downsizing, out time, hostile work environment and shifts are few causes of the stressful working condition. Occupations stress can affect health when the structures of workplace exceed ability the employee's ability to have some control on situations or cope in their ways. Workers are overburdened with a workload that remains high regard for of their efforts. The workload is the 'Stressors' employee feels anxious and their heart rate speeds up because they cannot, control their workload that is 'Stress' Increased blood pressure insomnia, or chronic headache that is 'Strain'.

A field study of 109 information systems (IT) managers explored the relationship among organizational characteristics, job satisfaction, and work stress. The IT work stress was measured by 21 items: role ambiguity and role conflict were measured by 14 items; work overload was assessed by 3 items and job-induced anxiety was measured by 4 items that measure the extent to which individuals experience symptoms of anxiety resulting from their work situation. The results indicate that work overload is the major source of perceived IT work stress, followed by role conflict, job-induced anxiety, and then role ambiguity. Four organizational contextual factors (IT climate, clarity and sharing of organizational mission, quality of work life, and flexibility of organizational processes) were found to influence significantly work stress and job satisfaction as perceived by IT managers. As expected, job satisfaction was significantly related to IT work stress while IT technological sophistication was not related to IT stress or job satisfaction factors. Contrary to predictions, neither the clarity nor awareness of organizational policies nor the qualities of IT resources were found to have an impact on any IT stressor[29].

A descriptive study with a sample of 180 software professionals from 29 software development projects used self-developed questionnaires to identify the stressors which positively related to stress and burnout measures. Control at work, complexity at work, and openness to criticism within the team were all found to be significantly and negatively related to lack of identification. Moderated regression analyses revealed that high cognitive requirements, high learning requirements, and low competition within the team enhanced the relationship between stressors and burnout[30].

A study was to identify the sources of stress among information technology (IT) personnel in Singapore. Data were collected via a combination of email survey and interviews from 257 IT personnel employed in an organization dealing with IT-related services and products. The data was collected by using Hackman's Job Diagnostic Survey, Job Induced Tension Scale and Cammann's Quit Intention Index. Factor analysis of survey data reveals six major dimensions of stress: work demands, relationships with others, career concerns, systems maintenance, role ambiguity and administrative tasks. Generally, both survey and interview data suggest that most of the factors which generate stress among IT personnel in Singapore are linked to various characteristics of IT personnel's work environment, particularly pressures associated with the job and organizational characteristics[31].

A major challenge that the IT industry person has been facing is in the field of Human Resource Management. The nature of work in today's competitive world is changing at whirlwind speed. Now more than ever before, job stress poses a threat to the health of employees and in turn to the health of organization although occupational stress and stress management have assumed enormous importance in any organization. The work life and the problems that are encountered in daily work life have been blended with our lifestyles for the past several years. Workplace stress management programs and implementation of measures

to reduce psychological pressure and individual's sense of control are possible ways to counteract the negative effects of a stressful situation[32].

The 2001-2002 Health and Safety Executive (HSE) survey indicates that 563,000 people were experiencing stress, anxiety or depression brought on or made worse by work. On average each of these people lost 29 work days, equating to a total of 13.4 million days lost in the 12 month reference period. This equates to a loss of a half-day of work per worker per year in Great Britain alone. Extrapolating from this, the HSE concluded that work-related stress, anxiety or depression costs the economy in the region of 370 million pounds (v). The Bristol work stress study assessed 17,000 workers and found that approximately 20% of respondents experienced very high or extremely high levels of stress at work[33].

Relations among job stressors perceived justice, and negative emotional reactions to work, counterproductive work behavior (CWB), autonomy, and effective traits were investigated. Participants representing a wide variety of jobs across many organizations were surveyed both inside and outside a university setting. Results were consistent with a theoretical job stress framework in which organizational constraints, interpersonal conflict, and perceived injustice are job stressors, CWB is a behavioral strain response, and negative emotion mediates the stressor-strain relationship. Only very weak support was found for the moderating role of affective disposition (trait anger and trait anxiety), and no support was found for the expected moderating role of autonomy in the stressor–CWB relationship[34].

In a survey of managers and executives has found that in 71% of cases, the participants reported that the number of hours they worked (over 60 hours per week equivalent to more than 12 hours per day in a 5 days/ week) was stressful. They stated that their social life suffered because of their job demands. Long working hours especially were reported, 41% of them regularly worked during the weekends. 16 participants felt that 'work overload stressed them severely, and also that there were periods with no work when one felt that the fear of redundancy made them insecure and that they were not up to date with the latest development[35].

Chan, Lai, Ko & Boey examined the experience of work stress among 6 different professionals and paraprofessionals: General practitioners, I.T professionals, Lawyers, teachers, nurses and life insurance personnel. Data was collected from a sample of 2570 men and women from a survey of professionals in Singapore conducted in 1989-1990. The results showed that performance pressure and work-family conflicts were perceived to be the most stressful aspects of work. These two stressors also significantly contributed to the experience of overall work stress. Further stress arising from work-family conflict, performance pressure, and poor job prospects were negatively associated with the level of work satisfaction. Women who are known to have lower job status than their male colleagues, therefore, stand at great risk of experiencing the harmful effects of occupational stress[23].

A study to assess the degree of reported job stress among IT professionals in Winnipeg, Manitoba and to determine which hypothesized factors are reported by a majority of employees as being major contributors to their stress by using a self-developed stress assessment questionnaire (n=191). Analyses were done to investigate a significant relationship between reported degrees of experienced stress, perceived stress factors, and personal characteristics of the employee, the computing environment (technical and managerial) and the employing organization. The findings showed that while the amount of change on the job increased, the degree of commitment to the employer seemed to decrease [36].

Moore studied about the concept of work exhaustion in the context of technology professionals. Data was collected from 270 IT professionals and managers in various industries across the United States. The results of the study revealed that technology professionals experiencing higher levels of exhaustion and reported higher intentions to leave the job. Among the variables expected to influence exhaustion (work overload, role ambiguity, and conflict, lack of autonomy and lack of rewards), work overload was the strongest contributor to exhaustion in the technology workers. The exhausted IT professionals identified insufficient staff and resources as a primary cause of work overload and exhaustion[37].

Thong & Yap did an empirical research on the effects of occupational stress on IT professionals. A major reason contributing to stress was that IT professionals and researchers were unaware of the consequences of occupational stress and unfamiliar with the occupational stress literature. The purpose of this research was to propose a theoretical framework of occupational stress for IT professionals. Based on a review of the IT, psychology, and general management literature, 12 occupational stress models were identified. These stress models were analyzed along the two dimensions of focus and theoretical foundation. The analysis showed that most of the occupational stress models considered stress to be the consequence of the interaction between an environmental stimulus and the idiosyncratic response of the individual. Further analysis of these models suggested that nine key points were critical in developing a theoretical framework of occupational stress for IT professionals. A mapping of how the existing stress models incorporated the nine key points was also presented. The findings of this paper provided a theoretical basis for further research on the occupational stress of Information System professionals[38].

A study was done to determine the influence of organizational variables (conflict, blocked career, alienation, work overload, and unfavorable work environment) on job stress among managers and, to examine whether this relationship varied according to the individual's level of neuroticism. Analyses of 285 responses using hierarchical regression revealed that three of the five organizational variables (conflict, blocked career, and alienation) had significant positive effects on job stress. Neuroticism was found to moderate the effects of the three organizational stressors (alienation, work overload, and unfavorable work environment) on job stress[39].

Cuirrin conducted a study to investigate the factors that motivate/ demotivate and cause stress among the computer engineers, as well as examined the implications of these factors both individually and interdependently for both the computing graduate and their employing organization. An empirical quantitative approach of employee questionnaires (n=330) was used to assess the interrelationship between these concepts from the employees perspective. Nine dimensions were created (job security, social relationships, fiscal equity, skill variety, autonomy, advancement, recognition, task identity and feedback) in order to assess, both motivation and stress. A semi-structured interview schedule was utilized to determine three manager's perception of whether these nine dimensions are a motivator/demotivator or a cause of stress for employees. The results indicated that seven of the dimensions were significantly related (either positively or negatively) for the sources of motivation and the sources/ levels of stress. The results also demonstrated that the management was unaware of the factors that were a cause of motivation and stress for their computing subordinates. Thus, employers by thwarting the motivation needs of their employees, inadvertently or otherwise, may find that their employees experience a significant increase in stress, with resulting individual and organizational consequences. In conclusion, employers and management need to be aware that any attempt at increasing motivation and decreasing stress should consider the impact of the interrelationship between the two variables, thus facilitating a more productive and satisfactory employment relationship for both the information technology graduate employee and employer[40].

An exploration was done on the levels of job stress amongst the information technology professionals, and the ways that they had found to deal with it and also the intentions as to why they left their companies. The sample consisted of 26 professionals working in three different companies. Qualitative methods were used to collect data. Findings showed that IT professionals faced a huge amount of work stress mainly caused by heavy workload and it was found that the IT professionals had their own ways to cope with stress. However, it was also seen that intentions to leave their organizations were not purely due to stress problems[41].

Marcello investigated the prevalence of workplace bullying among IT professionals and the relationship between workplace bullying and psychological empowerment. The Negative Acts Questionnaire (NAQ-R) and Spreitzer's Psychological Empowerment Instrument, were used to measure perceived exposure to bullying and dimensions of psychological empowerment at work. The research study found that IT professionals are frequently exposed to workplace bullying and that psychological empowerment is negatively or related to workplace bullying. The study also found that IT professionals are exposed to work-related forms of workplace bullying more frequently than personal forms of workplace bullying. IT professionals in the executive job type report less exposure to workplace bullying than IT professionals working in non-executive job types. The key findings of this study (a) provided the frequency and forms of exposure to workplace bullying by IT professionals and (b) determined the degree and direction of the relationship between workplace bullying and psychological empowerment in the IT work environment causing stress in the employee[42].

A study to examine the level of stress perception by IT project managers and to determine the types of coping strategies used to handle their stress on sixty-four South African IT project managers through an online questionnaire found that IT project managers were highly stressed and tended to utilize maladaptive coping strategies more as their stress levels increased. These strategies included self-distraction, venting, self-blame, positive reframing, behavioral disengagement, substance use and denial. This contradicted prior research where the coping strategy was emotional support. In addition, the more experienced the IT project managers were, the higher their levels of stress. These findings could assist project managers to better understand the effects of stress on their productivity and to consider more appropriate coping strategies to assist them to reduce their stress[43].

In an online survey in a large global European bank to examine how various job stressors impact the retention of information technology (IT) professionals and how these impacts were mediated by work-leisure conflict; a combination of exploratory factor analysis and confirmatory factor analysis procedures were used to assess the psychometric properties. The results indicated that among all the job stressors, role ambiguity had the most adverse influence on retention. Work-leisure conflict partially mediated the negative relationship between role conflict and retention and fully mediated the negative relationship between role overload and retention. The empirical findings implied that organizations should tackle role ambiguity with the highest priority and relieve work-leisure conflict to effectively retain employees under job stress[44].

A study was done to investigate the extent to which job satisfaction mediates the relationship between job stress work outcomes, such as intention to leave the employer and citizenship behaviour (ECB). To reach this objective, data were collected from two independent samples (software engineers, N = 138; truck drivers, N = 94). Mueller's Perceived stressful work was measured with the three-item scale, Hackman's Job satisfaction was measured with the three-item, Poliakoff's Employer and Citizenship Behaviour was measured with a selection of four items. The resulting pattern across both samples was very similar. While no relationship was found between stressful work and ECB, perceived stressful work increased the desire to leave the employer. Job satisfaction had a positive effect on ECB and a strong negative effect on intention to leave. In both samples, job satisfaction fully mediated the relationship between perceived stressful work and intention to leave the employer[45].

In an investigation of the intensity of organizational role stress among women information technology professionals in the Indian private sector, Pareek's Organizational Role Stress Scale was used on a sample of n=264 to explore the level of role stress. Organizational stress originates in organizational demands that are experienced by the individual. Stress is built up on the concept of the role which is conceived as the position a person occupies in a system. The results found that there are differences in the level of stress between married and unmarried employees. It was also found that level of education does not emerge as a significant differentiator of stressors[46].

Bhattacharya & Basu conducted a study on the distress, wellness and organizational role stress of professionals in the area of Information Technology (IT). The effect of sex and age on the above variables as well as the predictability of the variables from stressful life events and coping resources taken together were also examined. The data were collected from six IT companies of Kolkata by using purposive sampling technique. 101 professionals (60 men and 41 women) were administered Goldberg's General Health Questionnaire-28, PGI – Well-Being Scale, Pareek's Organizational Role Stress Scale, Singh's Presumptive Stressful Life Events Scale (PSLES), and Rao's Coping Checklist. Results of the study revealed that women experienced greater wellness and older personnel experienced more distress. Distress could not be predicted from the life events and coping resources taken together. Wellness and Organizational role stress could be predicted from these two variables[47].

A study was conducted to assess the general role stress in the young IT professionals between the age group of 22-28 yrs by using the Pareek's General Role of Stress Scale questionnaire. The GRS scale has 12 questions in all and used five-point Likert type responses which contain three items of each of the four role space (Self-role distance, Inter role distance, Role boundedness and Personal inadequacy). The data were collected using judgment sampling by distributing 120 questionnaires and 42 responses were obtained among which one was rejected. The results showed that the stress caused by the IRD (Inter role distance) is significantly lower than the stress caused by the RB (Role boundedness). The researcher felt that this was because most of the respondents were single and those who were married had no children. They were self-sufficient and did not shoulder many responsibilities in life, showing less or not so significant conflict between the various roles they occupied. However, organization roles placed a high demand on their time. Respondents felt that the organization did not leave them with time to pursue any other interest, which led to a feeling of being bound in the organizational role. Stress caused by the RB was significantly higher than that caused by Pin (Personal inadequacy). This showed that the respondents felt competent enough to do the job but they felt bound by organization's demands of long work hours, work in shifts, and work from project to project with strict deadlines[48].

In a study to investigate the role of work stress and health in the prediction of organizational commitment in employees (N=300), the level of work stress was assured by Cooper's Work Stress Profile and health status was determined by C.M.I.(Cornell Medical Index) Health Questionnaire, Allen's Organizational Commitment Scale was used to assess the level of commitment in employees. The study was based on a 3 X 2 factorial design with three levels of job hierarchy and analyzed by using ANOVA. Results revealed that work stress related to interpersonal, physical condition and job interest were found higher in managers than level 4 employees. Furthermore, long job tenure group reported more interpersonal stress than their short job tenure counterparts. Despite this, health problems were found more in level 4 employees than managers. Contrary to this, the organizational commitment was identified higher in managers than level-4 employees. Furthermore, short job tenure group showed a higher level of commitment than long job tenure group. Work stress was found to be inversely related to effective, normative and overall commitment. Further, illness was found to be negatively correlated with effective, continuance, normative and overall commitment. The effective, normative and overall commitments were predicted by stress related to physical condition and health (illness) [49].

EFFECT OF STRESS

Smith et al conducted the Bristol Stress and Health at Work Study and showed that approximately 20% of the surveyed British employees suffered from high occupational stress. The same survey found that high occupational stress was significantly related to medical problems such as gastrointestinal symptoms, fatigue, tension, depression, and anxiety as well as to problems in the family. Furthermore, stress was significantly associated with rates of sick leave, GP visits, and accidents at work[50].

A study was done among 428 employees to measure the prevalence of 18 work condition factors which may have an influence on the levels of stress and insecurity. The analysis pointed out the relationship between these two latter factors and 16 health indicators of subjective morbidity and medical consumption. The main results showed a significant increase in the prevalence of subjective morbidity and medical consumption with the increase in exposure to a medium to high level of fear of dismissal and to a continuous level of stress in the previous 12 months. The comparative analysis carried out on a representative sample of employees in another economic sector (n=859) showed that the employees had higher levels of stress and insecurity and showed evidence of significantly worse health indicators[51].

Hetland, Sandal & Johnsen examined subordinates level of burnout in relation to how they perceive the leadership style of their direct superior. The study was conducted on 289 subordinates working in an IT firm. They completed Maslach Burnout Inventory-General Survey and rated their superior on the Bass Multifactor Leadership Questionnaire. According to the study, high subordinate burnout was defined as high exhaustion, high cynicism, and low professional efficacy. A structural equation model revealed that transformational leadership was significantly related to cynicism and professional efficacy, while passive-avoidance was significantly related to exhaustion and cynicism. Transactional leadership was not linked to burnout. The study showed that neuroticism in subordinates was directly related to all burnout components. The link between passive-avoidant leadership and burnout's key component exhaustion indicates perception of negative leadership behavior which is more important for burnout than the perception of positive leadership styles[52].

A study was conducted to examine the prevalence of sleep debt, insomnia and long working hours among Finnish IT professionals and to analyze which specific work-related factors were associated with shortened sleep. A cross-sectional research design, where data was collected from a questionnaire survey was conducted on 2334 IT professionals. The results showed that 37% reported sleep debt of at least 1 hour and 6% of at least 2 hours, while 16% reported insomnia. Twenty-seven percent worked for a minimum of 50 hours a week, while 31% spent at least 50 hours a week on work. The most important factors associated with both sleep debt and insomnia were work-related demands requiring long hours, mental stamina and problem solving and positive

perceptions of work, such as job control and importance of the respondents own work in their life. The study concluded that even though long working hours were common among IT professionals in Finland, sleep debt and insomnia were not. Work-related factors were associated with insufficient sleep[53].

A prospective study of a total of 15,256 men aged 18 to 67 years with no previous history of mental disorders employed in six I.T companies located in several regions of Japan. The purpose of the study was to investigate the prospective association of job strain, role stressors, and job insecurity with long-term sick leave due to depressive disorders. At baseline, they were surveyed using a self-administered questionnaire, including self-reported measures of job strain, as well as its components (job overload and job control), role stressors (role ambiguity and role conflict), social support at work, job insecurity, and other demographic and psychological covariates. During the follow-up, a long-term sick leave of 30 days or more due to depressive disorders were recorded. High job control at baseline was associated with a lower risk of long-term sick leave due to depressive disorders, after adjusting for demographic variables, depressive symptoms, and neuroticism at baseline (hazard ratio, 0.28 [95% confidence interval, 0.11-0.71]); high role ambiguity was associated with the higher risk (hazard ratio, 3.49 [95% confidence interval, 1.43-8.49]). Job control and role ambiguity may be important predictors of long-term sick leave due to depressive disorders among male employees, independent of depressive symptoms and neuroticism[54].

In a study to examine four potential roles of work-related negative affectivity on the associations between self-reported occupational stress and physical well-being among telecommunication employees in Greece, participants (n=764), predominantly male) completed a battery of self-report measures of perceived occupational stress, negative affectivity, and illness symptoms. In line with previous research, negative affectivity exerted a nuisance effect, by inflating the association between reported stressors and illness symptoms, and significantly predicted illness symptoms, over and above the effects of stressors. In addition, negative affectivity influenced reported illness symptom indirectly, through the effects of stressors, and moderated the relationship between interpersonal conflict at work and illness symptoms. The findings suggested that negative affectivity would largely explain and influence in different ways the associations between self-reported stress and physical strain. It was recommended that future studies of occupational stress should control for the effects of negative affectivity and that health professionals should be cautious of its effects when interpreting relationships between self-reported occupational stress and physical well-being[10, 55].

In a research to evaluate the association between emotional competencies and burnout syndrome in professionals of information technology (IT), the sample consisted of n=107 professional employees (33 women and 74 men). Data collection was done with the Emotional Competency Inventory and the Maslach's Burnout Inventory-General Survey. The descriptive analysis indicated that those IT professionals with average levels of emotional skills, and higher social sensitivity, the burnout rate is higher and higher effectiveness in relation to emotional exhaustion and cynicism. Correlations analysis showed that emotional competencies are associated with burnout syndrome which allows the orientation of organizational preventive and remedial interventions based on emotional competencies[56].

A study to measure the effect of occupational stress (i.e., physiological stress and psychological stress) and emotional intelligence on job satisfaction in Sarawak, Malaysia, used survey method to gather 80 usable questionnaires from employees who have worked in the organizations. The results of exploratory factor analysis confirmed that the measurement scales used in this study satisfactorily met the standards of validity and reliability analyses. The outcomes of testing research hypothesis using a hierarchical regression analysis showed two major findings: First, the interaction between emotional intelligence and physiological stress significantly correlated with job satisfaction. Second, the interaction between emotional intelligence and psychological stress insignificantly correlated with job satisfaction. This result demonstrated that the capability of employees to manage their emotions and other employee emotions had increased their abilities to control psychological stress in implementing their job. As a result, it could lead to higher job satisfaction. Conversely, the incapability of employees to manage their emotions and other employee emotions had decreased their abilities to control psychological stress in implementing their job. Consequently, it could lead to lower job satisfaction[57].

Wilson & Sheetz, presented an initial test of the group task demands-resources (GTD-R) model of group task performance among IT professionals, theorized that demands and resources in group work influence formation of perceived group work pressure (GWP) which heightened levels of GWP which inhibit group task performance. A prior study identified 11 factors relating to the task, group, individual, or environment as source factors to GWP. The researchers' extended this research by creating and validating scales for each source factor within an integrated GWP instrument and applied the instrument in an initial test of the GTD-R model. Results showed that the GTD-R model provided good predictions of GWP and group task performance. In addition, the researchers found GWP, task complexity, and time pressure factors to be higher in IT tasks vs. non-IT tasks described by participants. The findings extend demands-resources research from its prior focus on job burnout and exhaustion in individual tasks to incorporate less-intense pressure levels and group task contexts[, 58].

A survey with 854 agents working in twenty call centers of Bangalore by using various instruments which measure psychological well-being, general health, personality profile, social support and family rituals. The analysis of data revealed that 52% of respondents were psychologically distressed and therefore required psychological support. Inability to cope with daily activities and work pressure seemed to be the main effect of psychological distress. Conscious, extroversion and birth order of respondents happened to be the major contributors of the high level of stress and low scores in the general health questionnaire[59].

A study on stress and coping patterns among business process outsourcing personnel, at Bangalore, selected 50 samples through convenient sampling method. The researcher used exploratory research design and analysis done by ANOVA and χ^2 test. The work stress among the 50 respondents was assessed by Work Stress Scale[23], Stress Response Checklist, and Coping Checklist. Around 19 (38%) of respondents reported having severe work stress whereas 25 (50%) reported moderate and remaining 6 (12%) reported mild stress. The findings clearly indicated that Business Process Outsourcing (BPO) personnel faced a high level of stress and used different coping behaviors such as abuse of psychoactive substances to tackle the work stress[60].

Zacharias conducted a survey of 60 software engineers by using purposive sampling method regarding the work-life balance by using questionnaires of Work-Family Conflict and Family Work Conflict Scale and Nagpal's Subjective Well-Being Inventory and the data was analyzed by ANOVA. The results indicated that there was a significant negative correlation between subjective well-being and work-family conflict. Also, the work status of the spouse was very significant with the work family and family work conflict[61].

A qualitative study was conducted to find out the causes of occupational stress amongst the software professionals, the ways adopted by them to come up with it and their intention to leave employment in a sample of 26 software professionals working in three different software companies. The sample included professionals working for full-time, with varying demographic details. Qualitative methods were used to collect the data which included four focused group discussions and twenty-six in-depth interviews. The strength of Company A was around 100 employees, Company B had a strength of around 500 employees and Company C had around 1000 employees. In all the three organizations, informants were dispersed throughout the organizational hierarchy and were selected via randomized quota sampling to reflect a mixture of age, experience, gender, and position they held with the organization. The data from this study was systematically gathered and analyzed using a grounded theory approach. It was noted that almost all the employees interviewed, were experiencing the very high amount of work stress, underlying the importance of worksite health promotion interventions. The importance of stress as a target of future interventions can also be highlighted by the correlations between stress and subjective health status. In the present study, behavioural changes identified amongst software professionals were sleep disorders and the difficulty of turning the mind off work problems; work was viewed to be affecting the personal life of individuals[62].

Cherian, collected data from 60 married men in the Information Technology Sector using the criterion of a random sampling method to assess marital adjustment and occupational stress by using the Spanier's Dyadic Adjustment Scale and Work Stress Scale. The researcher used descriptive design and analysis done by t-test, one-way ANOVA, correlation, and regression. It was found that a majority of respondents (51.7%) experienced a moderate level of stress and 13.3% were under severe stress and occupational stress could exacerbate the very characteristics that have been found to predict marital unhappiness. The researchers concluded that a strong and supportive marital bond would be able to mitigate the effects of stress and that on a preventive level; therapists need to focus on strengthening domains of marital adjustment[63].

Subramanian & Vinoth Kumar conducted a study to examine relationships among hardiness personality, self-esteem and occupational stress index among IT professionals. Data were collected from 140 IT professionals employed in four computer software organizations by using Occupational Stress Index, Hardiness questionnaire, and Rosenberg Self-Esteem Scale. The findings of this study revealed that the internal strength factors such as hardiness and self-esteem mediate the perceived occupational stress by altering the individual's cognitive appraisal process, such that individuals were able to reframe or reinterpret stressful situations at work environment. The results of correlation showed that hardiness and self-esteem tend to have negative and significant correlations with role overload, role ambiguity, low status and strenuous working conditions. The results revealed that the level of hardiness is more likely to moderate their cognitive process and able to cope the stressors at reasonably better level. This is meaningful in the sense that the hardy individual lay much emphasis on his/her own resources to deal with various perceived occupational stressors and tend to have higher levels of self-esteem compared to those who have lower levels of hardiness[64].

In a study on stress and interpersonal needs among 60 employees working in the corporate sector, Work Stress Scale, Stress Response Checklist, and Pareek's Interpersonal Needs Inventory was used by the researcher. A descriptive design was used and 60 samples were collected using convenient sampling method. The analysis was done through ANOVA and t-test and it was observed that 45% of them experienced moderate work stress whereas 53.3% experienced mild stress with a Mean of 5.28 (SD=4.33). The employee's stress response at workplace showed that majority (66.7%) of them responded while experiencing mild stress and 33.3% responded while experiencing moderate stress. The study showed that the effect of stress was to increase employee's expectation of interpersonal support from the colleagues as well as from the supervisor or management[65].

Vimala & Madhavi studied the influence of age and experience on stress and depression and the relationship between stress and depression among women information technology professionals in Chennai. The aim of the study was to find out the level of stress and depression experienced by women IT professionals, to understand the impact of age and experience on stress and depression, and to study the relationship between stress and depression. The study was conducted on a sample of 500 women IT professionals. The data was collected by convenient sampling method and analyzed using descriptive one-way analysis of variance and Pearson's co-relational test. The results showed that the women IT professionals experience a moderate level of overall stress and stress dimensions. The study also revealed that 84% of the respondents experienced medium level of depression and also suggested that age and experience significantly influence the overall stress and depression experienced by the employees. The study showed that there might be a strong relationship between overall stress and depression[66].

INTERVENTION STRATEGIES FOR WORK STRESS MANAGEMENT

McLeod conducted the largest systematic study of workplace counseling in U.K by reviewing 34 studies. The researchers evaluated the evidence from these studies on the basis of their methodological strengths and concluded that there were three categories of studies: Those that provided 'best evidence' having the most robust methodologies, those with 'supporting evidence' where there were some methodological limitations and those with 'authenticating evidence' which provided descriptive information about the effectiveness of workplace counseling. In total, 11 of the 16 'best evidence' studies provided evidence which was overwhelmingly in favor of the effectiveness of workplace counseling. This was also true for 4 of the 13 'supporting evidence' studies and for 3 of the 5 studies in the 'authenticating evidence' category. The rest of the studies provided moderate support for the effectiveness of workplace counseling. Only 2 studies in the 'best evidence' category found workplace counseling to have no beneficial effect. In conclusion, there was strong evidence to suggest that workplace counseling had a significant beneficial effect on the wellbeing of employees,[67,68].

An investigation on the job satisfaction of information technology (IT) professionals, Computer Aided Software Engineering (CASE) tools were used. The main purpose of the CASE tools was to decrease the development time and increase the quality of software. This study presented a model of the combination of CASE tool usage and job satisfaction as related to internal career orientation. Two hypotheses based on this model were tested using empirical evidence collected through a survey method. The first examined whether the career orientation of IT personnel influenced their job satisfaction. The second incorporated the impact of CASE tool usage on this relationship. The results indicated that in a CASE tool environment, personnel with a predominant technical career orientation had more job satisfaction than those with a predominant managerial orientation. However, there was a significant and positive synergy between the sophistication of the CASE tool used and managerial competence orientation leading to higher job satisfaction. These findings indicated that combating the IT personnel shortage through task automation may also increase worker satisfaction, thereby decreasing turnover[69].

A comparative study among public sector Information Technology employees of a south-central state in the United States found positive relationships between career mentoring and subjective stress as well as between perceived workload and subjective stress. This study examined whether mentoring moderated the relationship between increased workloads associated with rapid organizational change and the subjective stress experienced by the employees. The relationship between perceived workload and subjective stress was moderated by psychosocial mentoring but not by career mentoring. Contrary to expectations, those who received more psycho-social mentoring reported, experiencing more subjective stress during conditions of a high perceived workload than did those who received less psychosocial mentoring The researchers suggested that public sector managers need to do more in assisting employees to cope with the change-induced stress[70].

Raghavan, Sakaguchi & Mahaney studied whether organizations can employ job design strategies to relieve organizational stress for information technology (IT) professionals. The effect of flexible work schedule, employee support and training, and telecommuting as potential coping resources to relieve stress were studied and perceived workload, role ambiguity, work facilitation, and decision latitude were drawn from previous studies as potential stressors of IT professionals. Perceived stress was measured by two measures: work exhaustion and depressed mood. The results suggested that removing role ambiguity and improving work-facilitation eased work-related stress. Allowing employees to have flexible work schedules was also found to ease their perceptions of workload. Employee support and training strategies were found to influence decision latitude and role ambiguity. It was also found that telecommuting did not have any effect on the stressors. Results also indicated that the association between work exhaustion and depressed mood was stronger for males than females[71].

In a study with a group of 23 middle level male executives of a computer firm to evaluate the efficacy of different stress management interventions in reduction of stress and enhancement of wellbeing and to compare the relative efficacy of the 3 intervention techniques: 6 sessions of relaxation training (n=8); 6 sessions of cognitive appraisal with relaxation (n=7) and a half day stress management workshop (n=8). The result of the study showed that relaxation training was effective in significantly reducing the somatic stress response and enhancing subjective well-being. Cognitive appraisal with relaxation was effective in significantly reducing the total, somatic and cognitive stress response. The workshop module was effective in significantly reducing the total somatic, emotional and cognitive response. All three types of intervention were found to be equally effective. The difference between the three groups was not clearly established because of the small sample size. The researchers observed that the executives in this study were not aware of the association between lifestyle factors and stress and emphasized on the need to include a psycho-educational component in the stress management[72].

Patra, studied the prevalence of psychiatric morbidity, perceived stress, burnout and subjective well-being in a group of 32 software professionals compared with non-software professionals and the effectiveness of a full day stress management workshop in reducing perceived stress and burnout. The assessment was done by using Goldberg's General health questionnaire; Perceived stress scale; Maslach burnout inventory, Nagpal's Subjective well-being inventory; Rao's Coping checklist and Visual analogue scale. The results showed that the software professionals were found to have more stress and psychiatric morbidity and higher burnout compared to the nonprofessionals. The one-day stress management workshop showed a significant improvement in their stress profile at the follow-up of 4 weeks[73].

In a quasi-experimental research design, where convenient sampling was used to collect data from 30 I.T professionals from selected companies at Bangalore. The subjects perceived work stress and stress response was assessed by using the Work Stress Scale23 and the Stress Response Checklist25. The subjects were screened by using the Work Stress Scale and the data were

collected at pre-intervention, immediate post-assessment, and follow-up assessment after one week. Audio Assisted Progressive Muscle Relaxation was administered to the I.T professionals for 5 days by the researcher followed by immediate post-assessment. For one week, the subjects practiced the intervention on their own following which again they were assessed. The analysis was done for 30 subjects by using repeated measures of ANOVA to compare the effectiveness of progressive muscle relaxation techniques between pre and post-intervention. Results: Analysis of the data revealed that, a statistically significant ($p<0.05$) reduction in the Mean scores of perceived work stress and stress response was observed among the subjects from pre-intervention to immediate post and follow-up assessment stages. Thus, the research hypothesis was retained. Conclusion: The study concluded that majority of the I.T professionals had moderate to severe level of work stress and stress responses and the progressive muscle relaxation was very effective in reducing perceived work stress and stress responses among the I.T professionals[74].

Verma studied the effectiveness of cognitive behaviour stress management (CBSM) intervention for (n=20) women software professionals. The findings showed that the women software professionals experienced stress related to the organization, to their work and in handling the work family interphase. The CBSM program was found to be efficacious in decreasing work stress, perceived stress, burnout and dysfunctional attitudes and in increasing subjective well being[72].

A study was done to assess the effectiveness of video assisted teaching program on progressive muscle relaxation technique to reduce stress among cotton mill workers in selected industries at Dindigul. The sample of 60 workers who met the inclusion criteria was selected for the study by using stratified random sampling method. After the pretest video assisted teaching program was given. Post-test was given after 15 days of intervention. Pre-test stress scores among 60 cotton mill workers were assessed; almost 95 % (57) of the workers had a moderate level of stress. The assessment of post-test stress scores among 60 workers, Majority 88 % (53) of workers had mild stress. The assessment of the level of stress scores of cotton mill workers after being exposed to Video Assisted Teaching program on progressive muscle relaxation technique showed that level of stress had been markedly decreased as evidenced by the post-test analysis. It revealed that level of stress among cotton mill workers in post-test mean score of 63.7 which was lower compared to the mean score of 112.95 on the pre-test at $p<0.05$ level of significance.[75]

An investigation was done on the efficacy of different stress management interventions in the reduction of stress and enhancement of well-being. The intervention was done in a work setting, on a sample of 23 male middle-level executives with a mean age of 27 years. The subjects were sequentially allocated to the three intervention groups namely, Relaxation training (GI), a Cognitive appraisal with relaxation (GII) and the workshop module (GIII). The tools used for assessment were the socio-demographic data sheet, Coping Checklist[57], Stress Response Checklist[25], Nagpal's Subjective Well-Being Inventory[80], Job Pressure Index and Visual Analogue Scale. The assessment was done pre and post-intervention at $1^1/_2$ month follow-up period. The result of the study showed that relaxation training was effective in significantly reducing the somatic stress response and enhancing subjective well-being. Cognitive appraisal with relaxation was effective in significantly reducing the total, somatic and cognitive stress response. The workshop module was effective in significantly reducing the total, somatic, emotional and cognitive response. The comparison of the three interventions indicated that relaxation training (GI) was more effective than cognitive appraisal with relaxation (GII) in reducing the somatic stress symptoms. The three intervention modalities were found to be equally effective on the other outcome variables[76].

A study aimed to examine the efficacy of mindfulness integrated cognitive behavioural intervention in workplace stress assessed 30 software (IT) professionals from a software firm at Bangalore. The subjects were divided into two groups-intervention and control group (15 in each group). The intervention was carried out in 8 sessions held once per week for the duration of $1^1/_2$ hours and the intervention group was subjected to an 8-week intervention program which involved the training of Mindfulness meditation and cognitive behavioural modules relevant to the working professionals. A comparative group design was adopted using Perceived Stress Scale, Stress Response Checklist, WHO Well-Being Index and Toronto Mindfulness Scale to assess the participants of both groups. The obtained data were analyzed using descriptive statistics, paired t-test to assess the significance level within the group and independent t test to assess the level of significance between the groups. The results revealed that there was a significant reduction in symptoms of stress and increase the level of awareness from pre to post assessments. Between-group comparisons of the two groups revealed that stress response was statistically significant[77].

In a study to evaluate the effectiveness of structured teaching program on knowledge, attitude and practice of MCTT staff regarding healthy computing the researcher used quasi-experimental design and the samples were selected by total enumeration method (n=69). The data were collected using Structured Knowledge Questionnaire, Attitude Scale (developed by the researcher), Attitude scale for burnout (modified from Mind Tools Career Excellent Club- 2008), Computer Operator System Survey and Checklist for Computer Workstation. The main findings of the study showed that the major health-related problems were neuromuscular problems, pain, aches, stiffness, numbness or tingling sensation, back and eye problems, itching, headache and blurring of vision. The majority, 60.9% had problems in the back, 44.9% had shoulder problems and 37.7% had problems in the neck. Correlation between knowledge, attitude and practice showed a positive correlation between knowledge and attitude and a negative correlation between knowledge and practice[78].

SUMMARY

After conducting an extensive review of available resources concerning occupational stress among computer professionals, the large body of scientific studies was classified on the basis of occupational stress, effects of stress and the intervention implemented for stress reduction both abroad and in Indian settings revealed that stress at workplace is a critical factor in the determination of the employee's health and well-being, physical as well as psychological. Research in the relationship between job stress and

psychosomatic health outcomes and all health-related outcomes are mainly confined to the studies from the developed countries. Thus, the review points towards a critical need to evaluate the many strategies of stress management techniques, that have been studied and the extent of their effectiveness. The review shows that there are very few studies on occupational stress in computer professionals. Among these, most of the studies have focused mainly on various aspects of organizational role stress and job satisfaction rather than on indices of psychological as well as physical health and well-being.

The review also suggested that computer technology may be associated with new and as yet unidentified psychological stressors and further research is urgently required in this direction to identify any adverse consequences of such stressors. This is especially important in the Indian context considering the recent explosion in its information technology industry. There are a staggering number of software professionals in India and their mental health should be a concern of priority, considering the crucial role of the I.T industry in the economic development of the nation.

CHAPTER-3
METHODOLOGY

Research approach

Research design

Variables

Schematic representation of the study

Setting of the study

Population

Sample and sampling technique

Inclusion criteria

Exclusion criteria

Tools

Description of the tool

Content validity

Reliability of the tool

Pilot study

Data collection process

Plan for data analysis

METHODOLOGY

This chapter deals with the methodology that was selected by the investigator in order to assess the effect of progressive muscle relaxation technique on stress among computer professionals working in a selected private company, Ernakulum district. Research methodology is a way to systematically solve the research problem. It includes the steps, procedures, and strategies for gathering and analyzing the data in a research investigation.

The methodology includes research approach, research design, variables, the setting of the study, population, sample and sampling technique, criteria for the selection of the sample, data collection instruments, content validity, reliability, pilot study, data collection procedure, and data analysis.

This chapter discusses the methodology adopted for the study.

RESEARCH APPROACH

In order to accomplish the main objective of assessing the effectiveness of progressive muscle relaxation technique on stress among computer professionals, a quantitative approach was adopted.

The goal was to assess the effectiveness of progressive muscle relaxation technique on stress among computer professionals based on the independent and dependent variables.

RESEARCH DESIGN

A research design is a blueprint for conducting a study. The research design used in the study was Pre experimental one group pre-test post-test design.

Pre-experimental study designs were developed to provide alternative means of examining causality in situations not conducive to experimental controls. These designs have been developed to control as many threats to validity as possible in a situation in which at least one of the three components of true experimental design (randomization, control, and manipulation) is lacking.

The study was intended to ascertain the change in the level of stress who were subjected to progressive muscle relaxation technique. Here one group was observed twice, i.e., before and after introducing the progressive muscle relaxation technique. The effect of the treatment would be equal to the level of the phenomenon after the treatment minus the level of phenomenon before treatment.

Thus it can be represented as:

Group	Pre test	Intervention	Post test
I	O_1	X	O_2

O_1: Pre-test before administration of progressive muscle relaxation technique
X: Administration of progressive muscle relaxation technique
O_2: Post-testing of the computer professionals after administration of progressive muscle relaxation technique.

Using this design, the cause-effect relationship between the progressive muscle relaxation technique (independent variable) and stress among computer professionals (dependent variable) to be assessed which is essential for testing the effect of the progressive muscle relaxation technique.

Variables

Variables are the conditions or characteristics that the experimenter manipulates controls or observes. Three types of variables were identified in this study:

1. Independent variable
2. Dependent variable
3. Extraneous variables

1. Independent variable

The independent variable is manipulated by the researcher. It is the intervention or treatment that the researcher performs to see the resulting change in the dependent variable. The independent variable is the presumed cause for the resulting effect on the dependent variable.

The independent variable in the present study was the progressive muscle relaxation technique demonstrated by the investigator and further carried out by the computer professionals.

2. Dependent variable

The dependent variable usually is the variable that the researcher is interested in understanding, explaining or predicting. It is the outcome variable, which is measured or observed following the intervention of the independent variable.

Stress scores of pre-test and post-test were the dependent variables in the study.

3. Extraneous Variables.

Extraneous variables are controlled variables that influence the findings of the research study. They can interfere with obtaining a clear understanding of the relational or causal dynamics within these studies.

The extraneous variable in the study was age, marital status, type of family, salary, working hours per day and years of experience.

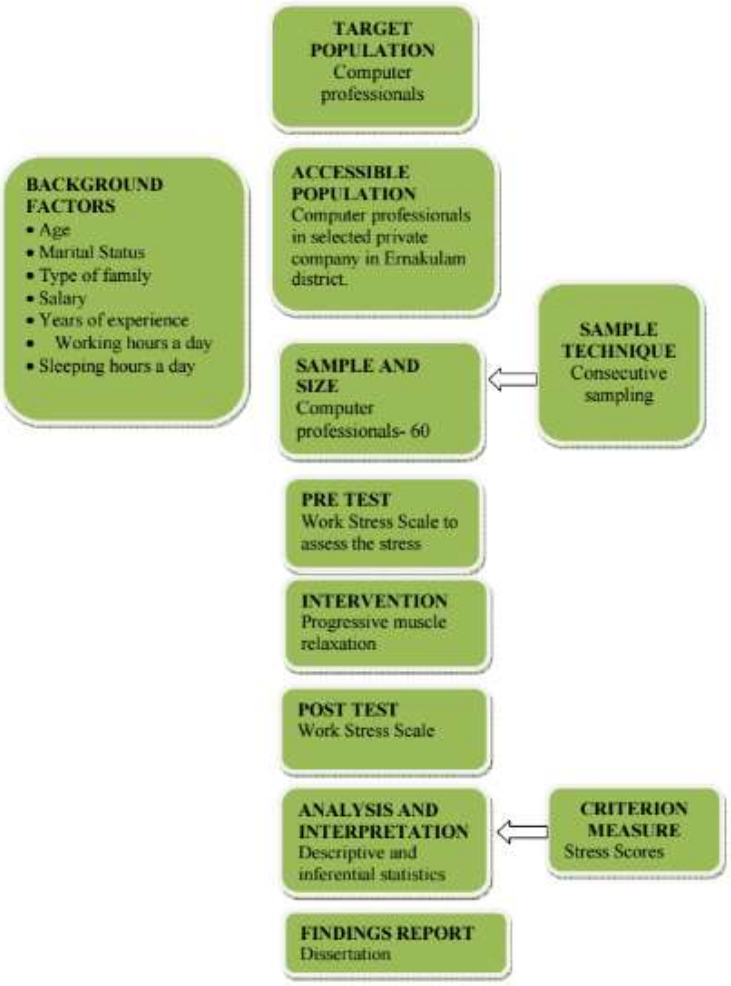

Fig.2: SCHEMATIC REPRESENTATION OF STUDY DESIGN

SETTING OF THE STUDY

The physical location and conditions in which data collection takes place in a study. The study was conducted in Infaduratech, Ernakulam district. It is a software company with a total of 120 employees among which 95 are computer professionals.

Population

In this present study, the target population is all the computer professionals who are working in private companies.

Sample

The sample for the present study consisted of computer professionals, working in Infaduratech, Ernakulam, who met the inclusion criteria**.**

Sampling technique

Consecutive sampling technique was used to select the sample for the present study. It is a form of sampling which can be considered as the best non-probability sampling because it includes all the subjects available, which makes the sample a better representation of the entire population. 60 computer professionals were selected based on the inclusion and exclusion criteria.

Sampling criteria

Inclusion criteria

1. Employees who work for more than 6 hours in front of the computer daily.
2. Employees who are willing to participate in the study.

Exclusion criteria

1. Those who are on leave on the date of data collection.
2. The candidates who have already taken work-related stress management measures.

Tools / instruments

In the present study, the data collection tools consists of two sections

Section -A: Socio-demographic data sheet

Section-B: Stress assessment with Work Stress Scale (WSS)

DESCRIPTION OF THE TOOL

Section A – Socio-demographic data sheet

This was developed by the researcher to understand the identifying data and socio-demographic background of the subjects. A structured interview schedule was used to collect the socio-demographic data. It consists of 8 items classified as:

- Personal and family profile: Age, marital status, sleeping hours a day.
- Professional profile: Qualification, designation and years of experience.
- Working condition profile: Salary, working hours a day, resting time in workplace

Section B – Work Stress Scale

A structured interview schedule was used to assess stress of computer professionals. The scale consists of 34 items divided into 6 domains: relationship problems with superiors, bureaucratic constraints, work-family conflicts, relationship problem with colleagues, performance pressure and poor job prospects. It has the high reliability of 0.96 and has been frequently used in Indian studies and found applicable. A 5 point scale was applied to the measure, ranging from (0) no stress to (4) extreme stress. Higher scores indicate higher work stress. The stress-related questions were further categorized under six dimensions; relationship problems with superiors, bureaucratic constraints, work-family conflict, relationship problems with colleagues, performance pressure, and poor job prospects. Relationship problems with superiors include items 4, 5, 6, 7, 8; bureaucratic constraints includes items 19, 20, 21, 22, 23, 32; work-family conflict includes items 27, 28, 29, 30, 31, 33; relationship problems with colleagues includes items 12, 13, 14, 15, 16, 18; performance pressure includes items 1, 2, 3, 17, 24, 25; and poor job prospects includes items 9, 10, 11, 26, 34.

Scoring and interpretation

The scoring is arbitrarily graded as follows:

- 0 - Not a source of stress
- 1 - Mild stress
- 2 - Moderate stress
- 3 - Severe stress
- 4 - Extreme stress

The range score is from 0-136. The work stress levels are divided into 4 categories;

- 1- 33 - Mild stress
- 34-67 - Moderate stress
- 68- 101 - Severe stress
- 102- 136 - Extreme stress

Content validity

The Work Stress Scale is a standardized instrument for which the validity is already established and has been used in numerous studies all over India and abroad. Even then the validity of the tool was performed in order to check whether the tool can be used in the present setting and culture. Content validity of the tool and procedure of progressive muscle relaxation along with its blueprint and criteria checklist was established in consultation with five experts in the field of psychiatric nursing, psychiatrist, psychologist and psychiatric social worker.

Reliability of the tool

Reliability refers to the degree of consistency or dependability with which an instrument measures the attribute it is designed to measure. The reliability of the tool was checked by test and retest method, and it was 0 .96. The practicability, appropriateness, and feasibility of the study were established.

Ethical consideration

The research proposal and data collection tool were presented before the Institutional Ethical Committee (IEC). After making the corrections suggested by the ethical committee, the investigator got the ethical clearance from the IEC (Appendix 1). The computer professionals were given I detailed information regarding the data collection process and confidentiality was assured to win their cooperation. Informed consent was taken from all computer professionals before data collection to preserve human rights.(Appendix – 4)

Pilot study

After obtaining administrative sanction from the authority concerned (Sivaprasad and Associates), a pilot study was conducted among six samples. The period of the pilot study was 2 weeks from 29/11/2012 to 12/12/ 2012. Data was collected with the prepared tools and analyzed using descriptive and inferential statistics. The results show that the mean pre-test stress score was 37.67 and it was reduced to 20.83 after the practice of progressive muscle relaxation technique. The 't' test reveals that progressive muscle relaxation technique was effective as shown by the 't' value (3.907) which was significant at 0.05 level of significance

DATA COLLECTION PROCESS

The data collection period was for 4 weeks; from 19th December 2012 to 19th January 2013. After getting permission from CEO of Infaduratech and the Ethical committee, KVM College of Nursing, the data collection was done in four steps.

Step I: The informed consent was collected from the computer professionals who meet the inclusion criteria after getting permission from them and their authorities.

Step II: The Pre-test stress was assessed by work stress scale after developing a rapport with the participants. The tool was distributed among the participants and they were asked to fill it completely as per the instructions. On an average, it took 30 minutes for each participant to complete the questionnaire.

Step III: The progressive muscle relaxation technique was demonstrated to the participants in a group by the investigator and the participants were asked to practice progressive muscle relaxation for a period of two weeks, 30 minutes daily.

Step IV: Stress of the participants was reassessed by work stressed scale 2 weeks after the implementation of progressive muscle relaxation technique.

INTERVENTION (JACOBSON PROGRESSIVE MUSCLE RELAXATION TECHNIQUE)

Procedure

Step 1. Assume a comfortable position. You may lie down; loosen any tight clothing, close your eyes and be quiet.

Step 2. Assume a passive attitude. Focus on yourself and on achieving relaxation in specific body muscles. Tune out all other thoughts

Step 3. Tense and relax each muscle group and when tensing muscles it is important that not be too excessive, only tense them to about 80% of what you are able. If you feel pain or discomfort, move on to a different area. During each session take a deep breath, hold it, and let it out

Forehead - Wrinkle your forehead; try to make your eyebrows touch your hairline for five seconds. Relax.
Eyes and nose - Close your eyes as tightly as you can for five seconds. Relax.
Lips, cheeks, and jaw - Draw the centers of your mouth back and grimace for five seconds. Relax. Feel the warmth and calmness in your face.
Hands - Extend your arms in front of you. Clench your fists tightly for five seconds. Relax. Feel the warmth and calmness in your hands.
Forearms - Extend your arms out against an invisible wall and push forward with your hands for five seconds. Relax.
Upper arms - Bend your elbows. Tense your biceps for five seconds. Relax. Feel the tension leave your arms.
Shoulders - Shrug your shoulders up to your ears for five seconds. Relax.
Back - Arch your back off the floor for five seconds. Relax. Feel the anxiety and tension disappearing.
Stomach - Tighten your stomach muscles for five seconds. Relax.
Hips and buttocks - Tighten your hip and buttock muscles for five seconds. Relax.
Thighs - Tighten your thigh muscles by pressing your legs together as tightly as you can for five seconds. Relax.
Feet - Bend your ankles toward your body as far as you can for five seconds. Relax.
Toes - Curl your toes as tightly as you can for five seconds. Relax.

Step 4. Focus on any muscles which may still be tense. If any muscle remains tense, tighten and relax that specific muscle three or four times.

Step 5. Fix the feeling of relaxation in your mind. Resolve to repeat the process again.

Plan for data analysis

Data analysis involves descriptive statistics to find mean, mode and median and inferential statistics. The data is entered in the master sheet.

Descriptive statistics such as frequency, percentage, mean and standard deviation were used to describe the sample characteristics and level of stress.

Inferential statistics such as paired t test was used to find the effectiveness of progressive muscle relaxation on stress among computer professionals, chi-square was used to find the association between stress and selected demographic variables.

CHAPTER -4
ANALYSIS AND INTERPRETATION

Section A: Socio-demographic data of the subjects.

Section B: Stress level of subjects.

Section C: Effectiveness of progressive muscle relaxation technique on stress among the subjects.

Section D: Association between the pre-test levels of stress experienced by the subjects with their selected demographic variables.

ANALYSIS AND INTERPRETATION

The analysis is the process of organizing and synthesizing the data so as to answer research questions and test hypothesis. This chapter deals with the analysis of data and the interpretation of the results. The purpose of the present study was to find out the effect of progressive muscle relaxation technique on stress among computer professionals, Ernakulam district. The study was conducted using a quantitative approach among 60 computer professionals. The samples were selected by implementing consecutive sampling technique. Demographic Questionnaire and structured questionnaire were used for collecting data. The data collection period was one month, in the month of January 2013.

The data collected was analyzed using statistical package for social sciences.

The data were analyzed using both descriptive and inferential statistics and was presented under the following headings.

Section A: Socio-demographic data of the subjects.

Section B: Stress level of subjects.

Section C: Effectiveness of progressive muscle relaxation technique on stress among the subjects.

Section D: Association between the pre-test levels of stress experienced by the subjects with their selected demographic variables.

SECTION A: Socio-demographic data of the subjects.

Table 1
Frequency and percentage distribution of computer professionals based on age.

(n=60)

Age	Frequency	Percentage
20-25yrs	27	45
26-30yrs	19	31.7
>31yrs	14	23.3
Total	60	100

The table shows that majority (45%) of the subjects were in the age group of 20-25 yrs, 31.7% were in the age group of 26-30 yrs and only 23%were in the age group of above 31 yrs.

Table 2
Frequency and percentage distribution of computer professionals based on marital status

(n=60)

Marital status	Frequency	Percentage
Married	17	28.3
Unmarried	42	70
Divorced	1	1.7
Total	60	100

The table shows that majority (70%) of the subjects were unmarried and only 28.3% were married.

Table 3
Frequency and percentage distribution of computer professionals based on type of family

(n=60)

Type of family	Frequency	Percentage
Joint family	14	23.3
Nuclear family	40	66.7
Extended family	6	10
Total	60	100

The table shows that majority (66.7%) of the subjects belong to a nuclear family and only23.3% were from joint family.

Table 4
Frequency and percentage distribution of computer professionals based on salary

(n=60)

Salary	Frequency	Percentage
Below 10,000 Rs	21	35
Rs. 10,001-30,001	33	55
Above Rs 30.001	6	10
Total	60	100

The table shows that majority (55%) of the subjects had income between Rs. 10,001-30,001 per month and only 35% had income below 10,000 monthly.

Table 5
Frequency and percentage distribution of computer professionals based on years of experience

(n=60)

Year of experience	Frequency	Percentage
Less than 1 year	24	40
1-3 years	17	28.3
Above 3 years	19	31.7
Total	60	100

From the above table, it is evident that majority of them (40%) had experienced less than 1 year, 31.7% have experienced more than 3 years and only 28.3% had years of experience between 1-3 years.

Table 6
Frequency and percentage distribution of computer professionals based on working hours a day
(n=60)

Working hours	Frequency	Percentage
Less than 7hours	9	15
7-9 hours	37	61.7
Above 9 hours	14	23.3
Total	60	100

From the above table, it is evident that majority (61.7%) of the subjects work for 7-9 hours a day and only 23.3% worked above 9 hours a day.

Table 7
Frequency and percentage distribution of computer professionals based on resting time in workplace
(n=60)

Resting time	Frequency	Percentage
Less than 45mts	19	31.7
45mts-1hr & 30mts	38	63.3
Above 1hr & 30mts	3	5
Total	60	100

From the above table, it is evident that majority (63.3%) have the resting time of 45 minutes- 1hour 30 minutes in workplace a day and only 31.7% had resting time less than 45 minutes in workplace a day.

Table 8
Frequency and percentage distribution of computer professionals based on sleeping hours
(n=60)

Sleeping hours	Frequency	Percentage
Less than 6 hours	19	31.7
6-8 hours	39	65
Above 8 hours	2	3.3
Total	60	100

From the above table, it is evident that majority (65%) of the subjects have sleeping hours 6-8 hours a day and 31.7% have sleeping hours less than 6 hours a day.

SECTION B: Stress level of subjects.

Table 9

Section II: Frequency distribution of computer professionals based on stress level before the practice of progressive muscle relaxation technique.

(n=60)

Stress level	Frequency	Percentage
Mild stress	20	33.3
Moderate stress	24	40
Severe stress	16	26.7
Extreme stress	0	0
Total	60	100

Table shows that majority (40%) of computer professionals had moderate stress, 33.3% of them had mild stress, and only 26.7% of them had severe stress due to work.

SECTION C: Effectiveness of progressive muscle relaxation technique on stress among computer professionals.

(n=60)

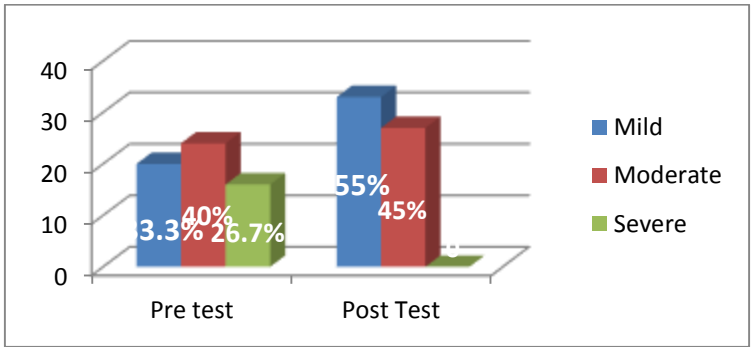

Fig: 3 Comparison of stress before and after progressive muscle relaxation

From the graph it is evident that 26.7% of the subjects were having severe stress in the pre test and in the post test none of the subjects were having severe stress, 40% of the subjects were having moderate stress in the pre test and in the post test moderate stress level is 45% and 33.3% of the subjects were having mild stress in the pre test and in the post test mild stress level is 55%.

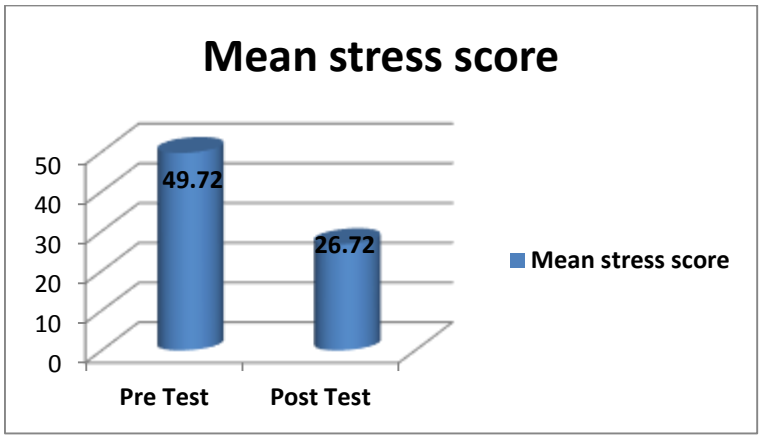

Fig 4: Pre-test and Post-test mean stress score.

From the graph, it is evident that there is a significant reduction in mean stress score from 49.72 in the pre-test to 26.72 following the practice of progressive muscle relaxation.

Table 10: Effectiveness of progressive muscle relaxation technique on stress among computer professionals

(n=60)

Stress level	Mean	SD	N	Mean Difference	Paired t	P
Pre test	49.72	24.484	60	23	**12.645****	**0.001**
Post test	26.72	12.818	60			

**** Significant at 0.001 level**

The table shows that the mean stress scores were reduced from 49.72 in the pre-test to 26.72 following progressive muscle relaxation. This difference was found to be significant with a `t` value of 12.645 (P = 0.001). That means progressive muscle relaxation help in reduction of stress significantly.

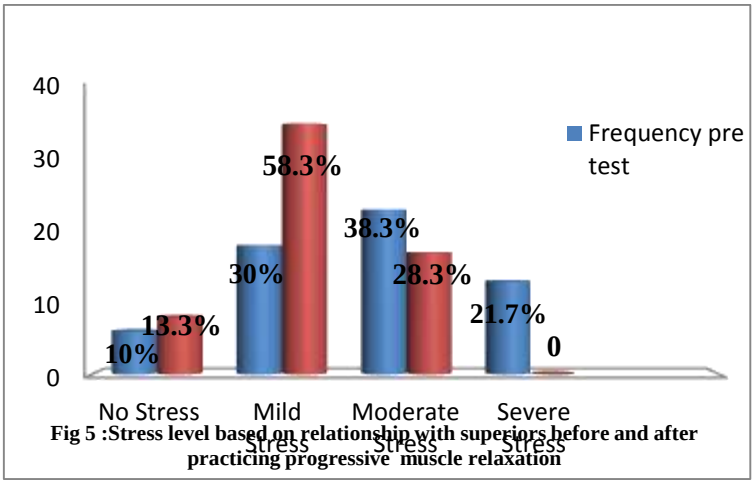

Fig 5 :Stress level based on relationship with superiors before and after practicing progressive muscle relaxation

From the graph it is evident that based on a relationship with the superiors, in the pre-test 21.7% of the subjects had severe stress, 38.3% had moderate stress and 30% had mild stress. But following progressive muscle relaxation, it was interesting to find that none of the subjects were having severe stress, the majority (58.3%) were having only mild stress and 28.3% were having moderate stress.

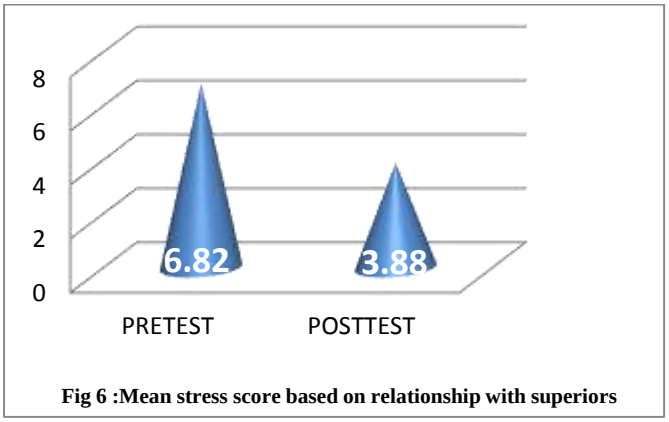

Fig 6 :Mean stress score based on relationship with superiors

From the graph, it is evident that based on a relationship with the superiors; there is a significant reduction in mean stress score from 6.82 in the pre-test to 3.88 following the practice of progressive muscle relaxation.

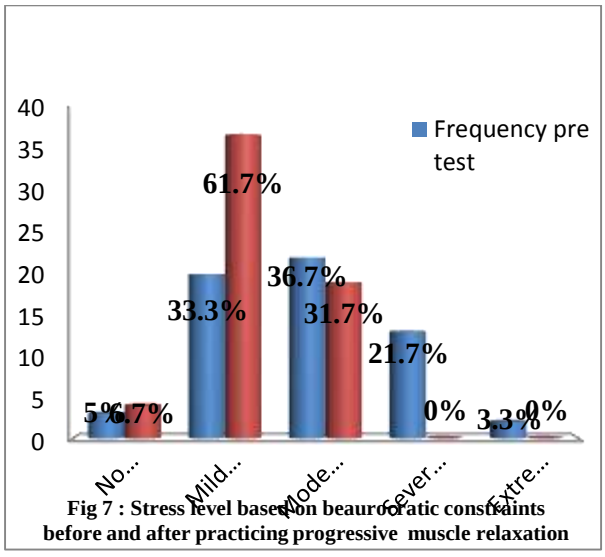

Fig 7 : Stress level based on beaurocratic constraints before and after practicing progressive muscle relaxation

From the graph it is evident that based on beaurocratic constraints; in the pre-test, the 21.7% subjects had severe stress, 36.7% had moderate stress and 33.3% had mild stress. But following progressive muscle relaxation none of the subjects were having severe stress, the majority (61.7%) were having only mild stress and 31.7% were having moderate stress.

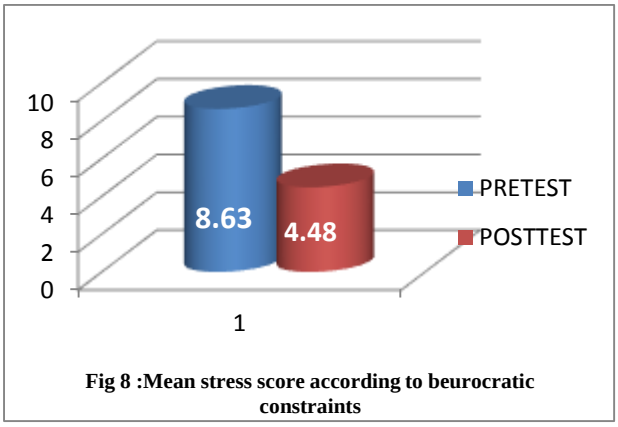

Fig 8 :Mean stress score according to beurocratic constraints

From the graph it is evident that based on beaurocratic constraints; there is a significant reduction in mean stress score from 8.63 in the pre-test to 4.48 following the practice of progressive muscle relaxation.

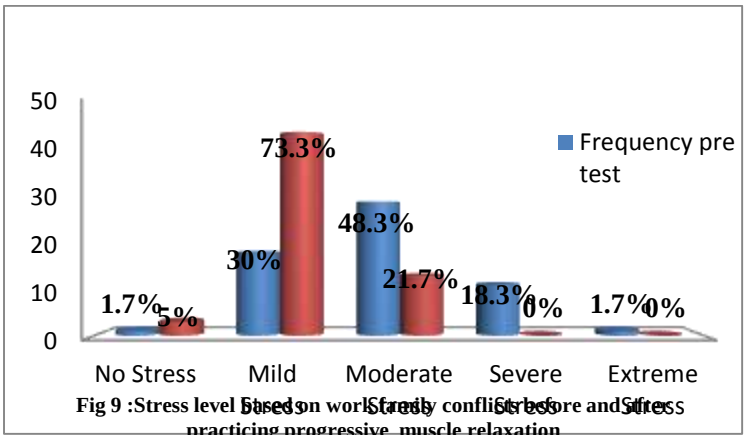

Fig 9 :Stress level based on work family conflict before and after practicing progressive muscle relaxation

From the graph it is evident that based on work-family conflicts; 18.3% of the subjects were having severe stress in the pre test and in the post test none of the subjects were having severe stress, 48.3% of the subjects were having moderate stress in the pre test and in the post test moderate stress level is 21.7% and 30% of the subjects were having mild stress in the pre test and in the post test mild stress level is 73.3%.

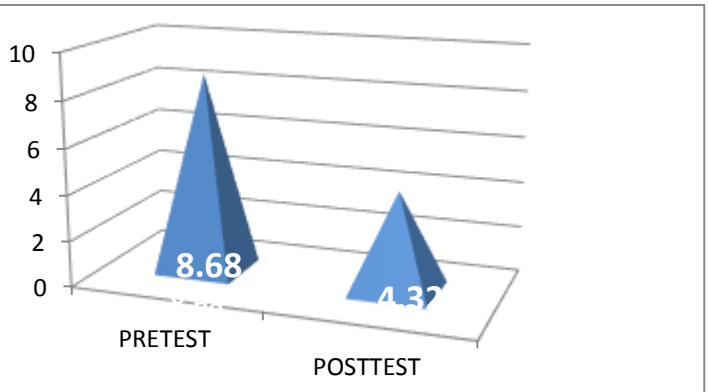

Fig 10 :Mean stress score according to work family conflicts

From the graph it is evident that based on work-family conflicts; there is a significant reduction in mean stress score from 8.68 in the pre-test to 4.32 following the practice of progressive muscle relaxation.

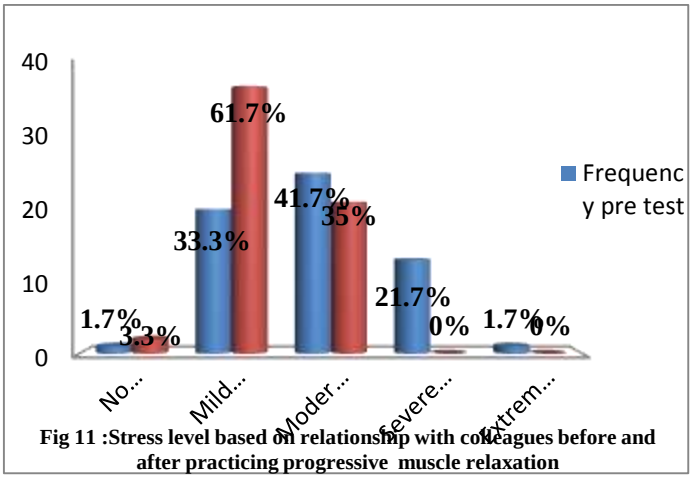

Fig 11 :Stress level based on relationship with colleagues before and after practicing progressive muscle relaxation

From the graph it is evident that based on relationship with colleagues; 21.7% of the subjects were having severe stress in the pre test and in the post test none of the subjects were having severe stress, 41.7% of the subjects were having moderate stress in the pre test and in the post test moderate stress level is 35% and 33.3% of the subjects were having mild stress in the pre test and in the post test mild stress level is 61.7%.

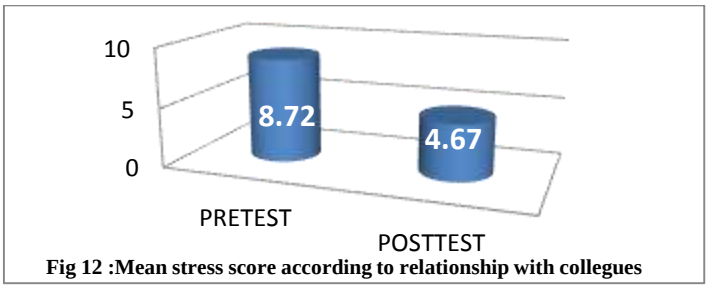

Fig 12 :Mean stress score according to relationship with collegues

From the graph, it is evident that based on a relationship with colleagues; there is a significant reduction in mean stress score from 8.72 in the pre-test to 4.67 following the practice of progressive muscle relaxation.

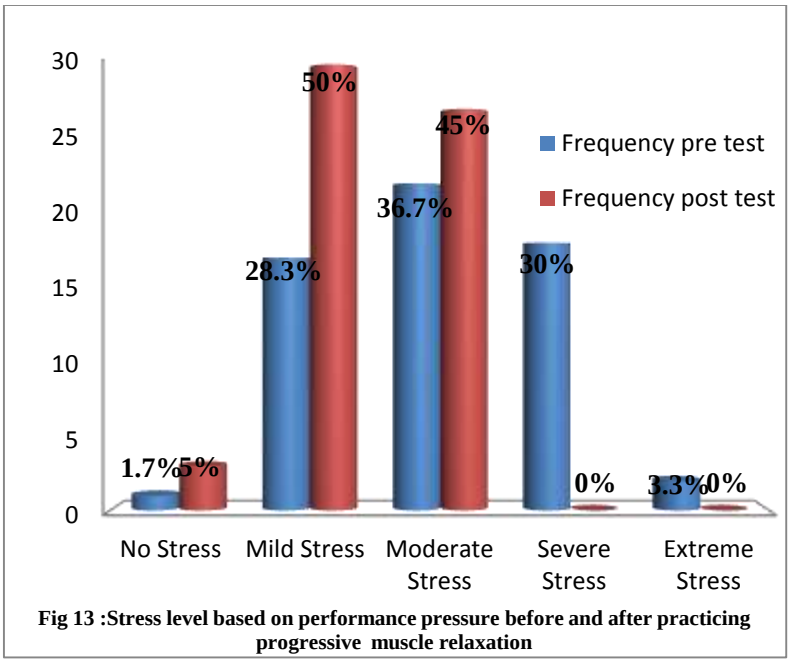

Fig 13 :Stress level based on performance pressure before and after practicing progressive muscle relaxation

From the graph it is evident that based on performance pressure; in the pre-test, the 30% subjects were having severe stress, 36.7% were having moderate stress and 28.3% were having mild stress. But following progressive muscle relaxation none of the subjects were having severe stress, the majority (50%) were having only mild stress and 45% were having moderate stress.

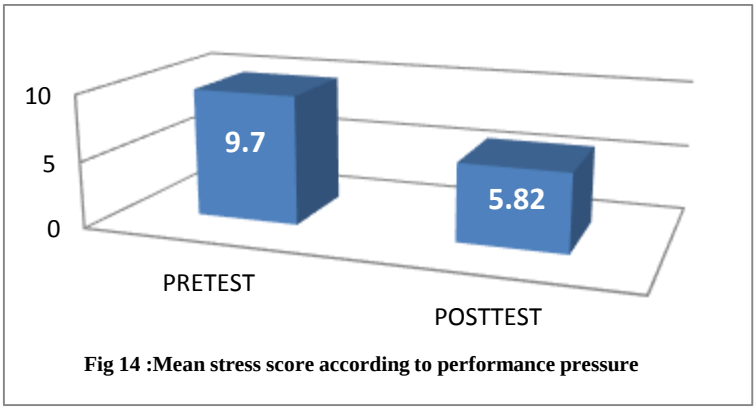

Fig 14 :Mean stress score according to performance pressure

From the graph it is evident that based on performance pressure; there is a significant reduction in mean stress score from 9.7 in the pre-test to 5.82 following the practice of progressive muscle relaxation.

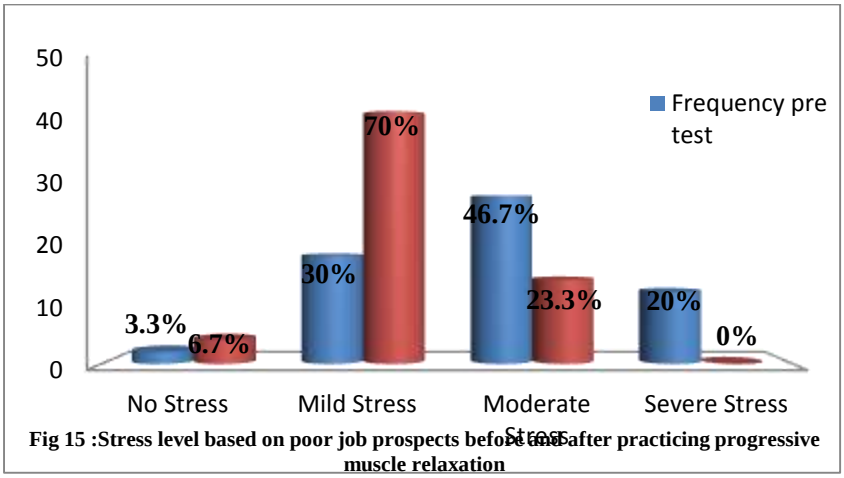

Fig 15 :Stress level based on poor job prospects before and after practicing progressive muscle relaxation

From the graph it is evident that based on poor job prospects; 20% of the subjects were having severe stress in the pre test and in the post test none of the subjects were having severe stress, 46.7% of the subjects were having moderate stress in the pre test and in the post test moderate stress level is 23.3% and 30% of the subjects were having mild stress in the pre test and in the post test mild stress level is 70%.

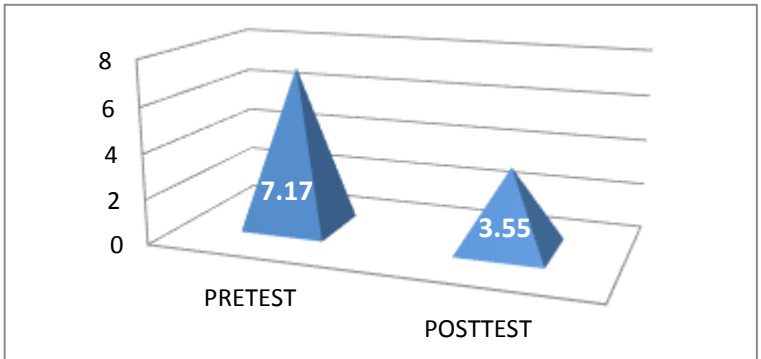

Fig 16 :Mean stress score according to poor job prospects

From the graph it is evident that based on poor job prospects; there is a significant reduction in mean stress score from 7.17 in the pre-test to 3.55 following the practice of progressive muscle relaxation.

SECTION D: **The association of pre-test level of stress experienced by the subjects with their selected demographic variables.**

Table 11
Association between level of stress and age
n = 60

Age	Level of knowledge			Chi-square	df	P
	Mild stress	Moderate stress	Severe stress			
20-25 years	12	10	5	3.762	4	0.439
26-30 years	5	7	7			
Above 31 years	3	7	4			

There is no significant association between level of stress and age since p-value is greater than 0.05.

Table 12
Association between the level of stress and marital status.
n = 60

Marital status	Level of knowledge			Chi square	df	P
	Mild stress	Moderate stress	Severe stress			
Married	5	8	4	3.216	4	0.522
Unmarried	15	16	11			
Divorced	0	0	1			

There is no significant association between level of stress and marital status since p value is greater than 0.05.

Table 13
Association between level of stress and type of family
n = 60

Family	Level of knowledge			Chi-square	df	P
	Mild stress	Moderate stress	Severe stress			
Joint family	1	6	7	**13.141**	**4**	**0.011***
Nuclear family	18	13	9			
Extended family	1	5	0			

There is a significant association between level of stress and type of family since p value is less than 0.05 (p = 0.011).

Table 14
Association between level of stress and salary.
n = 60

Salary per month	Level of knowledge			Chi square	df	P
	Mild stress	Moderate stress	Severe stress			
Below 10,000 Rs	5	9	7			
Rs 10,001-30,000	14	12	7	3.010*	4	0.556
Above Rs30,001	1	3	2			

There is no significant association between level of stress and salary since p-value is greater than 0.05 level of significance.

Table 15
Association between the level of stress and years of experience.
n = 60

Years of experience	Level of knowledge			Chi-square	df	P
	Mild stress	Moderate stress	Severe stress			
Less than 1 year	9	10	5			
1-3 years	5	7	5	0.817	4	0.936
Above 3 years	6	7	6			

There is no significant association between level of stress and years of experience since p-value is greater than 0.05.

Table 16
Association between the level of stress and working hours a day.
n = 60

Working Hours	Level of knowledge			Chi-square	df	P
	Mild stress	Moderate stress	Severe stress			
Less than 7hrs	0	7	2			
7-9yrs	17	9	11	**12.215**	**4**	**0.016***
Above 9hrs	3	8	3			

It is significant between association between level of stress and working hours a day since p-value is less than 0.05 (p = 0.016).

Table 17
Association between the level of stress and resting time in workplace.
n = 60

Resting time in workplace	Level of knowledge			Chi-square	df	P
	Mild stress	Moderate stress	Severe stress			
Less than 45minutes	2	12	5			
45 minutes to 1hr & 30 mts	17	11	10	8.241	4	0.083
Above 1 hr & 30 mts	1	1	1			

There is no significant association between level of stress and resting time in workplace since p-value is greater than 0.05.

Table 18
Association between the level of stress and sleeping hours a day.
n = 60

Sleeping hours a day	Level of knowledge			Chi-square	Df	P
	Mild stress	Moderate stress	Severe stress			
less than 6 hours	4	10	5			
6 to 8 hours	16	12	11	**6.176**	**4**	**0.186**
above 8 hours	0	2	0			

There is no significant association between level of stress and sleeping hours since p-value is greater than 0.05.

CHAPTER 5
Results

Objectives

Hypothesis

Results

RESULTS

This chapter deals with statistical analysis and findings of the study based on
Objectives and hypotheses of the study

Objectives

1. Assess the level of stress experienced by computer professionals
2. Assess the effect of progressive muscle relaxation technique on stress among Computer professionals.
3. Find out the association of pre-test level of stress experienced by the computer Professionals with their selected demographic variables.

Hypotheses

H_1: There is a significant level of stress experienced by computer professionals working in selected private companies.
H_2: There is a significant difference in pre-test and post-test level of stress score of computer professionals at 0.05 level of significance.
H_3: There is a significant association of pre-test level of stress score with their selected demographic variables.

Results

Results of the present study are discussed under the following headings

- Socio-demographic data of the subjects.
- The stress level of subjects.
- The effectiveness of progressive muscle relaxation technique on stress among the subjects.
- Association between the pre-test levels of stress experienced by the subjects with their selected demographic variables.

Socio-demographic data of the subjects

- The majority (45%) of the subjects were in the age group of 20-25 yrs, 31.7% were in the age group of 26-30 yrs and only 23%were in the age group of above 31 yrs.
- The majority (70%) of the subjects were unmarried and only 28.3% were married.
- The majority (66.7%) of the subjects belongs to the nuclear family and only 23.3% were from joint family.
- The majority (55%) of the subjects had income between Rs. 10,001-30,001 per month and only 35% had income below 10,000 monthly.
- Majority of them (40%) had experienced less than 1 year, 31.7% have experienced more than 3 years and only 28.3% had years of experience between 1-3 years.
- The majority (61.7%) of the subjects works for 7-9 hours a day and only 23.3% were working 9 hours a day.
- The majority (63.3%) have resting time 45 minutes- 1hour 30 minutes in workplace a day and only 31.7% were had resting time less than 45 minutes in workplace a day.
- The majority (65%) of the subjects have sleeping hours 6-8 hours a day and 31.7% have sleeping hours less than 6 hours a day.

The stress level of subjects.

- The majority (40%) of computer professionals had moderate stress, 33.3% of them were having mild stress, and only 26.7% of them had severe stress due to work.

The effectiveness of progressive muscle relaxation technique on stress among computer professionals.

- 26.7% of the subjects were having severe stress in the pretest and in the post test it is found that none of the subjects were having severe stress, 40% of the subjects were having moderate stress in the pretest and in the post test it is found that moderate stress level is 45% and 33.3% of the subjects were having mild stress in the pretest and in the post test it is found that mild stress level is 55%.
- That there is a significant reduction in mean stress score from 49.72 in the pre-test to 26.72 following the practice of progressive muscle relaxation.
- Mean stress scores were reduced from 49.72 in the pre-test to 26.72 following progressive muscle relaxation. This difference was found to be significant with a `t` value of 12.645* (P = 0.001). That means progressive muscle relaxation help in reduction of stress significantly.

The association of pre-test level of stress experienced by the subjects with their selected demographic variables

- There is a significant association between level of stress and type of family since p-value is less than 0.05 (p = 0.011).
- There is a significant association between level of stress and working hours a day since p value is less than 0.05(p = 0.016).
- There is no significant association between level of stress and age, marital status, year of experience, salary, resting time in workplace, sleeping hours.

CHAPTER- 6

DISCUSSION, SUMMARY AND CONCLUSION

Discussion
Summary
Conclusion
Nursing implications
Limitations
Recommendations

DISCUSSION

This chapter gives a brief account of the major findings of the present study and discussions in relation to similar studies conducted by other researchers, summary, conclusion, nursing implications, limitations, and recommendations for the further study.

The present study focused on the effect of progressive muscle relaxation technique on stress among computer professionals working in a selected private company, Ernakulam district.

The first objective of the study was to assess the level of stress experienced by computer professionals. The present study found that 40% of computer professionals had moderate stress, 33.3% of them were having mild stress, and 26.7% of them had severe stress due to work. These findings are supported by the findings of the study done by Thippeswamy in which 38% of respondents reported to have severe work stress whereas 50% reported moderate and remaining 12% reported mild stress[77], and in a study done by Dhar and Bhagat it was found that almost all the employees interviewed, were experiencing very high amount of work stress[81]. Paul found that majority (76.7%) of the subjects reported having moderate level of work stress. while 20% of them were experiencing severe work stress and 3.3% had an extreme level of work stress[98].

The stress-related questions were further categorized under six dimensions; relationship problems with superiors, bureaucratic constraints, work-family conflict, relationship problems with colleagues, performance pressure, and poor job prospects. It was found that majority of the participants were having a moderate level of stress in all the dimensions. Cuirrin in his study investigated the factors that motivate/ demotivate and cause stress among the computer engineers. Nine dimensions were created (job security, social relationships, fiscal equity, skill variety, autonomy, advancement, recognition, task identity and feedback) in order to assess, both motivation and stress[40].

The second objective was to assess the effect of progressive muscle relaxation technique on stress among computer professionals. The present study found that the mean pretest stress score was 49.72 which was reduced to 26.72 in the posttest. This difference was found to be significant with a't' value of 12.645($p = 0.001$). This explains that the progressive muscle relaxation technique is effective in reducing work-related stress. These findings are supported by the findings of the study done by Paul in which it was found that the stress level of the IT workers reduced slightly in the immediate post-assessment and again reduced significantly in the follow-up assessment[98]. Verma, in his study also found that relaxation training was effective in significantly reducing the somatic stress response and enhancing subjective well-being.

The third objective of the study was to find out the association of pre-test level of stress experienced by the computer professionals with their selected demographic variables. The present study found that the work stress has a significant association with the type of family and working hours per day. Paul in his study also found that the working hours of the IT professionals had a significant association with work stress[98].

SUMMARY

This chapter provides the process employed in this study. The aim of the study was to find out the effect of progressive muscle relaxation technique on stress among computer professionals.

The study found that majority of the participants were having moderate stress and Jacobson's progressive muscle relaxation technique has a significant effect in reducing the stress.

This study was based on Roy`s adaptation theory in which Sr. Callista Roy stated that the recipient of nursing care may be the person, a family, a group, a community, or a society. Each is considered by the nurse as a holistic adaptive system.

The sample for the present study consisted of 60 computer professionals working in selected private companies in Ernakulam district, who met the inclusion criteria. Consecutive sampling technique was used to select the sample.

The data collection tool used in the consists of two sections

- Section A: A questionnaire to collect socio-demographic variables.
- Section B : Stress assessment with Work Stress Scale (WSS)

In order to establish content validity although the tool was standardized, the tool was given to three subject experts and one psychologist. The reliability of the tool was established by testing for stability and internal consistency. The reliability of the structured questionnaire was obtained by using test-retest method, which the reliability, $r = 0.96$

A pilot study was conducted in the month of December among 6 samples and the final study was conducted from 19th December 2012 to 19th January 2013**.**

After collecting the data of demographic variables from the study participants who meet the inclusion criteria and after getting permission from them and their authorities. The Pre-test stress level of computer professional was assessed using Work

Stress Scale. The progressive muscle relaxation technique was demonstrated to the participants in a group by the investigator and the participants are being asked to practice progressive muscle relaxation for a period of two weeks 30 minutes daily. The stress of the participants was reassessed by work stressed scale 2 weeks after the implementation of progressive muscle relaxation technique.

The data gathered was analyzed and interpreted according to the objectives. Descriptive statistics used were frequency, percentage, mean, and standard deviation. Inferential statistics used to test hypotheses at $p < 0.000$ level of significance, paired't' test was also applied.

MAJOR FINDINGS OF THE STUDY

The present study revealed that mean pre-test stress score of 60 samples is 49.72 with a standard deviation of 24.484 and mean post-test stress score is 26.72 with a standard deviation of 12.818. This difference was found to be significant with a calculated't' value 12.645 which is significant at 0.001 level of significance. It was found that progressive muscle relaxation has a significant effect in reducing stress among computer professionals.

It was found that it had a significant association with the type of family ($p = 0.011$) and working hours ($p = 0.016$).

CONCLUSION

Occupational stress is of increasing importance due to continuing structural changes in the workplace, with both increasing demands and job insecurity imposed on employees. A range of adverse health outcomes have been identified but psychological disorders are significant because they occur frequently, are often unrecognized and can be accompanied by significant social morbidity; this study finding has important implications for the lifestyle and health of computer professionals. India is becoming a strong controller in the I.T revolution and computer professionals contribute tremendously to the economic progress of the country. Hence, their health is of paramount concern.

The present study stated that from all the domains of Work Stress Scale, the employees had perceived and experienced work stress with the Mean scores showing that majority of the subjects expressed mild to severe level of stress in almost all the domains. The findings contribute that the level of employees' work stress revealed that majority, 40% of them experienced moderate stress, 33.3% had mild stress and 26.7% had extreme stress before the intervention.

IMPLICATIONS OF THE STUDY

The findings of the present study have implications not only in the field of psychiatric nursing but also in other areas like community health, preventive medicine, and school health. Education curriculum planners and administrators may use the information obtained to integrate progressive muscle relaxation for educational as well as training programmers. More studies are needed to bring out an effective preventive intervention. The findings of the present study may be helpful for such future studies. In this context, the finding of the study has valuable implications towards nursing education, administration, and research.

Nursing education

The nursing students are under severe stress throughout their academic program. As the study found that Progressive Muscle Relaxation is a very effective strategy in reducing the stress responses, this technique can effectively be used to reduce the stress among students brought by intensive learning to a certain extent. Nurse educators who offer comprehensive services can use progressive muscle relaxation as a method to cope with their stress.

Nursing practice

As the study found that Progressive Muscle Relaxation is very effective in reducing stress it can be used as an effective intervention strategy for not only the patients but also the caregivers of the patients so that they can cope effectively with the burden of illness. Nurses who offer 24 hours services are in the best position to teach patients and their caregivers this stress management strategy. Nurses can also create public awareness about the complications of stress, correct the maladaptive coping patterns and teach adaptive coping strategies to deal with it.

Nursing research

From the nursing research point of view, the study throws light on work stress perceived by the subjects and the use of maladaptive practices which seek attention to the need for specific stress reduction program at workplace. The research to date has shown that studies conducted in handling workplace stress and effectiveness of stress intervention program are very few and is in need for further exploration.

Nursing administration

Nurse administrators should take initiative in organizing the mass educational program in the hospitals and in the community to emphasize the importance of stress reduction program and need to motivate nurses and relatives to encourage participation in the stress reduction programs. Moreover, the mental health team can collaborate with multinational companies in implementing stress reduction programs and counseling services in the workplace to handle the work stress of their employees. Nurse administrators can also incorporate stress management strategies to address nursing occupational stress.

Limitation of the Study

1. Due to time constraints, the sample size and the variables were limited.

2. The post-assessment was done within two weeks, since a longer period (preferably 6 weeks) was beyond the scope of the present study. Hence, lasting effects of the intervention could not be assessed.
3. No tool was used to assess multiple role functioning which evolved as an important factor in the stress perception.
4. The study attempted to understand the employee's problems in few dimensions, many other factors could not be considered.
5. There was no control group for the evaluation of the effectiveness of the intervention in computer professionals and hence, findings could not be generalized to the study population.

Recommendations

Keeping in view the findings of the present study, the following recommendations are made:

1. Long-term, multiple points follow-up is needed to assess the durability of progressive muscle relaxation techniques in managing workplace stress.
2. Qualitative research should be carried out on stress and interpersonal needs as part of occupational mental health.
3. Replicate the study on larger samples with different variables so as to generalize the findings.
4. Active collaboration between the mental health team and the software organizations should take place in order to ensure that proactive measures for the computer professionals' mental health are taken up.
5. Assessment and management of stress in the domestic domain.

The study very clearly highlighted the moderate level of stress perceived by the subjects reflected in unhealthy cognitive, somatic, behavioral and emotional responses which could lead to chronic illness. These findings are alarming and need the attention of mental health professionals as it suggests that inability to manage stress could lead to high incidence of mental and psychosomatic illness in this group in the near future. Hence, secondary preventive measures equipping computer professionals to deal with stressors and manage stress is the need of the hour. So the demonstration of Muscle Relaxation Technique conducted by the researcher is a step in this direction by a mental health nurse.

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BIOGRAPHIES

	Post-Graduation in MSc Nursing (Mental Health Nursing) from Kerala University of Health Sciences, Kerala. Graduated from RUGHS, Karnataka.

