

## CHAPTER I

### INTRODUCTION

“Health is the greatest gift, contentment the greatest wealth,  
faithfulness the best relationship”

- **Buddha (Dr.Krishna Raman, 1998)**

Human being total health is harmony between body, mind and soul. It is a perfect maintenance of the inner environment. Health is not a static rather it is dynamic and everchanging. The body can malfunction at any time.

It is a well known fact that India is, the second largest country in terms of population in the world. But the health status of a great majority of the people is far from satisfactory as compared to China and other developed countries. However, over the last five decades or so, India has built up health infrastructure and manpower at primary, secondary and tertiary care in government, voluntary and private sectors and made considerable progress in improving the health of its population **(Ray 2003; Bhat and Babu 2004)**.

India is passing through demographic and environmental transition which is adding to burden of diseases. The first half of the 20<sup>th</sup> century witnessed a large number of communicable disease epidemics. There have been major improvements in public health since 1950s. However, there have also been health consequences due to urbanization and industrialization. Inequality in health status

exists due to varying economic, social and political causes. Ever increasing population with increasing geriatric population and changing lifestyle with more urbanization is adding pressure on environmental as well as on nutritional requirement resulting in nutritional deficiency, poor sanitation, increasing communicable and non-communicable diseases etc. The growth of public health in India has been very slow due to low public expenditure on health, very few public health institutes in India and inadequate national standards for public health education **(Chauhan L S, 2011)**.

### **1.1. INDIAN APPROACHES TO HEALTH CONCEPT**

In India from the time immemorial, many great sages devoted their entire lives to study the secret of human nature and existence with indefatigable striving and iron endurance. They completely withdrawn themselves from the disturbances of the world and concentrated solely upon this pursuit. Ultimately, their dedication bore fruit by discovering deepest secret of life and the mysteries of being. They discovered a secret leading upward to freedom and emancipation and named its Yoga **(Swami Rajarshi Muni, 2001)**.

### **1.2 DEFINITION OF HEALTH – ACCORDING TO AYURVEDA**

“Samadoshah samaagnishcha Samadhatu mala kriya,  
Prasannaatmendriyah manah Swastha ityabhidhiyate”

- **Susruta Sutra 15/38 (Latha Sathis, 2012)**.

Indian culture is concerned with health and healing which are essentially spiritual in nature. Balancing tridoshas by choosing an appropriate lifestyle, keeping in touch with nature, being aligned with

one's own natural environment appropriately are widely recommended. The relation between lifestyle and holistic health is well recognized by healthcare professionals. A healthy lifestyle provides fit, energetic and reduced risk for disease based on the choices we make about our daily habits.

“Good nutrition, daily exercise and adequate sleep are the foundation for continuing good health. Managing stress is positive ways for longer and more comfortable life constitutes the plan for healthy lifestyle and living upto it” **(Latha Satish, 2012)**.

### **1.3. HEALTH STATUS IN INDIA**

In 2015 the World Health Organization reported that In “India the life expectancy of male is 66.9 years, female 69.9 years and total life expectancy is 68.3 years which gives India a World Life Expectancy ranking of 123”.

### **1.4. LOW BACK PAIN**

Low back pain has been known since the start of written history. Probably the first report of back pain and sciatica can be found in an ancient text, the so-called Edwin Smith Surgical Papyrus presumably written around 1550 B.C.

In the industrialized countries, back pain today is the second most common reason for seeking medical care. Back pain accounts for 15% of all sick leaves and is the most common cause of disability for persons under 45 years of age. However, in historical textbooks, only little information is available on back pain. Waddell stated: “At first

glance, back pain appears to be a problem only since World War II. At second glance, it is realized that not back pain but back related disability became a medical problem at the end of the last century”.

Back pain or "dorsalgia" is a functional disorder. Here pain is felt in the back that usually originates from the muscles, nerves, bones, joints or other structures in the spine.

### **1.5 PREVALENCE OF LOW BACK PAIN**

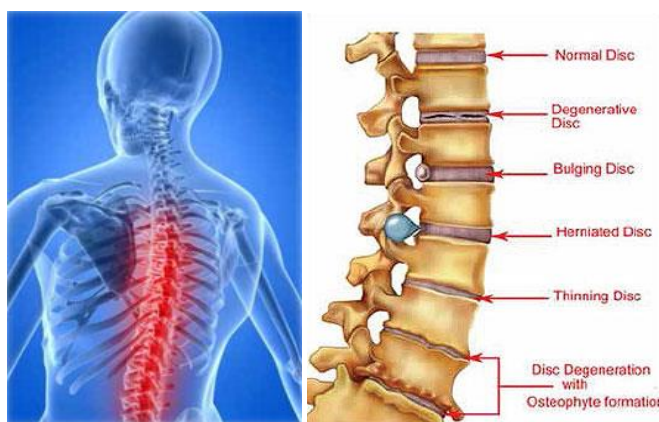
International surveys on low back pain reported that one month prevalence was 19-43 percentage and point prevalence was 15-30%. The estimated worldwide lifetime prevalence of low back pain varies from 50% to 84%. Studies conducted in developed countries proved that the low back pain point prevalence was 6.8% in North America, 13.7% in Denmark, 12% in Sweden, 14% in the United Kingdom, 33% in Belgium, and 28.4% in Canada. Similarly, few studies in western countries have revealed much higher incidence of 72.4% in Nigeria, 64% in China, and 56.2% in Thailand. The occurrence of low back pain in India is also alarming with nearly 60% of the people in India suffers from low back pain at some time during their lifespan. In India, very few studies have been done with regard this background, the present study aimed to assess the prevalence of low back pain **(Ahdhi, G. S., Subramanian et.al. 2016).**

### **1.6 STATUS OF LOW BACK PAIN**

In India, nearly 60 percent of the people have significant low back pain at some time or the other in their life. However, most of the earlier studies in India were hospital based and rarely the population

based studies were done on the association of low back pain with socioeconomic class and other anthropometric measures. The present study, is aimed at finding the prevalence of low back pain and to examine its association with height, body fat distribution, pain reproductive history and socio-economic influences (**Mathew, A. C., et. al 2013**).

### 1.7 STRUCTURE OF THE SPINAL CORD



### 1.8. CLASSIFICATION OF BACK PAIN

Health professionals classify back pain anatomically: Such as

- The cervical spine (neck)
- The thoracic spine (upper back)
- The lumbar spine (lower back)
- The sacral region (bottom of the spine)

### 1.9 CAUSES OF LOW BACK PAIN

If an adult grow his bone strength and muscle elasticity and tone tend to decrease. Also the discs begin to lose fluid and flexibility, which decreases their ability to cushion the vertebrae.

Pain can occur when, someone lifts something too heavy or overstretches, causing a sprain, strain, or spasm in one of the muscles or ligaments in the back. If the spine becomes over strained or compressed, a disc may rupture or bulge outward. Which put pressure on one of the more than 50 nerves rooted to the spinal cord that control body movements and transmit signals from the body to the brain. When these nerve roots become compressed or irritated, back pain results.

Low back pain may reflect nerve or muscle irritation or bone lesions. Injury or trauma to the back, degenerative conditions such as arthritis or disc diseases, osteoporosis or other bone diseases, viral infections, irritation to joints and discs, or congenital abnormalities in the spine are some of the causes for Blood Pressure. Further more Obesity, smoking, weight gain during pregnancy, stress, poor physical fitness inappropriate posture for the activity being performed, and poor sleeping position also may contribute to low back pain. Additionally, scar tissue created when the injured back heals itself does not have the strength or flexibility of normal tissue and this build up of scar tissue from repeated injuries eventually weakness the back and can lead to more serious injury.

Occasionally, low back pain indicates a more serious medical problem. Pain accompanied by fever or loss of bowel or bladder control, pain when coughing, and progressive weakness in the less may indicate a pinched nerve or other serious condition. People with

diabetes may have severe back pain or pain radiating down the leg related to neuropathy (**Floyd, R., & Thompson, Clem. 2008**)

### **1.10. RISK FACTORS OF LOW BACK PAIN**

**Age:** The first attack of low back pain typically occurs between the ages of 30 and 50, and back pain becomes more common with advancing age. As adults grow older, loss of bone strength from osteoporosis can lead to fractures, and at the same time, muscle elasticity and tone decrease. The intervertebral discs begin to lose fluid and flexibility with age, which decreases their ability to cushion the vertebrae. The risk of spinal stenosis also increases with age.

**Fitness level:** Back pain is more common among people who are not physically fit. Weak back and abdominal muscles may not properly support the spine. “Weekend warriors”—people who go out and exercise a lot after being inactive all week—are more likely to suffer painful back injuries than people who make moderate physical activity a daily habit. Studies show that low-impact aerobic exercise is beneficial for the maintaining the integrity of intervertebral discs.

**Pregnancy:** Pregnancy is commonly accompanied by low back pain, which results from pelvic changes and alterations in weight loading. Back symptoms almost always resolve postpartum.

**Weight gain:** Being overweight, obese, or quickly gaining significant amount of weight can put stress on the back and lead to low back pain.

**Genetics:** Some causes of back pain, such as ankylosing spondylitis, a form of arthritis that involves fusion of the spinal joints leading to some immobility of the spine, have a genetic component.

**Occupational risk factors:** Having a job that requires heavy lifting, pushing, or pulling, particularly when it involves twisting or vibrating the spine, can lead to injury and back pain. An inactive job or a desk job may also lead to or contribute to pain, especially if one have poor posture or sit all day in a chair with inadequate back support.

**Mental health factors:** Pre-existing mental health issues such as anxiety and depression can influence how closely one focuses on their pain as well as their perception of its severity. Pain that becomes chronic also can contribute to the development of such psychological factors. Stress can affect the body in numerous ways, including causing muscle tension.

**Backpack overload in children:** Low back pain unrelated to injury or other known cause is unusual in pre-teen children. However, a backpack overloaded with schoolbooks and supplies can strain the back and cause muscle fatigue. The American Academy of Orthopaedic Surgeons recommends that a child's backpack should weigh no more than 15 to 20 percent of the child's body weight.

### **1.11. SYMPTOMS OF LOW BACK PAIN**

- The pain is sometimes accompanied by a tingling sensation or numbness in the back or buttocks or leg.



➤ Pain across the lower part of the back that sometimes radiates into the buttocks, the back of the thigh or to the groin. The pain is usually worse on movement.

➤ Limitation in movement of the spine - especially bending forward and leaning back.

➤ Tense spasm of the muscles surrounding the spine and causing a stiff back.

➤ With severe pain and spasm, the back may tilt to one side causing a change in posture.

### **1.12 DIAGNOSIS OF LOW BACK PAIN**

The existence of low back pain may be diagnosed through

- X-ray imaging.
- Computerized Tomography (CT-Scan)
- Magnetic Resonance Imaging.(MRI)
- Discography.
- Electromyography.(EMG)
- Bone scans.
- Ultrasound imaging.

### **1.13. DO'S AND DON'TS OF LOW BACK PAIN**

#### **a). DO'S**

- Place a supportive towel roll at the belt line of the back especially while sitting.
- Avoid bending forward at the waist.
- Try to keep the normal curves in back at all times.

- Keep back straight when lifting.
- Sleep on a good firm surface.
- Keep the natural curves of back by kneeling. (E.g. when making a bed, vacuuming, cleaning the floor or weeding the garden).
- Bend backwards to increase the curve of back while cough or sneeze.

#### **b) DON'TS**

- Do not sit on a low soft couch with a deep seat. It will force to sit with hips lower than knees and will round back. Will lose the normal curve in back.
- Do not place legs straight out in front while sitting.(E.g. sitting in the bath tub).
- Avoid half bent positions.
- Do not sleep on stomach

#### **1.14. SURGICAL TREATMENT OF LOW BACK PAIN**

Surgery may be indicated when conservative treatment is not effective in reducing pain or when the patient develops progressive and functionally limiting neurologic symptoms such as leg weakness, bladder or bowel incontinence, which can be seen with severe central lumbar disc herniation causing cauda equina syndrome or spinal abscess. The most common types of low back surgery include Microdiscectomy, Discectomy, Laminectomy, Foraminotomy, or Spinal Fusion. Another less invasive surgical technique consists of an

implantation of a spinal cord stimulator and typically is used for symptoms of chronic radiculopathy (sciatica). Lumbar artificial disc replacement is a newer surgical technique for treatment of degenerative disc disease, as are a variety of surgical procedures aimed at preserving motion in the spine. According to studies, benefits of spinal surgery are limited when dealing with degenerative discs.

### **1.15. ALTERNATIVE MEDICINE**

There are many alternative therapies used to overcome low back pain symptoms including Naturopathy, Yoga, Acupuncture, Massage, Siddha, Varma, Ayurveda, Panchakarma and herbal remedies. Many approaches have been promoted as aids in managing the symptoms of low back pain, but few of them have scientific evidence to back up to the claims.

#### **1.15.1 YOGA**

Yoga is not merely doing an asana by the body, through the body and for the body. The sadhakas learns to unite one part of the body with another part of the body, the body with the breaths and senses, also the breath with the mind and senses and this takes one to the self realization path. It is this unification which justifies the definition of the word yog which means, 'to unite' (**B.K.S Iyengar, 2004**).

#### **1.15.2 HEALTH ACCORDING TO YOGA**

According to yoga, any obstacle that prevents the realization of the self is an indication of physical indisposition causing a

modification in the mental state-chittavrtti. The aim of yoga is to restrain both physical disturbances and mental modifications.

The obstacles or impediments are: sickness, inaction, doubt, delusion, carelessness, non abstention, erroneous conception; non-attainment, and instability in the sadhana, sorrow, dejection, restlessness and disturbed or unrhythmic breathing. These originate in the body or in the mind. Therefore, health means total freedom from physical and mental afflictions in order to achieve one's goal. Modern medical science is not at variance with the above definition and it agrees that the relationship between the body and the mind is intimate **(Geeta Iyengar, 2013)**.

### **1.15.3. YOGA AS TREATMENT MODALITY**

Yoga is becoming popular in world wide. It gives solace for the restless mind, for the sick, it is a boon. For a common man, it is the fashion of the day to keep him fit and beautiful. Some use it for developing memory, intelligence and creativity. With its multifold advantages, it is becoming a part of education. Specialists use it to unfold the deeper layers of consciousness in their move towards perfection. Because of its rational basis, the modern medical system has replaced almost all the traditional systems of medicine in different parts of the globe. It has proved itself most effective in saving man from the fatal hands of contagious and infectious diseases. However, new widespread psychomatic ailments are posing a great challenge to the modern medical systems. It is here that yoga appears to make a

vital contribution to the modern medicinal system (**Nagendra and Nagarathna, 2005**).

Yoga is a form of medicine. The fact that it can prevent and cure many ailments has been accepted. Yoga has been used as a tool of psychological and spritual evolution and health for hundreds of years. It has given clear-cut guidelines both for preventive and cure. Today, more than ever, the need for preventive systems of medicine is being widely realized. The cost of medical care is rising all over the world.

Yogic practices are effective for prevention of diseases. It lay great emphasis on strengthening inherent defensive mechanisms of human body and mind. It develops immunity and resistance in the human body and helps the body and mind in attaining homeostatic balance. The strengthening of defense mechanism and the harmony between mind and body prevents onset of diseases. Yoga helps in channelizing the psychic energy (prana) effectively so that the permanent solution is arrived at by uprooting the cause of the problem (**MDNIY, 2010**).

### **1.16. AYURVEDA**

In Sanskrit, Ayurveda means 'Ayur'-life, longetivity and 'veda'-means knowledge, wisdom or science, thus term The Science of Life. It is also described as the Indian science for maintaining life, which includes not only therapeutics but also preventive treatment and lifestyle. The use of Ayurveda for treatment involves two different types

of experts: practitioners and dispensers. Within the category of practitioners, there is a subcategory for Ayurveda therapists, of two types: those who practice as panchakarma therapists and those who practice as Ayurveda dieticians.

### **1.16.1. PRINCIPLES OF PANCHAKARMA THERAPY**

The Sanskrit term Panchakarma translates five therapeutic procedures. Pancha refers to five and karma refers to the therapy that brings about homeostasis by way of evacuation of accumulated dosha. These Panchakarma procedures are carried out in three sequentiated steps. Vamana, Virechana, Asthapana basti, Anuvasana basti and Nasya are the five procedures comprising Panchakarma. Vamana refers to the therapeutic emesis. Virechana means therapeutic purgation. Decoction emema is called by the name Asthapana basti. Oil enema is referred by the name Anuvasana basti. Nasya is the nasal administration of the medicine **(Acharya, G. S. , 2006)**.

Panchakarma is one of the most important ayurvedic treatment methods. When done correctly, it increases the receptivity and effectiveness of subsequent therapies. Each procedure is performed in three phases: preparatory procedures, the main procedure, and post-cleansing procedures such as diet and lifestyle modification. Like allied therapies include shirodhara (ayurvedic oil dripping treatment), shirobasti (retention of warm herbal oil on the scalp), katibasti (retention of warm herbal oil on the back), and janubasti (retention of warm herbal oil on the knee). Treatment protocols are customized to

meet the individual needs of each patient. In addition, Panchakarma may be used for preventative and rejuvenative (**Vinjamury, S. P., et. al., 2012**).

### **1.16.2. KATI BASTI TREATMENT FOR LOW BACK PAIN**

Kati basti is indicated in painful conditions of low back region. The waist area of the body is called Kati. Holding warm ayurvedic oils on the affected areas is called Basti. Kati Basti involves retention of warm thick medicated oil over the lower back or other parts of the spine for certain period. Kati basti, a part of pre-operative procedure prior to Panchakarma is a very effective treatment for lower back pain.

The patient is asked to lie face down on the bed, and is applied medicated oil locally around the lumbo-sacral region. Then, a reservoir made of black gram dough is built around the lumbo-sacral area. Ensuring leak-proof, a lukewarm medicinal oil around 200-300ml is slowly poured into it.

The temperature of oil is maintained reheating and continuously adding more oil. The oil is kept on for 30-40 minutes.

Once this part of the treatment is over, the affected area may be gently massaged, followed by a steaming for 10-15 minutes for better absorption of the medicine.

### **1.16.3 BENEFITS OF KATI BASTI**

1. Alleviates numbness due to Sciatic nerve compression & most types of low-back pain.

2. Strengthens back muscles which maintain normal curvature of the spine and the bone tissues.
3. Effective treatment for any type of back pain & spinal disorders, stiffness and other back concerns related to spinal disc problems.
4. Increases the circulation in the region & highly effective in inflammatory conditions.
5. Kati Basti alleviates lower back conditions like Lumbar Spondylosis, Inter vertebral disc prolapses, Lumbago (low back ache) and Sciatica.
6. Alleviates pain associated with fracture, dislocation, spinal tuberculosis and tumors.
7. Strengthens the joints, muscles and soft tissues around and enables to resume back to the work and activities.

Kati Basti can be taken as a preventive treatment also. It helps to avoid problems related to back and keeps the spine healthy. As medicated oil gets deeply absorbed into the skin it both nourishes and strengthens the muscles and nerves. This is the one of the best treatment for healthy bone, muscle, vertebrae, spine, and nerves of lower back.

#### **1.17. REASONS FOR SELECTION OF THE TOPIC AND THE VARIABLES**

In this modern world the lifestyle and food habits are changing day by day. Hence most of the men are affected by low back pain. To create awareness among men, the researcher has selected this topic.



The researcher selected yogic practices and Panchakarma therapy to treat the selected risk factors such as Physical, Physiological, Clinical, Radiological and Psychological variables among men with low back pain. The researcher took this topic because there are lack of knowledge and awareness on alternative medicine in this field and especially to help the men with low back pain. Hence the researcher wish to find out the effect of Yogic practices with Panchakarma therapy and Yogic practices without Panchakarma therapy on men with low back pain through a experimental research.

#### **1.18. OBJECTIVES OF THE STUDY**

1. To find which treatment group significantly improves flexibility among men with low back pain.
2. To measure whether there was a decrease or increase in the physiological variable such as body mass index (BMI) among men with low back pain due to different therapies.
3. To clinical variables prove whether there was any significant improvement in pain and range of motion among men with low back pain.
4. To find out whether there would be any significant difference in selected radiological variable such as bone density (Dual energy X-ray absorptiometry (DXA) scanner) among men with low back pain.
5. To measure scientifically the psychological variables such as life satisfaction and stress level of the subjects after the treatment

among men with low back pain due to yogic practices with and without panchakarma therapy.

### **1.19 STATEMENT OF THE PROBLEM**

This study was carried out to know the effect of yogic practices and panchakarma therapy on selected risk factors among men with low back pain.

### **1.20 HYPOTHESES**

The following were the hypothesis set for the present investigation:

1. There would be significant differences in yogic practices with and without panchakarma therapy groups than the control group on selected physical, physiological, clinical, radiological and psychological variables among men with low back pain.
2. There would be significant differences between yogic practices with panchakarma therapy group and yogic practices without panchakarma therapy group on selected physical, physiological, clinical, radiological and psychological variables among men with low back pain.

### **1.21 SIGNIFICANCE OF THE STUDY**

- The study would help to improve the knowledge and to provide a systematic approach of yogic practices with comparative advantages of panchakarma therapy which in turn is useful to assess the degree of improvement in the men with low back pain.

- The study would be useful for all and serves as a guide to demonstrate the importance of yogic practices in the overall development.
- This study would be helpful to the future research scholars to select new research related to the men with low back pain.
- This study would be help the yoga therapist and ayurveda panchakarma therapist working in hospital and rehabilitation center to assess the present standing of men with low back pain.

### **1.22 DELIMITATIONS**

1. The study was confined to 45 middle aged men with low back pain only.
2. The study was delimited to the men with low back pain in Chennai city only their age group 35 to 45 years.
3. Only selected yogic practices with panchakarma therapy and yogic practices without panchakarma therapy were used during this study as independent variables.
4. The following dependent variables were selected for this study:
  - (a) Physical variable
    1. Flexibility
  - (b) Physiological variable
    1. Body Mass Index
  - (c) Clinical variable
    1. Pain

## 2. Range of Motion

### (d) Radiological variable

#### 1. Bone Density

### (e) Clinical variable

#### 1. Stress

#### 2. Life satisfaction

5. The Training period was delimited to 16 weeks only.
6. Every training session for 45 to 105 minutes and panchakarma therapy 20 to 30 minutes. The training program was scheduled for three days (Monday, Wednesday and Friday) in the morning 6.30 am and 8.15 am for a period of 16 weeks.

### **1.23 LIMITATIONS**

The following factors were the limitations of the study:

1. The social-economic status of the subjects were not taken into consideration.
2. The climatic conditions were not considered for the study.
3. The other factors like life-style, body structure, personal habit, medication and family hereditary were not taken to in account for this study.
4. The acute case were not controlled.
5. The subject's day to day activities and attending counseling therapy were not controlled.
6. Diet pattern of the subject were not considered for this study.

## **1.24 MEANING OF THE TERMS**

### **1.24.1. YOGA:**

Yoga as “Chitta vritti nirodhah” – Patanjali’s Yoga Sutra//I.2.

- Cessation of mental modificationsnis yoga.

Yoga as “Samatvam yoga uchyate” – Bhagwadgita II.48.

- Balance / equanimity is called yoga.

Yoga as “Yogah karmasu kaushalam” - Bhagwadgita II.50

- Yoga is skillfulness in action.

**- (Basavaraddi V. Iswar, 2010).**

### **1.24.2 PANCHAKARMA:**

The term Panchkarma consists of two word “Panch’ means five and “Karma” means method of treatment **(Shukla, M., 2013).**

### **1.24.3. LOW BACK PAIN**

Back pain also known as "dorsalgia" is a functional disorder. In this pain felt in the back that usually originates from the muscles, nerves, bones, joints or other structures in the spine. **(Abgrall, J. M. 2007).**

### **1.24.4.FLEXIBILITY**

“Flexibility is the ability of a limb to move freely around a joint through a full range of motion” **(Patricia, 2007).**

#### **1.24.5. BMI (BODY MASS INDEX):**

The Body Mass Index is a measure of body weight relative to height. It can be used to determine if people are at a normal weight, overweight or obese (**Brian K. Alldredge, 2013**).

$$\text{BMI} = \frac{\text{Weight (kg)}}{(\text{height (m)})^2}$$

#### **1.24.6. PAIN**

“An unpleasant sensory and emotional experience associated with actual or potential tissue damage” (**Kumar, K. H., 2016**).

#### **1.24.7. RANGE OF MOTION**

“Range of motion (ROM) is the measurement of the amount of movement around a specific joint or body part. It is commonly measured during a physical therapy evaluation or during a course of treatment” (**Norkin, C. C., 2016**).

#### **1.24.8. BONE DENSITY**

“Bone density is the amount of bone tissue in a certain volume of bone. The most widely recognized BMD test is called a central dual-energy x-ray absorptiometry, or central DXA test. Bone density is a reflecting the strength of bones as represented by calcium contain. The bone density test detects osteopenia mild bone loss, usually without symptoms and osteoporosis more severe bone loss, which may cause symptoms” (**www.medicinenet.com**).

**1.24.9. STRESS:**

“Stress arises when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their well-being” **(R.S. Lazarus, 1966)**.

**1.24.10. LIFE SATISFACTION**

Life satisfaction is the way persons evaluate their lives and how they feel about where they are going in the future. It is a measure of well-being and may be assessed in terms of mood, satisfaction with relations with others and with achieved goals, self-concepts, and self-perceived ability to cope with daily life. It is having a favorable attitude of one's life as a whole rather than an assessment of current feelings **(Andrews, F. M., 2012)**.