INTRODUCTION

An inflammation of a joint or any damage to a joint that produces pain, is generally named as arthritis. The major complaint by individuals who have arthritis is joint pain. Pain is often a constant and may be localized to the joint affected. The pain from arthritis occurs due to inflammation that occurs around the joint, damage to the joint from disease, daily wear and tear of joint, muscle strains caused by forceful movements against stiff, painful joints and fatigue. The term arthritis is used to refer to several different musculo-skeletal problems. These include osteoarthritis, rheumatoid arthritis, juvenile arthritis, systemic lupus, gout, and fibrositis. The term has also been extended to include symptoms that arise from injuries in tissues near the joints where no specific damage to the joint itself is evident. So arthritis is a group of conditions where there is degeneration and/or inflammation of the joints, frequently resulting in pain and discomfort (Hughes, 2004).

Arthritis is the major cause of functional limitations all over the world. Osteoarthritis affects over 135 million people worldwide. It is the fourth most frequent cause of health problems in women worldwide and the eighth in men. Rheumatoid arthritis affects over 20 million people worldwide (Bone and Joint Decade Annual Report 2009, by WHO). In U.S., arthritis account for about 50% of all disabilities. In India the incidence of arthritis is a little less than in west, may be due to lack of awareness and under reporting. There is very little information on the prevalence and incidence of arthritis diseases in the population of this country. The world prevalence of RA might be around 0.3–1.2% (Silman and Horchberg 1993). On the basis of incomplete data of 1975-76 from the Central Bureau of Health Intelligence, Directorate General of Health Services, Ministry of Health, (Government of India), Malaviya, Singh, Kapoor, Sharma, Kumar, and Singh (1994) found that about 8-9 percent (70-80 million approx.) of the adult population suffers from some or the other form of rheumatic disease and about 5-6 percent of the population has real joint or related diseases (i.e. approximately 50 million population). Amongst these, osteoarthritis is the commonest. Inflammatory arthritides were also found in large number of patients (about 1-1.5 percent i.e. about 10 million persons with these disorders in the country).

According to the report based on the BHIGWAN COPCORD Data collected under Bone and Joint Decade 2001-2010 (sponsored by WHO) the prevalence of Arthritis in India is given in the following tables:
Table 1: Prevalence of Rheumatoid Arthritis per 100000 population in India:

<table>
<thead>
<tr>
<th>Age groups (years)</th>
<th>15 - 29</th>
<th>30 - 44</th>
<th>45 - 59</th>
<th>60 - 74</th>
<th>≥75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>-</td>
<td>479</td>
<td>-</td>
<td>1136</td>
<td>-</td>
</tr>
<tr>
<td>Females</td>
<td>113</td>
<td>1639</td>
<td>1775</td>
<td>1914</td>
<td>3846</td>
</tr>
</tbody>
</table>

Table 2: Prevalence of Osteoarthritis per 100000 population in India

<table>
<thead>
<tr>
<th>Age groups (years)</th>
<th>15-24</th>
<th>25 - 34</th>
<th>35 - 44</th>
<th>45 -59</th>
<th>60- 69</th>
<th>70- 79</th>
<th>≥80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4644</td>
<td>15385</td>
<td>20 000</td>
<td>6250</td>
</tr>
<tr>
<td>Females</td>
<td>-</td>
<td>-</td>
<td>2247</td>
<td>6587</td>
<td>14371</td>
<td>19608</td>
<td>14286</td>
</tr>
</tbody>
</table>

However, the prevalence of arthritis varies amongst the states. According to the Technical Report WHS Dissemination Workshop, India, 2003 prevalence of arthritis is very high in West Bengal (35%) and Maharashtra (27%). Arthritis prevalence is higher among females and in the richer population.

Arthritis and rheumatism include a wide variety of disorders affecting the peripheral joints (knees, ankles, finger joints) the spine the soft tissues surrounding joints (tendons, ligaments, capsules), and the connective tissues may be affected by congenital anomalies, metabolic or biochemical abnormalities, infections, inflammatory conditions or cancer (Kidd and Jawad, 2003). Certain rheumatic disorders occur more commonly in the young (inflammatory arthritis), in women (connective tissue diseases such as lupus erythematosis, and rheumatoid arthritis), in men (gout, ankylosis spondylities), or in the aged (osteoarthritis).

**Osteoarthritis:** OA is the most common type of arthritis that results from a wearing out of joints. OA is a joint failure, a disease in which all structures of joints have undergone pathological change, often in concert. The pathological sine qua non of disease is hyaline articular cartilage loss present in a focal, and, initially, nonuniform
manner. This is accompanied by increasing thickness and sclerosis of the subchondral boney plate, by outgrowth of osteophytes at joints margin, by stretching of articular capsule, by mild synovitis in many effected joints, and by weakness of muscle bridging the joint. There are numerous pathways that lead to joint failure, but the initial step is often joint injury in the setting of a failure of protective mechanisms (Brandt, Doherty, and Lohmander, 2003). So in OA, the top layer of the cartilage wear away and allows the bones under the cartilage to rub together, which results in stiffness, swelling, pain and loss of movement in the joint (Maurer, 1979). OA is often called a “wear and tear” disease. It usually begins after the age of 40 and progresses slowly. It may affect over 50% of people above age 70 years (Arthritis Foundation, 2005b). While the causes of OA are not fully understood, risk factors for developing it include joint injury or overuse, aging, female gender, traumatic experiences, obesity, heredity, nerve injury, and lack of physical activity (Arthritis Foundation, 2005a; Doherty, Brandt, and Lohmander, 1998).

In OA due to some factors e.g. repeated trauma, advanced age, obesity etc. that cause the breakdown of joint eventually results in loss of joint shape and alignment, the ends of the bones thicken and form bony growths called ‘spurs’. The degenerated small bits of cartilage or bone may float within the joint space causing stiffness, pain and loss of mobility in joints. It mainly affects the weight-bearing joints like the knees and hips. However, it may also involve small joints of finger (e.g. in typists and computer operators due to overuse of finger joints) and the spine (e.g. in old people). The pain in knees may become worse after suddenly rising from a “prolonged sitting posture” and sometimes in damp or rainy seasons (possibly due to change in joint pressure with change in atmospheric pressure), does not affect the overall health of the person.

**Rheumatoid Arthritis:** RA is a chronic inflammatory systematic disease in young or middle aged adults, characterized by destructive and proliferative changes in synovial membrane, periarticular structures, skeletal muscles, and perineural sheaths. Eventually joints are destroyed, ankylosed and deformed. RA causes pain and swelling in the synovial membranes, or linings of the joints. Rheumatoid arthritis (RA) is the second most common form of arthritis and affects 2.1 million Americans (Arthritis Foundation, 2005c). RA is more common in females. The ratio of female to male patient is approximately 3:1 (Anderson, Bradleyla, Young, McDaniel, and Wise, 1985). While the cause of RA is not known, it is an autoimmune disorder in which
joint damage results from the immune system attacking the joints. RA is characterized by inflammation of the lining of the joints, resulting in pain, swelling, stiffness, and loss of function in the joints. The inflammation most often affects joints in the hands and feet on both sides of the body. It often first involves the hands, wrists, or feet, but over time may include the ankle, hips, knees, shoulder or jaw (Kidd and Jawad 2003; Hughes 2004). Some patients with RA experience constant symptoms while others have an up and down course of bad periods or flares and good periods called remissions. Some important risk factors that lead to the development of RA are changes in the female hormonal environment such as in pregnancy, breastfeeding and the use of the oral contraceptive (OC) pill, cigarette smoking, exposure to silica dust, diets high in caffeine, low in antioxidants and high in red meat, Epstein-Barr virus (Oliver and Silman, 2006).

Generally its onset is more acute, with a rapid development of polyarthritis, often accompanied by constitutional symptoms, including fever, lymphadenopathy (swollen/enlarged lymph nodes), and splenomegaly (enlargement of the spleen). Synovial inflammation causes swelling, tenderness, and limitation of action. With persistent inflammation, a variety of characteristic joint changes can develop. Some extra-articular manifestations can also occur. For example rheumatoid nodules may develop in some persons usually on periarticular structures, extensor surfaces, or other areas subjected to mechanical pressure, but they can develop anywhere. Rheumatoid vasculitis which can affect any organ system, is seen in patients with severe RA and high titers of circulating rheumatic factor (Lipsky, 2008).

**Systemic lupus Erythematosus (SLE):** It is a chronic autoimmune disease in which organs and cells undergo damages mediated by tissue-binding auto-antibodies and immune complexes. It can affect any part of the body. In it the immune system attacks the body’s cells and tissue, resulting in inflammation and tissue damage (William, Berger, and Dirk, 2005). SLE begins with high fever, rashes, and hair loss, and may eventually result in kidney dysfunction. It also affects the nervous system, the skin, the kidneys, the lungs, the heart, and the blood-forming organs. The course of the disease is unpredictable, with periods of illness (called flares) alternating with remissions. The disease occurs nine times more often in women than in men, especially between the ages of 15 and 50, and is more common in those of non-European descent (Rahman, David, and Isenberg, 2008). Women exposed to estrogen
containing oral contraceptives or hormone replacement has an increased risk of developing SLE.

Important risk factors in SLE are, heredity (as it is a multigenic disease), female gender, hormonal environment, smoking, presence of other types of arthritis e.g. RA and fibromyalgia, and exposure to UV rays. Occupational mercury exposure, work in a dental laboratory or office, and agricultural work involving the mixing of pesticides are other risk factors for developing SLE (Cooper, Parks, Treadwell, St. Clair, Gilkeson, and Dooley, 2004).

Most people with SLE have intermittent polyarthritis, varying from mild to disabling, characterized by soft tissue swelling and tenderness in joints, most commonly in hands, wrists, and knees. Joint deformities (hands and feet) develop in only 10% of the patients. Erosion of joints is rare but some experts think erosion can occur in SLE. SLE most often harms the heart, joints, skin, lungs, blood vessels, liver, kidneys, and nervous system. The course of the disease is unpredictable, with periods of illness (called flares) alternating with remissions. The disease occurs nine times more often in women than in men, especially between the ages of 15 and 50, and is more common in those of non-European descent (Rahman, et al., 2008; Hannahs Hahn, 2003).

SLE is treatable through addressing its symptoms, mainly with cyclophosphamides, corticosteroids and immunosuppressants; there is currently no cure. SLE can be fatal, although with recent medical advances, fatalities are becoming increasingly rare. Survival for people with SLE in the United States, Canada, and Europe is approximately 95% at five years, 90% at 10 years, and 78% at 20 years (Hannahs Hahn, 2003).

Gout: it is another common arthritis disease usually presents with recurrent attacks of acute inflammatory arthritis (red, tender, hot, swollen joint). It is a metabolic disease most often effecting middle aged to elderly men (mainly between 30-50 years) and menopausal women. It results due to the increased body pool of urate with hyperuricemia. It is characterized by episodic acute and chronic arthritis due to the disposition of uric acid in the blood. The uric acid crystallizes and deposits in joints, tendons, and surrounding tissues. It affects primarily the knees, toes, heels, and wrists. It is more common in males. It is more prevalent in males than females. Gout is associated with a specific biochemical abnormality that causes swelling of the large toe. This often spreads to other joints and can result in sudden and often very severe
pain (Schumacher and Chen, 2008). The main factors increasing the risk for gout are advancing age, male gender, family history of the condition, obesity, hypertension, use of certain drugs, including diuretics ("water pills"), low-dose aspirin, cyclosporine, or levodopa, alcohol, Lead toxicity, organ transplants, thyroid problems, other serious illness e.g. Leukemia, Lymphoma, Psoriasis etc. (Roubenoff, Klag, Mead, Liang, Seidler, and Hochberg 1991; Bhole, de Vera, Rahman, Krishnan and Choi, 2010). Without treatment an acute attack of gout will usually resolve in 5 to 7 days. However, 60% of people will have a second attack within one year (Aaron and Eggebeen, 2007) Those with gout are at increased risk of hypertension, diabetes mellitus, metabolic syndrome, renal and cardiovascular disease and thus at increased risk of death (Richette and Bardin, 2010). This may be partly due to its association with insulin resistance, obesity, but some of the increased risk appears to be independent (Kim, De Vera, and Choi, 2008)

Without treatment episodes of acute gout may develop into chronic gout with destruction of joint surfaces, joint deformity, and painless tophi (deposits of monosodium urate crystals in people with longstanding high levels of uric acid in the blood). These tophi occur in 30% of those who are untreated for 5 years often in the helix of the ear, over the olecranon (it is a large, thick, curved bony eminence of the forearm that projects behind the elbow) processes, or on the Achilles tendons (Aaron and Eggebeen, 2007). With aggressive treatment they may dissolve. Kidney stones also frequently complicate gout affecting between 10-40% of people and occur due to the low urine pH promoting precipitation of uric acid. Other forms of chronic renal dysfunction may also occur (Richette and Bardin, 2010).

**Fibromyalgia:** It is a musculo-skeletal disease associated with aching, stiffness, and tenderness near joints or muscles in which there is formation or development of excess fibrous connective tissue in an organ or tissue as a reparative or reactive process, as opposed to a formation of fibrous tissue as a normal constituent of an organ or tissue. Patients with FM often present different clinical symptoms and associated syndromes such as tiredness, sleep disturbances, morning stiffness, paraesthesia, anxiety, subjective sense of swelling, headache, irritable bowel syndrome, cold intolerance and Raynaud's phenomenon (a vasospastic disorder causing discoloration of the fingers, toes, and occasionally other areas), amongst others (Albornoz, Povedano, Quijada, Iglesia, Fernandez, Perez-Vilchez, and Garcia, 1997). Female are more prone to this disease than male i.e. (4.2% prevalence in
women compared with 0.2% in men (Valverde, Juan, Rivas, and Carmona, 2001). Research has revealed abnormalities within the central nervous system affecting brain regions that may be linked to clinical symptom (Schweinhardt, Sauro, and Bushnell, 2008). These studies show a correlation, but not causation (Wolfe 2009). Some research suggests that alterations in the central nervous system might be the result of childhood stress, or prolonged or severe stress (Schweinhardt et al., 2008).

Historically, fibromyalgia has been considered either a musculoskeletal disease or neuropsychiatric condition. It is associated with sleep problem as there are studies showing that problems in REM are related to fibromyalgia (Moldofsky, Scarisbrick, England, and Smythe, 1975). Main risk factors for this disease are emotional stress, infections and medical illness, surgery, hypothyroidism, and trauma.

Main effects of fibromyalgia are chronic, widespread pain, fatigue, and heightened pain in response to tactile pressure (allodynia). Other effects may include tingling of the skin, prolonged muscle spasms, weakness in the limbs, nerve pain, muscle twitching, palpitations, functional bowel disturbances,( Wallace and Hallegua, 2004) and chronic sleep disturbances (Moldofsky et al.,1975). Other complications often attributed to fibromyalgia that may possibly be due to a comorbid disorder include myofascial pain syndrome, also referred to as chronic myofascial pain, diffuse non-dermatomal paresthesias, functional bowel disturbances and irritable bowel syndrome (possibly linked to lower levels of ghrelin (Tander, Atmaca, Aliyazicioglu, and Canturk, 2007). genitourinary symptoms and interstitial cystitis, dermatological disorders, headaches, myoclonic twitches, and symptomatic hypoglycemia. Although fibromyalgia is classified based on the presence of chronic widespread pain, pain may also be localized in areas such as the shoulders, neck, low back, hips, or other areas. Many sufferers also experience varying degrees of facial pain and have high rates of comorbid temporomandibular joint disorder. 20–30% of patients with rheumatoid arthritis and systemic lupus erythematosus may also have fibromyalgia (Yunus, 2007).

Arthritis is a chronic disease which have both kind of impacts on the patients i.e. Biological and Psychosocial impacts. The biological impacts have already been discussed in the preceding literature. The psychological impacts of arthritis are discussed in the following section.

Psychological Impacts of Arthritis:
Arthritis is considered a stressful chronic illness (Melanson and Downe-Wamboldt, 2003). It is known that the persistent pain, joint stiffness, and joint damage of arthritis not only produce substantial physical disability, but also negatively influence numerous aspects of individuals' lives, including functional ability, work, family and social relationships, and psychological status (Escalante and del Rincon, 1999; Yelin and Callahan, 1995; Katz, 1998), as well as lost or reduced independence, uncertainty, and role changes (Melanson and Downe-Wamboldt, 2003). It is also known that the economic burden for individuals with arthritis is significant. For example, Doherty, et al. (1998) found that persons with rheumatoid arthritis (RA) suffer from a 50% drop in their income over a 9-year period. Furthermore, it has been shown that living with arthritis is associated with decreased Quality of life (Nadal, 2001). So all these factors lead to many psychological impacts upon the patients. Some important psychological impacts are as follows:

**Reactions to the diagnosis:** Many patients experience a range of emotions including shock, retreat, denial or disbelief, grief, mourning or depression, anger and bewilderment, comparable to the stages of bereavement. Even after two years many patients have not realized that they have a chronic disease and remain in a state of denial (Eberhardt, Rydgren, Peterson, and Wollheim, 1993). Le Gallez (1993) found that it could take patients as long as 5 years to adapt to their condition.

**Problems related to sexuality:** Blake, Maisiak, Graciela, Alarcon, Holley, and Brown (1987) found that physical unattractiveness, loss of partner interest and concerns regarding sexual drive and loss of sexual drive, physical disability, pain and to a lesser extent, depression, (Kraaimaat, Bakker, Janssen, and Bijlsma, 1996); fatigue and pain place limitations on sexual activities (Hill, Bird, and Thorpe, 2003).

**Depression:** Patients with chronic pain, when compared to those with almost all other medical conditions, suffer dramatic reductions in physical, psychological, and social well being, and their Health Related Quality of Life is lower (Atkinson, Zibin, and Chaung, 1997; Becker, Sjogren, Bech, Olsen, and Eriksen, 2000; Skevington, 1998), and consequently affective and anxiety disorders were the most commonly found in arthritis patients. For example, the prevalence of major depression in patients with chronic low back pain is 3-4 times greater than in the general population (Sullivan, Ressor, Mikail, and Fisher, 1992). However, the causal relationship between these syndromes remains controversial. People with RA are twice as likely to suffer from depression compared to the general population (Dickens and Creed, 2001). Major
depression is a syndrome of sufficient intensity to impair psychological, social and vocational functioning (Parker and Wright, 1995).

Main factors associated with depression are pain and functional disability, patients' poor engagement in valued activities, some social factors e.g. lack of social support and concerns regarding future disability (Katz, 1995). Higher levels of depressive symptoms among people with arthritis are associated with greater risk of becoming work-disabled, higher use of health services, and worse health outcomes overall compared to those who are not depressed (Patten, Williams, and Wang, 2006; Bookwala, Harralson, and Parmelee, 2003; Keefe, Smith, Buffington, Gibson, Studts, and Caldwell, 2002; Li, Gignac and Anis, 2006).

But Li, Gignac, and Anis (2006) have found that it is not the intensity of pain but the meaning of pain significantly predicts severity of depressive symptoms. They found that helplessness, catastrophizing, and amplifying the importance of pain in daily activities lead to more depression. These findings, with other reports on learned helplessness and coping, indicate that interventions aimed at reducing feelings of helplessness and increasing effective coping strategies could reduce depression as well as other adverse outcomes among arthritis patients.

**Family life and relationship:** Not only does pain interfere with work, but it restricts participation in other roles, including those integral to family life, such as being a parent, managing a household or maintaining intimate relationships (Hirsh, Waxenberg, Atchison, Gremillion, and Robinson, 2006). Difficulties in caring for children are frequently reported by parents with arthritis (Katz, Morris, and Yelin, 2006; Evans, Shipton, and Keenan, 2005; Backman, Kennedy, Chalmers, and Singer, 2004). In studies of pain, marital functioning and psychological distress, there are mixed results (Leonard, Cano, and Johansen, 2006) as the problematic forms of spousal 'support' are significantly associated with psychological distress and pain severity (Leonard et al., 2006; Griffin, Friend, Kaell, and Bennett, 2001), but interestingly, the presence of positive forms of support does not consistently demonstrate an association to either psychological well-being or pain (Cano, Gills, Heinz, Geisser, and Foran, 2004). Marital satisfaction may have an inverse relationship to the presence of depressive symptoms (Cano et al., 2004).

**Work:** Job loss resulting from arthritis is associated with reduced life satisfaction and greater depression and pain (Allaire, Li, and LaValley, 2003). In RA, work disability occurs early and continues at a steady rate (Lacaille, Sheps, Spinelli, Chalmers, and
and pain is a significant predictor of work loss or limitation (Lacaille et al. 2004; Backman et al., 2004; James, Miller, Brown, and Weaver, 2005). Those reporting work limitations resulting from RA are more likely to have greater pain, poorer function, and rate their work as less psychologically demanding than participants who reported no limitations (Lacaille et al., 2004; Backman et al., 2004). This can lead to coping with an enforced change of role for the individual which often has psychological and social consequences e.g. depression and isolation. Moreover family members may have to leave work to provide care or take on work to compensate for lost income.

**Leisure:** in the presence of pain and physical limitation, it may seem daunting to engage in active recreational pursuits. Pain and fatigue are both independent predictors of loss of participation in activities such as recreation and hobbies (Katz et al., 2006). Studies of valued life activities demonstrate that declining ability to engage in recreational activities, hobbies, and social interactions appear to significantly increase the risk of new depressive symptoms, even more so than activity losses in other domains (Katz and Yelin, 2001).

**Treatment of Arthritis:**

1. **Biological therapies:**

   Most used treatment for arthritis is pharmacological medication. Some important medication forms are:

   **Paracetamol:**

   This drug has been used for over 100 years; however, its mechanism of action remains uncertain (Libert, Bonnefont, Bourinet, Doucet, Alloui, Hamon, Nargeot, and Eschalier, 2004), but Paracetamol is effective in many arthritic conditions and across all age groups. It has been recommended as the oral analgesic of choice for mild to moderate pain in OA (Brandt, 2000; Temple, Benson, Zinsenheim, and Schweinle, 2006), but associated with a moderate increase in the risk of incident hypertension (Forman, Rimm, Gary, and Curhan, 2007).

   **Non-steroidal anti-inflammatory drugs (NSAIDs):** NSAIDs have been shown to be highly effective for treating acute pain and remain one of the principal pharmacological agents for treating arthritic pain (Kean and Buchanan, 2005). It has become major treatment of RA and OA at the earliest level of treatment (Towheed, Maxwell, Judd, Catton, Hochberg, and Wells, 2006; Emery and Suarez-Almazor, 2003). NSAIDs have been shown to have many side effects e.g. gastrointestinal
events, including perforation, ulceration and bleeding, oedema and renal insufficiency; however, the development of cyclooxygenase inhibitors (Coxibs) has highlighted additional cardiovascular risks associated with these agents (Laine, 2003).

**Tramadol:** It is a central-acting oral analgesic which has received widespread approval for use in both moderate and severe pain and has found use as adjunctive therapy for arthritic pain (Schnitzer, Kamin, and Olson, 1999). Tramadol combines favorably with paracetamol and permits a decrease in the use of NSAIDs without compromising analgesia (Mullican and Lacy, 2001). It has many side effects e.g. dizziness, nausea and constipation etc. (Cepeda, Camargo, Zea, and Valencia, 2007).

**Cyclokoxygenase Inhibitors (Coxibs):** Coxibs selectively inhibits COX-2 and not COX-1, have been shown to be as effective as classic NASIDs, which inhibit both isoforms of COX, but cause significantly less gastroduodenal ulceration. But these agents are associated with an increased risk of cardiovascular events.

**Disease Modifying Anti-Rheumatic Drugs:** They are mainly used to treat the RA. These agents have capacity to decrease elevated levels of acute-phase reactant in treated patients and, therefore, are thought to modify the inflammatory component of RA and thus its destructive capacity. These agents includes methotrexate, sulfasalazine, hydroxychloroquine, gold salts, or D-penicillamine combination of DMARDs appear to be more effective than single agents in controlling the signs and symptoms of RA.

**Glucocorticoid Therapy:** Systematic glucocorticoid therapy provide effective symptomatic therapy in patients with RA. Low dose glucocorticoid therapy retards the progression of bone erosions and that an initial course of low dose glucocorticoid may have a long term protective effect against bone damage.

**Antidepressants:** The antinociceptive action of antidepressants is independent of their effect on depression and occurs at lower doses and after a shorter duration of treatment (McQuay and Moore, 1997). The main antinociceptive indication for tricyclic anti-depressants is for neuropathic pain, although they have beneficial effects in patients with fibromyalgia as well as back pain. More modest effects have been noted in RA (Frank, Kashani, Parker, Beck, Brownlee-Duffeck, Elliott, Haut, Atwood, Smith, and Kay, 1988). For the most part, these agents remain useful as adjuvant therapy and are not considered front-line analgesic agents in most musculoskeletal disorders.
**Anti-cytokine therapies:** These are used as anti-inflammatory treatment.

**Topical therapy:** Topical NSAIDs have a proven efficacy across a range of musculoskeletal disorders with fewer side effects than oral therapy e.g. in OA (Mason, Moore, Edwards, Derry, and McQuay, 2004).

**Intra-articular injections and other local anti-Inflammatory therapies:** Intra-articular steroid injections are widely used to control symptoms in both OA and inflammatory conditions. The duration of symptom relief may be relatively short in OA, with effects lasting only a few weeks (Bellamy, Campbell, Robinson, Gee, Bourne and Wells, 2005). Although longer responses may occur in RA.

**Surgery:** it is also used in every kind of arthritis depending on the joint involved and nature of the damage.

2. **Other non pharmacological therapies:**

**Acupuncture:** alternative sources, with acupuncture being a popular choice in patients with arthritic pain, (Ezzo, Hadhazy, Birch, Lao, Kaplan, Hochberg, and Berman, 2001).

**Physical Exercise:** Physical activity is essential to optimizing both physical and mental health and can play a vital role in the management of arthritis. Regular physical activity can keep the muscles around affected joints strong, decrease bone loss and may help control joint swelling and pain. Exercise also helps to enhance energy and stamina by decreasing fatigue and improving sleep (Minor, 1999). Exercise can enhance weight loss and promote long-term weight management in those with arthritis who are overweight.

The psychological benefits of exercise are equally compelling. In the short-term (i.e. immediately after exercising) exercise: decreases anxiety, improves mood and well being, and promotes a state of relaxation. A growing body of empirical research also suggests that exercise can lead to improvement in mood and well being, lower anxiety and depression and is useful in treating arthritis (Andersen, Blair, Cheskin, and Bartlett, 1997).

**Yoga:** Many studies have shown that yoga is a safe and effective way to increase physical activity that also has important psychological benefits due to its meditative nature. As with other forms of exercise, yoga can increase muscle strength, improve
flexibility, enhance respiratory endurance, and promote balance (Madanmohan, Thombre, Balakumar, Nambinarayanan, Thakur, Krishnamurthy and Chandrabose, 1992; Schell, Allolio, and Schonecke, 1994; Gauchard, Jeandel, Tessier, and Perrin, 1999). Yoga is also associated with increased energy and fewer bodily aches and pains. Finally, yoga is associated with increased mental energy as well as positive feelings (such as alertness and enthusiasm), fewer negative feelings (reduced excitability, anxiety, aggressiveness) and somatic complaints (Wood, 1993; Miller, Fletcher, and Kabat-Zinn, 1995). Many studies have shown promising results with some improvement in joint health, physical functioning, and mental/emotional well-being (Dash and Telles, 2001; Garfinkel, Schumacher, Jr. Husain, Levy, and Reshetar, 1994; Haslock, Monro, Nagaritha, Nagendra, and Ragharam, 1994). Perhaps most importantly, yoga has an important positive effect on quality of life. People with arthritis may also enjoy yoga more than traditional forms of exercise, and exercise enjoyment is an important predictor of adherence (Trost, Sallis, Pate, Freedson, Taylor, and Dowda, 2003; Ryan, Frederick, Lepes, Rubio, and Sheldon, 1997). This is particularly important considering that, on average, 50% of sedentary individuals will drop out of exercise within 6 months (Dishman, 1990). In summary, yoga is associated with a wide range of physical and psychological benefits that may be especially helpful for persons living with a chronic illness.

**Psychological treatments for Arthritis:**

Pain and depression seem more related to psychological variables such as social stress and lack of social support, (Murphy, Creed, and Jayson, 1988), daily stress (Parker, Frank, Beck, Finan, Walker, Hewett, Broster, Smarr, Smith and Kay, 1988), and attitude toward illness (McFarlane and Brooks, 1988). Several studies also found significant associations between pain/depression in RA and psychological variables addressed during cognitive behavior therapy, such as cognitive distortions (Smith, Christensen, Peck, and Ward, 1994), helplessness (Hagglund, Haley, Reveille, and Alarcon, 1989; Smith et al., 1994), catastrophizing (Keefe, Brown, Wallston, and Caldwell, 1989), and coping strategies (Hagglund et al., 1989; Brown, Wallston, and Nicassio, 1989).

As it is clear by the above discussion psychosocial factors play a very important role in the expression and the management of arthritis, then psychological methods of treatment must also be very important in the management of this disease. The main psychological techniques used in arthritis management are:
Coping Skills Training (CST) or Cognitive Behavioral Therapy (CBT): Coping skills training interventions are based on the cognitive behavioral model of pain and teach patients cognitive and behavioral skills for managing pain to enhance their perceptions of control over pain. It is a 10-session protocol used in a randomized clinical trial of coping skills training for patients having pain due to OA of the knee(s) (Keefe, Caldwell, Williams, Gil, Mitchell, Robertson, Martinez, Nunley, Beckham, and Helms, 1990). Training begins with an educational rationale, the gate control theory of pain (Melzack & Wall, 1965) that describes how the brain influences the transmission of pain signals from the periphery to the brain by blocking pain signals at the level of the spinal cord. This rationale helps patients understand how the mind and body work together to influence the pain experience. It also enables them to see how training in coping skills that alter thoughts, behaviors, and feelings can improve pain. Following the rationale, patients are taught three sets of coping skills. Patients who received pain coping skills training showed significant improvements in pain and psychological disability compared to those receiving the arthritis information/education protocol or standard care (Keefe et al., 1990). The efficacy of pain coping skills training in RA also has been demonstrated in a number of randomized clinical trials (e.g., Kraaimatt, Brons, Geenen, and Bijlsma, 1995; Leibing, Pfingsten, Bartmann, Rueger, and Schuessler, 1999; Parker, Smarr, Buckelew, Stucky-Ropp, Hewett, Johnson, Wright, Irvin, and Walker, 1995; Sinclair, Wallston, Dwyer, Blackburn, and Fuchs, 1998). It has been reported that stress management based on CBT indirectly improves pain and depression via cognitive-behavioral variables e.g. efficacy, coping and helplessness (Rhee, Parker, Smarr, Petroski, Johnson, Hewet, Wright, Multon, and Walker, 2000).

Emotional Disclosure: A growing body of research suggests that reluctance or inability to process events that are emotionally stressful may lead to increases in symptom complaints and poor immune functioning (Pennebaker and Seagal, 1999). Both of these outcomes could adversely impact arthritis sufferers, in particular patients with RA (Zautra, Hamilton, Potter, and Smith, 1999; Zautra, Smith, Affleck, and Tennen, 2001). Emotional disclosure is an intervention designed to facilitate psychological adjustment to stressful experiences that remain incoherent and emotionally laden because they have not been fully processed (Pennebaker and Seagal, 1999). During emotional disclosure interventions, individuals attend three to four consecutive private, daily sessions in which they write or talk into a tape recorder.
about thoughts and feelings associated with a stressful life experience. Emotional
disclosure interventions have only recently been applied in patients with arthritis pain.
It has been reported that in RA patients, emotional disclosure interventions led to
significantly fewer long-term problems with activities of daily living and lower levels
of negative mood and tension (Kelley, Lumley, and Leisen, 1997) as well as
improvements in disease activity (Smyth, Stone, Hurewitz, and Kaell, 1999) but the
benefits of disclosure on adjustment thus appear to be delayed.

Role-specific interventions:
Instead of individualized intervention (e.g. CST, Emotional disclosure) sometimes
programs are designed to enhance performance of specific roles, appealing to a
specific group of individuals based on the role first, and secondarily incorporating
psychosocial approaches to pain management into program content. For example it
has been used successfully with arthritis patients in vocational training in preventing
job loss, (Allaire et al., 2003) and in programs aimed at enhancing social support and
relationships (Keefe, Abernethy, Campbell, 2005).

Meditation:
Many studies have provided evidence that MBSR (Mindfulness-Based Stress
Reduction)leads to improvement of various measures of psychological symptoms in
patients with chronic pain (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, and Burney,
1985; Kabat-Zinn, Lipworth, Burney, and Sellers, 1987), fibromyalgia (Kaplan,
Goldenberg, and Galvin-Nadeau, 1993; Weissbecker, Salmon, Studts, Floyd, Dedert,
and Sephton, 2002). RA patients with recurrent depression benefited most from
meditation across several measures, including negative and positive affect and
physicians' ratings of joint tenderness (Zautra, Davis, Reich, Nicassario, Tennen,
Finan, Kratz, Parrish, and Irwin, 2008).

So arthritis is a troubling condition for several reasons. It has an enormous impact
upon disability and ultimately takes a substantial toll in terms of human suffering.
Most types of arthritis require people to cope with pain, stiffness, fatigue, and
physical limitations. The way they manage these aspects of their illness influences
their ability to engage in meaningful, obligatory and discretionary activities, including
the domains of work, (Chorus, Boonen, Miedema, and van der Linden, 2002; Allaire
et al., 2003), family life (Hirsh et al., 2006), leisure and social relationships (Katz and
Yelin, 2001). As social beings, with specific roles and responsibilities, humans
engage in a range of life activities. Pain, along with other symptoms from arthritis,
threatens the ability to participate in these activities (Katz et al., 2006) and may compromise psychological and social well-being (Tsai, Tak, Moore, and Palencia, 2003).

Many patients do perceive that they are unable to control or reduce the pain or other symptoms associated with arthritis. The unpredictable course of the disease as well as the dearth of knowledge regarding its etiology and cure may cause many patients to perceive that they are unable to control or reduce the pain or other symptoms associated with arthritis. The perception of uncontrollability, or helplessness, might account in part for the psychological and behavioral disabilities shown by a large number of arthritis patients. These disabilities include depression, functional impairment, decreased self-esteem, and negative changes in family functioning. Other psychological factors associated with helplessness are low self-efficacy and poor coping strategies.

Throughout the history bio-medical model was given more importance than bio-psychosocial model for the treatment of arthritis. But nowadays bio-psychosocial model is gaining due attention. The biomedical approach has emphasized the importance of understanding the underlying biology and physiology of arthritis. In addition, it has often assumed a direct causal relationship between these biological factors and the pain and disability experienced by those with OA, RA, and other forms of arthritis (Sokka, Kankainen, and Hännonen, 2000). Consequently, the biomedical approach has fostered the use of medical and surgical treatments that attempt to directly treat the underlying physiological pathology (Coulter, Entwistle, and Gilbert, 1998).

In contrast, a bio-psychosocial model of arthritis recognizes the possibility that psychological and social factors are related to and may even influence arthritis pain and disability (Keefe et al., 2002). There are several reasons for including psychological and social factors. First, objective markers of disease activity of arthritis have not been able to fully account for the pain and disability that people with OA and RA report (Keefe, Caldwell, Queen, Gil, Martinez, Crisson, Ogden, and Nunley, 1987; Sokka et al., 2000). Second, pain is a primary symptom of arthritis; theories of pain have shown how psychosocial factors may influence pain perception and reports (Melzack, 1999; Melzack and Wall, 1965). Third, research has increasingly shown that psychosocial factors are related to arthritis pain and disability,
and may even influence disease activity (Schoenfeld-Smith, Petroski, Hewett, Johnson, Wright, Smarr, Walker, and Parker, 1996; Zautra et al., 1999).

There is also a large body of research suggesting a link between psychosocial factors and arthritis-related pain and disability. Aside from coping, factors that have been most consistently identified as important include: stress, depression, self-efficacy, helplessness, and social relationships. Stress and depression may both be a consequence of having arthritis and may themselves lead to exacerbations of disease activity (Smith and Zautra, 2002; Zautra and Smith, 2001; Zautra, Yocum, Villanueva, Smith, Davis, Attrep and Irwin, 2004). Self-efficacy, helplessness, and social relationships have been related to pain and disability in people with arthritis and may also have important implications for coping (Lefebvre, Keefe, Affleck, Raezer, Starr, Caldwell and Tennen, 1999; Manne and Zautra, 1989; Schoenfeld-Smith et al., 1996). In addition, many other factors like anxiety and positive affect, may also be important for those with arthritis (Newman and Mulligan, 2000; Zautra, Johnson, and Davis, 2005).

Tak (2006) found that there are six important sources of stress in daily life of arthritis patients: (i) Health (ii) Routine Tasks (iii) Family Issues (iv) Financial Management (v) Social Relationships and (vi) Living Conditions. In his study three major strategies of coping with daily stress emerged: (i) Cognitive Efforts (ii) Diversional Activities and (iii) Assertive Activities. So arthritis is a chronic disease that affects the activity levels of the patient and becomes a major chronic daily stressors.

There are individual differences in how patients cope with various symptoms and adjust to the burden of the disease. In early stages of the disease emotional distress is associated with levels of pain and fatigue, functional status, disease impact on daily life, life events and perceived social support (Evers, Kraaimaat, Geenen, and Bijlsma, 1997). The effect of disease-related factors on psychological distress seems to decrease (Strating, Suurmeijer, van Schuur, 2006), and personality characteristics and individual coping resources appear to become more important predictors over time (Evers et al., 1997).

Literature reviews have documented the presence of a variety of difficulties in coping with chronic disease in general, such as the management of treatment, the necessity to control symptoms, the management of assaults upon body image and self-esteem, and the possibility of leading a normal life (Moos, 1989). Individuals differ in the way they adjust to chronic illness. Although arthritis is not a life-threatening disease, but it
more or less imposes disability on the individual. So self-management in terms of symptom control is especially important in the disabling but not life-threatening types of chronic diseases to reduce the impact of the disease on Quality of life (Miller, 1992). All this makes very evident that coping for the patients of arthritis has its own relevance and implications.

Interest in the process by which people cope with stress has grown dramatically over the past two decades. The researches in this area have recognized that the correlation between measures of stressful life events and mental and physical health though consistent, is modest at best (Johnsons and Sarason, 1978). This suggests that the existence of stress may be less important to well being than how an individual appraises and copes with stress. Coping is increasingly implicated as an important mediator between stress and illness outcome (Cohen and Lazarus, 1979), and adaptation to illness (Hyland, 1992; Allison, Locker and Feine, 1997; Abbey and Andrew, 1985; Antonowsky, 1988; Lazarus, 1966; Lazarus and Folkman, 1984; Lazarus, 1991). Several studies have documented the importance of individual coping efforts in helping adults to maintain a reasonable level of well being (e.g. Felton and Revenson, 1984; Viney and Westbrook, 1984; Killen, 1980).

However, there is no clear consensus as to which coping strategies or modes of coping are most effective, that is, how well a coping strategy serves the purpose of resolving problems, preventing future difficulties, or relieving emotional distress. Because of chronic, multiple challenges or stressors that people with arthritis experience, the use of effective stress-coping strategies may be important for counteracting the negative impact of stress among these individuals (Smith, Wallston, and Dwyer, 2003). Supporting this notion, in their longitudinal study, Evers, Kraaimaat, Geenen, Jacobs, and Bijlsma (2003) found that disease activity in early RA at the three- and five-year follow-ups was significantly predicted by coping and social support at the time of diagnosis after adjusting for disease activity at first assessment, other biomedical and psychosocial factors, and use of medication. So it is clear that ‘how to cope’ is an important research issue in this field.

Coping

An examination of coping strategies that people with arthritis use to deal with stress has significant implications (Melanson and Downe-Wamboldt, 2003). Aside from its contribution to theoretical advancements, an understanding of the ways in which people with arthritis cope with stress is essential for developing policies and programs
to deal with the sources of stress in their lives, and to establish an effective support system to proactively counteract the negative impact of stress on their health. Particularly, an increasing recognition of the behavioral and psycho-social impact of arthritis has led to a growing awareness for the need to incorporate behavioral and psycho-social intervention approaches into biomedical treatment for managing arthritis (Simon, Lipman, Allaire, Caudill-Slosberg, Gill, Keefe, 2002).

In their discussion of recent advances and future directions in the bio-psychosocial assessment and treatment of arthritis, Keefe et al. (2002) emphasized, “Coping is a topic that is clearly receiving growing attention from arthritis researchers. Perhaps the major reason for this is that data gathered on coping may have important implications for the prevention and treatment of arthritis pain and disability. Many of the psychosocial interventions now being used for persons with arthritis are designed to modify coping strategies initially identified as important in the arthritis coping research literature”.

Lazarus and Folkman (1984) defined coping as "Constantly changing cognitive and behavioural efforts to manage, reduce or tolerate external and/or internal demands that are appraised as taxing or exceeding the resources of the person". Accordingly, it seems convincing as highlighted by Lazarus (1966) that coping is a process which depends on the situational context in which it occurs, that we employ every day. We engage in coping when we feel under stress or want to manage a taxing situation (Lazarus, 1991). In defining coping in this way, Lazarus and Folkman argued that coping (a) is process-oriented (rather than trait-based), (b) should not be confounded with outcomes of these efforts to manage stress, and (c) should not be confounded with successful environmental mastery, because it focuses mostly on those attempts to master the environment.

Moos and his colleagues (Moos and Schaefer, 1984, 1986; Holahan, Moos, and Shaefer, 1996) had defined coping as “a stabilizing factor that can help individuals maintain psychosocial adaptation during stressful periods. It encompasses cognitive and behavioral efforts to reduce or eliminate stressful conditions and associated emotional distress” (Holahan et al., 1996).

Snyder and Dinoff (1999) defined coping as “a response aimed at diminishing the physical, emotional, and psychological burden that is linked to stressful life events and daily hassles”. They further maintained that the effectiveness of coping modes is
linked to their dual ability to reduce psychosocial distress and, ultimately, to foster long-term psychological wellbeing.

According to Matheney, Aycock, Pugh, Curlette and Silva-Cannella (1986) "Coping is any effort, healthy or unhealthy, conscious or unconscious, to prevent, eliminate or weaken stressors or to tolerate their effects in the least harmful manner."

Coping consists of the cognition and behavior that people use to assess and reduce stress and to moderate the tension that accompanies it and it is a dynamic process (Billings, Cronkite, and Moos, 1983). Accordingly combating coping employs more of the behavioural strategies to cope with the situation.

According to Matheney et al. (1986), there are two main categories of coping efforts: (A) **Preventive Coping**: In it people try to prevent stressors from appearing through cognitive restructuring that alters the perception of demand or through increasing resistance to the effects of stressors. The skills involved in preventive coping may involve changing habitual behaviour patterns, such as sedentary life-style, increasing optimism and self-efficacy that requires long-term efforts and may be difficult to achieve. On the basis of meaning as described above by Matheney et al. (1986) it seems that preventive coping employs more usage of cognitive strategies. (B) **Combating Coping**: In it a stressor triggers a defensive counterstrike, in which we attempt to subdue or defeat the stressor in some fashion. This strategy is essentially reactive. It includes progressive muscle relaxation, stress monitoring, problem solving, assertiveness-training etc.

To summarize, coping simply means, any kind of conscious/unconscious effort at either cognitive or behavioural level, made by an individual to negate the negative impact of any biological, psychological or affective strain or stressors in life. Thus it is an essential adjustment process.

Pearlin and Schooler (1978), submitted that coping mechanisms can take three forms: (1) **Psychological Resources**: Psychological resources are personal characteristics upon which people draw from within themselves to help deal with threats imposed by the environments (2) **Social Resources**: Social resources are the aspects of people's interpersonal networks. They involve social support available from family, friends and other associates (3) **Specific Resources**: Specific resources represent the things that people do to deal with specific strains of life e.g. adjustment after marriage etc.

Maddi and Kobasa (1984) divided coping strategies in two forms: (1) **Transformational Strategy**: It involves altering the events (e.g. intradecisively) so
that they are less stressful (2) Regressive Strategy: It includes a strategy wherein one thinks about the events pessimistically and acts evasively in order to avoid contact with them.

So it is clear that many researchers have classified the coping strategies differently from each other and there seems no clear understanding about the classification of coping strategies. But all researchers have agreed on one point that coping serve one of the two functions: (1) problem solving or (2) emotional regulation (Hamburg, Coelho and Adams, 1974; Lazarus and Flolkman, 1984).

Lazarus and Folkman (1984) have suggested that on the basis of their functions coping strategies can be classified as: (1) Problem Focused Coping, and (2) Emotional Focused Coping, mainly adopted to combat stress.

(1) Problem Focused Coping: This strategy involves direct dealing with internal or environmental demands that create threats either by reducing its demands or by increasing their capacity to deal with the stressor. People tend to rely on problem-focused coping strategies when they believe their resources and situations are changeable (Lazarus and Folkman, 1984). This coping strategy includes cognitions and behaviors that are directed at analyzing and solving the problem. It may include "chunking" or breaking a problem into more manageable pieces, seeking information, and considering alternatives, as well as direct action. Sometimes delaying or suppressing action is seen as a separate problem-focused strategy. Delaying action or decisions may be used in health circumstances in which people are waiting for the outcome of tests, and suppressing action may be useful in avoiding actions which may make a problem worse, such as acting in anger.

(2) Emotion Focused Coping: In this strategy people use behavioral and cognitive strategies to manage their emotional reaction to stress. Behavioral strategies include seeking out others who offer social support, using alcohol or other psychoactive drugs, or keeping themselves busy to distract attention from problem. Cognitive strategies involve changing how a stressor is appraised or denying unpleasant information. People tend to rely on emotion focused coping when they believe little or nothing can be done to alter the stressful situation or when they believe that their coping resources or skills are insufficient to meet the demands of the stressful situation.

Research has refined the general distinction between problem focused coping and emotion focused coping. A study by Lazarus, Folkman, Dunkel-Schetter, Delongis,
and Gruen (1986) elucidated a variety of more specific coping strategies. They found eight distinct types of coping strategies. According to them problem focused coping involve three distinct coping strategies i.e. (a) **Confrontative coping** is characterized by aggressive efforts to change the situation. (b) **Seeking social support** is characterized by efforts to obtain emotional comfort and information from others. (c) **Planful problem solving** describes deliberate problem focused efforts to solve the situation.

There are five strategies usually employed in emotional focused coping. These are: (a) **Self control**: deliberate efforts to regulate one’s feelings, (b) **Distancing**: means efforts to detach oneself from the stressful situations, (c) **Positive appraisal**: characterized efforts to find positive meaning in the experience by focusing on personal growth, (d) **Accepting responsibility**: Acknowledge one’s role in the problem, (e) **Escape/Avoidance**: described wishful thinking or efforts to escape or avoid the situation by eating, drinking, etc.

Problem focused coping is positively correlated with overall health outcomes, whereas confrontive coping, distancing, self control, seeking social-support, accepting responsibilities, avoidance and wishful thinking were each negatively correlated with overall health outcomes (Penley, Tomaka, and Wiebe, 2002). People who use problem-focused coping experienced a greater decrease in depressive symptoms compared to participants who engaged in other coping strategies (Penland, Masten, Zelhart, Fournet, and Callahan, 2000). Crockett, Iturbide, Torres Stone, McGinley, Raffaeli and Carlo (2007) also found problem-focused coping to be the most adaptive coping strategy employed by university students. Whereas many psychologists have studied the relationship between emotion-focused coping and psychological distress in general population and found that individuals have lower anxiety and depressive symptoms when they regularly received social support (Wijndaele, Matton, Duvigneaud, Lefevre, De Bourdeaudhuiji, and Duquet, 2007). So both problem focused and emotion focused coping strategies are useful in dealing with stress.

There are many studies which differentiate between the comparative effectiveness of these two strategies, and also at the same time it has been reported that these two strategies can be used simultaneously and also supplementary to each other e.g. in a study with women coping with invitro fertilization, emotion focused coping was found more effective in adjustment as compared to problem focused coping (Terry
and Hynes, 1998). Similar results were found by Macrodimitris and Endler (2001). The problem focused coping to be more effective than emotion focused coping in dealing with various diseases e.g. AIDS, mental health etc. Same time it has also been reported that both are equally effective and no one is better than other (Haley, Levine, Brown, and Bartolucci, 1987; Kramer, 1993; Pruchno and Kleban, 1993). In a study McQuneeney, Stanton and Signon (1997) reported that both of these strategies (EFC and PFC) are used either simultaneously or interchangeably in dealing with stress and chronic illness. The chronic arthritis patients with problem-focused coping suffer from higher pain than those with emotion-focused coping. Emotion-focused copers were more depressed and have lesser level of Quality of life.

In general it has been found that problem focused coping is the most effective coping strategy when people have realistic opportunities to change aspects of their situations and reduce stress. Emotion focused coping is most useful as a short term strategy. It can help to reduce one’s arousal level before engaging in problem solving and taking action and it can help people deal with stressful situations, in which there are a few problem solving options.

For determining whether a person uses emotion focused or problem focused coping strategy, an important factor is the nature of the stressful event or circumstance. School or work-related challenges lend themselves naturally to problem focused coping strategies, such as seeking assistance from friends or using problem solving skills to tackle the stressor directly. Any situation in which constructive action is possible, favors problem focused coping strategies. In contrast some health problems, the loss of loved ones, and other situations that simply have to be accepted are more likely to trigger emotion-focused coping.

It has been found that the use of both problem focused coping and emotion focused coping lead to the lesser physical health deterioration (Park and Adler, 2003). But the problem focused coping was positively correlated with overall health outcomes, whereas confrontive coping, distancing, self control, seeking social support, accepting responsibilities, avoidance and wishful thinking were each negatively correlated with overall health outcomes (Penly, Tomka, and Wiebe, 2002).

Gunther, Mur, Kurz, and Meise (1994) found that (1) RA patients can be characterized by a coping pattern which is determined by significantly more cognitive mechanisms, e.g. trivialization, more attempts at controlling their reactions and self-accusation (2) The patient group with different disease durations do not differ in their
coping patterns. The stress coping behavior of RA patients seems to be stable and does not appear to be influenced by the duration of illness.

RA patients may develop a coping strategy early in the illness and utilize their favorite strategies when confronted with the stressor of illness, little distinction was found between specific illness stressors, i.e. pain vs. disability, or whether a strategy had been successfully used before (Newman and Revenson, 1993). This makes the understanding of coping in RA all the more relevant.

**Religious Coping**

Long before researchers were studying coping techniques, individuals going through stressful or traumatic events were encouraged by their family, friends and religious counselors to turn to their faith and to God for solace, comfort and insight. This may well be good advice for those predisposed towards religion.

In the later part of 20th century it has been increasingly accepted that the psychological and physiological components of human body are clearly inter-linked and influence each other at many different levels (Melzack and Wall, 1962; Goleman and Gurin, 1993; Rippentrop, Altmaier, Chen, Found, and Keffala, 2005). As part of this, it has also been recognized that the religious part of a person can affect physiological functioning and therefore, health also (George, Larson, Koenig, and McCullaugh, 2000). In their review article Powell, Shahabi, and Thoresen (2003) highlighted that past research with different approaches, definitions and methods has resulted in mixed outcomes, and reviews have been split as to the very nature of this relationship.

Religious coping refers to the uses of religious belief or practices to cope with stressful life circumstances. It includes activities such as prayer, seeking comfort from one’s faith and obtaining support from Church members. Religious coping is both positive and negative. In the positive religious coping religion is appraised as benevolent. And in negative religious coping, religion is not appraised as benevolent e.g. anger at God.

Religion interlocks with individual’s life and allows them to deal with stresses in life. According to Pargament (1997) people use religious coping to appraise the causes of stressful events, to cope with stressful events, or to overcome the critical life events. So it is multifunctional.

There also appear to be general benefits of religious beliefs regarding health that may result from better health practices. Orthodox religious groups have lower cancer
mortality rates from all cancers (Dwyer, Clarke, and Miller, 1990), presumably they forbid smoking and drinking and they may limit contact with other carcinogens. It has been found that active participation in religion was related to perceived social-support and the ability to find meaning in the loss (McIntosh, Silver, and Wortman, 1993). Religious factors have a positive effect on health and physiological functioning (Matthews, Larson, and Burry, 1994). It has been concluded that religious coping serves to provide comfort, stimulates personal growth, enhances closeness with God and others and offers meaning and purpose in life (Pargament and Park, 1995). Prayer and meditation are being used with increasing frequency in the treatment of many chronic diseases, including cancer (Primack and Spencer, 1996). There is evidence that religiosity is correlated with health. A number of studies have reported that devotees of various religious catholic priest and nuns, Trappist Monks, and Mormon Priest have lower illness and less mortality rates than the general population (Kark, Shemi, Friedlander, Martin, Manor, and Blondheim, 1996).

Throughout history, religion and medicine have been closely connected as healing tradition. One survey reported that 90% of family physician agreed that personal prayer, meditation or other spiritual and religious practices could increase the effectiveness of medical treatment (Yankelovich Partners, 1998). One study of Californians reported that even after controlling differences of gender, ethnicity, age, and education, those who were religiously active were 36% less likely to die in any given year than their less religious counter-parts (McCullough, Hoyt, Larson, Koenig, and Thoresen, 2000). Many studies lent support to the idea that religious coping is very helpful in dealing with stress related to many diseases. For example Koenig, McCullough, and Larson (2001) reviewed 1600 studies that examined association between religion and many aspects of health and mental health behaviour. They reported that religious involvement played an important role in helping people to cope with stressful life conditions. It has also been reported that caregivers who use religious coping were reported to have less depressing symptoms than the caregivers who used general coping strategies i.e. problems focused coping and emotional focused coping (Kinney, Ishler, Pargament, and Cavanaugh, 2003).

Gordon (2002) has reported that in many chronic illnesses (rheumatoid arthritis, osteoarthritis, multiple sclerosis etc.) the majority of women tested reported that religious beliefs were important in living with a chronic illness.
In a study it has been found that religious coping was related to psychological well-being. Passive religious coping was associated with greater pain and worse adjustment. The effect of active coping on pain, depression and psychological well-being were entirely indirect, mediated by acceptance of illness and self-efficacy (Abraido-Lanza, Vasquez, and Echeverria 2004).

To explain the correlation between strong religious practices and better health, these three factors are accounted: (1) **Life Style:** More religious tend to smoke less, take less alcohol, eat less fat, be more active and be less likely to engage in high risk sexual behaviour than those in the general population (Sloan, Bagiella, and Powel, 1999). (2) **Social Support:** Religion tends to be a communal experience. Those who are religiously active may benefit from more social ties than those in general population. (3) **Positive Emotion:** Religious activity may promote health by fostering more positive emotions; including an optimistic and hopeful world view, a feeling of acceptance and personal control, and a sense that life itself is meaningful (Koenig and Larson, 1998).

It has been found that person using the religious coping strategies were less likely to experience joint pain, more likely to experience positive mood and higher level of social support and used positive religious coping strategies much more frequently for coping with their disease than they used negative religious and spiritual coping (Maracola, 2001).

People who use religious coping strategies are found to have longer life expectancies even when the various other variables i.e. age, race and gender were controlled (Humer, Rogers, Nam, and Ellison, 1999). So it is clear that this particular coping strategy is good, generally for all (McCullough et al., 2000). Matthews et al. (1994) found that religious factors have a positive effect on health and psychological functioning. It has been concluded that religious coping serve to provide comfort, stimulates personal growth, enhances closeness with God and others and offers meaning and purpose in life (Paragment and Park, 1995). It is also an important finding that in a study more than the half of the older adults reported that their religion was the most important resource that helped them cope with illness. Although there is no evidence that religious/spiritual coping moderate the disease indicators of any types of arthritis, there are several possible mechanisms with which religious/spiritual coping might moderate the experience of arthritic pain (Koenig 2002; Rippentrop et
al., 2005) involving the reduction of stress and anxiety or increased positive emotions leading to physiological consequences that result in moderation of pain.

Religious/spiritual coping can exist simultaneously with non-R/S coping as some of the methods in each coping strategy can work in very similar ways drawing on different resources (Vandecreek, Paget, Horton, Robbins, Oettinger, and Tai, 2004). One can also moderate the other indirectly, for example those people with increased spirituality frequently have a better social network (Keefe, Affleck, Lefebvre, Underwood, Caldwell, Drew, Egert, Gibson, and Pargament, 2001; Powell, Shahabi, and Thoresen, 2003), which can then become important in forming non religious/spiritual coping strategies. Religious/spiritual coping has been associated with an improved caregiver/patient relationship, also a resource for non religious/spiritual coping (Chang, Noonan, and Tennsted, 1998). It is therefore possible, and probably beneficial, for a person to form an integrated coping approach (Vandecreek et al, 2004).

Kinney et al. (2003) found that persons using problem focused and emotion focused coping strategies were found to be more depressive than persons using religious coping strategy. It is also to be noted that caregiver’s religiosity had a direct effect on appraisal of satisfaction and use of emotional focused coping, but had no effect or burden on active problem solving (Koenig et al 2001). Clark (2004) found that females used more emotion focused and religious coping than males. Joseph and Hurrell (1995) has found that problem focused coping is the most frequently used strategy than emotion focused, religious and other coping strategies. One important finding reported by Zwingman, Wirtz, Muller, Korber, and Murken (2006) that relationship between religious coping and psychosocial (anxiety and depression) outcome was completely mediated by non-religious coping (e.g. emotion focused, problem focused coping, etc.). Some studies also show that religious coping includes some aspects of both the emotion focused coping and problem focused coping e.g. seeking support as problem focused and prayer as emotion focused.

Our internal sense of harmony, happiness and well-being are very much dependent upon how we cope with the frustration, conflicts, stresses and anxieties. It denotes a wide range of capabilities, limitations and psychological characteristics that describe an individual’s ability to function and derive satisfaction from a variety of roles (Wenger, Mallstone, and Ferberg, 1984). So the Quality of life is largely determined
Quality of Life

Quality of life (QOL) is a descriptive term that refers to the person’s emotional, social and physical well-being and their ability to function in the ordinary tasks of living. Campbell, Converse, and Rodgers (1970) considered quality of life as a satisfaction involving many life situations, educational opportunities, creativity, belongingness and trust in others. QOL relates to adequacy of material circumstances and to personal feelings about these circumstances. It includes overall subjective feelings of well-being that are closely related to morale, happiness and satisfaction (McDowell and Newell, 1987).

There are many definitions of QOL, but there is no single, universally accepted definition of QOL (Lauer, 1999). This concept has been studied by both social sciences and medical sciences and every discipline have a different view about the QOL. In general there are three expert definitions of QOL: Global, Component and Focused definitions. For example, according to global definition Abrams (1973) defines the expression of QOL as the degree of satisfaction or dissatisfaction felt by people with various aspects of their lives. Or in other words, QOL is the provision of the ‘necessary conditions for happiness and satisfaction’ (McCall, 1975). The component definitions emphasize the multidimensional nature of the concept and separate the different dimensions of QOL. George and Bearon (1986) identified four dimensions two of which are ‘objective’ (general health and functional status; SES) and two of which are ‘subjective’ (life satisfaction, self esteem). In contrast, Hughes (1990) highlights 8 dimensions i.e. personal autonomy, expressed satisfaction, physical and mental wellbeing, SES, quality of the environment purposeful activity, social integration, and cultural factors. The third type of expert definition focused on just one or two of these dimensions and tend to reflect the political or professional agendas of different discipline. For example within health services research QOL often focuses on health and functional status measures (Bowling, 1996) and within health economics, on utility assessment. So it is clear that QOL means different things to different people. But some researchers have tried to sum up the overall issues related with QOL. One important attempt have been made by Seed and Lloyd (1997) where they tried to take into account all the approaches and summarized the main components of the QOL, which
are: Being (who one is); Physical Being (physical aspects of health, nutrition, exercise personal hygiene and grooming, clothing and overall physical appearance); Psychological Being (includes psychological health and adjustment); Spiritual Being; Belonging (how well the person fits in); Physical belonging; Social belonging; Community belonging; Becoming (purposeful activities the individuals does in order to achieve his own goals, hopes and aspiration, both immediate and long term); Practical activities includes work, volunteer activities etc.; Leisure activities; Personal growth activities.

Now after analyzing the different different views about QOL it is necessary to arrive at a conclusion about the nature of the QOL. Here the definition of QOL given by the WHO can be cited, which is an all inclusive definition. According to WHO QOL Group, (1993) ‘QOL is an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns’. It is a broad ranging concept incorporating in a complex way the person’s physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of the environment. This definition reflects the view that QOL refers to a subjective evaluation, which is embedded in a cultural, social and environmental context. As such, QOL cannot be simply equated with the terms “health status”, “life style”, “life satisfaction”, “mental state”, or “well-being”. Rather, it is a multidimensional concept incorporating the individual’s perception of these and other aspects of life. This definition of QOL was prepared by experts under the aegis of WHO’s initiative to develop a QOL assessment instrument which can satisfy the need for a genuinely international measure of QOL, and restates its commitment to the continued promotion of a holistic approach to health and health care.

The WHO’s definition, focuses on the subjective perspective (WHOQOL Group, 1993), whereas other constructs are broader and include objective indicators of health, housing and other material circumstances. According to some reviews (Lauer, 1999), most researchers believe that both subjective and objective information is necessary to the construct. Complications arise, however, from the finding that the subjective appraisal of life often bears little or no relation to objective life circumstances (Barry & Crosby, 1996; Warner, 1999). The same objective event may result in opposite evaluations by the same subject depending on his/her perspective at the time of interview (Skantze, Wanke, and Bless 1994). Objective improvements in life
circumstances may produce negative subjective responses (Lehman, 1996). Subjective QOL ratings are often higher in people with schizophrenia than affective disorder, although objective circumstances indicate the reverse (Atkinson, et. al., 1997; Katschnig and Angermeyer, 1997). A weak or moderate association between observer-rated mental health indicators, such as psychopathology, and subjective QOL has been found in various studies (Corrigan and Buican, 1995; Lehman, 1996; Oliver, Huxley, Bridges, and Mohamad, 1996; Kaiser, Priebe, Barr, Hoffeman, Isermann, Roder-Wanner, and Huxley, 1997).

QOL is often measured in its relation to health and disease. Bowling (1991) has also defined the QOL as individual’s responses to physical, mental and social effects of illness on daily living that influence the extent to which the personal satisfaction with life circumstances can be achieved. As health is generally cited as one of the most important determinant of overall quality of life, it has been suggested that QOL may be uniquely affected by specific disease processes such as AIDS, dementia, etc. (Watchel, Piette, Mor, Stein, Fleishman and Carpenter, 1992). In the same line Friedland, Renwick and McColl (1996) conceptualized QOL in terms of “an absence of pain or an ability to function in day to day life.” Several researchers described QOL as a “fighting spirit” associated with longer survival time for individuals (Rabkin, Remien, Kattofs and Williams, 1993; Namir, Wolcott, Fawzy and Alumbaugh, 1990).

According to Coons and Kaplan (1992) the basic dimensions of health related quality of life are physical status and functioning, psychological status, social functioning, and disease or treatment-related symptomatology. Some researchers have used many terms e.g. QOL, health status, HRQOL interchangeably to discuss the effect of disease, such as arthritis, on functioning and sense of well-being. At broadest level, it refers not only to health status but also to environment and economic factors (e.g. income, educational attainment) that can substantially influence well-being (Wan, Counte, and Cella, 1997).

But QOL and HRQOL is not the same thing. According to Padilla, Grant, Ferrell and Presant, (1996) QOL is subjective, multidimensional experience that involves a summary evaluation of positive and negative attributes that characterizes one’s life. It is dynamic construct affected by one’s ability to adapt to discrepancies between expected and experienced well-being (Padilla et.al., 1996), as well as one’s ability to maintain an overall level of functioning that allows the individual to pursue valued life goals (Shumaker and Naughtan, 1995). QOL is also reflected in general well-
being (Shumaker and Naughtan, 1995). HRQOL means that summary evaluation of attributes that characterize one's life is made at point in time when health, illness, and treatment conditions are relevant (Padilla et al., 1996). The relevant characteristics of a healthy person may not include physical, emotional, or bio-medically defined health but rather social relationship, financial success, and a satisfying job. On the other hand, a person whose health is threatened by acute or chronic illness will likely attribute certain dimensions of life quality to influence of health problems, health status, health care and health promoting activities. So at the same time these two constructs are different from each other and also affect each other.

There is growing awareness among health-care specialists that quality of life is an important health outcome in assessing the functioning of chronically ill. For certain diseases, such as arthritis, quality of life is the important health outcome. Advances in medicine have prolonged the life of many people with chronic diseases. Chronic diseases may not kill but they consume a lot of health care resources and threaten the quality of life of the sufferers (Hoffman, Rice, and Sung, 1996; Hombrook and Goodman, 1996). The ultimate goal of modern health care for patients with chronic disease is not only to delay death but also to promote health and quality of life. Health-related quality of life (HRQOL) has become an important measure of the outcome of care for patients with chronic diseases in the last two decades. It has also been found to be predictive of health service utilization and mortality (Hombrook and Goodman, 1996; Browne, Arpin, Corey, Fitch, and Gafni, 1990). It is subjective and should include the essential domains of physical, psychological, daily role and social functioning, and general health perception (Wilson and Cleary, 1995; Ware, Snow, Kosinski and Gandek, 1993).

There are several reasons to study quality of life amongst the chronically ill: First it is important to assess the degree to which illness intrudes into QOL. Documentation of exactly how illness affects vocational, social, and personal activities, as well as the general activities of daily living, provides an important evidentiary basis for interventions designed to improve QOL (Devins, Mandin, Hons, Burgess, Klassen, Taub, Schorr, Letourneau and Buckle, 1990). Second, QOL measures can help pinpoint which particular problems are likely to emerge for patients with particular diseases. Such information would be helpful in anticipating the kind of interventions that might be required (Schag and Heinrich, 1986). Third, it is important to assess the impact of treatment on QOL.
QOL analysis are particularly helpful for investigating the social, emotional and physical effect of treatment and disease processes on people’s daily living; analyzing the patient’s perspective and determining the need for social and emotional support during illness. QOL measures can, therefore, help to decide between different treatments, to monitor the success of treatments from the patient’s perspective and to plan and coordinate care packages. These measures attempt to evaluate directly the impact of a disease or treatment on people’s ability to function in life, and not the value that they place on a particular health state. Salafi and Stancati (2004) state that functional disability and QOL in RA are key outcomes that determine patient’s demand for care and influence their compliance and satisfaction with treatment. Studies on chronic illness and coping generally show that coping is characterized by being active, expressive and thinking positively, results in significantly higher levels of functioning and higher levels of psychological well-being (Maes, Leventhal and DeRidder, 1996). However, it is not empirically clear whether the choice of coping strategies is a cause or a result of mental health and QOL (Felton and Revenson, 1984). Patients suffering from chronic pain syndromes may have distress, negative feelings, and dissatisfaction in many aspects of life. These patients typically have poor QOL status, as mostly found with RA patients (Borman and Celiker, 1999).

Rheumatoid arthritis (RA) is a chronic, debilitating disease that significantly impacts patients' quality of life and socioeconomic productivity. On a personal level, RA has a significant socioeconomic impact on patients' lives, being ranked among the highest of all chronic diseases for its effects on HRQOL, and limitations in physical function as well as increased pain and fatigue affect patients' attendance at paid work, their work performance within and outside the home, and their participation in family, social, and leisure activities. Disease-related reductions in work and household productivity are not just due to the physical limitations posed by RA; mental/emotional limitations also play a key role in reducing patients' HRQOL and productivity (Strand and Khanna, 2010).

To sum up the whole of the above discussion it is very clear that religious activities lead to positive emotions and a better QOL/well-being etc.. Even in arthritis, there are, but a very few studies indicating the positive role of this kind of coping and a gap exists. Moreover, everyone does not adopt this kind of attitude in life. Hardly any emphasis has been given in the past on the comparison of religious coping with other coping strategies. The psychological aspects of arthritis, e.g. QOL have been a focus
in the past but these have not been studied much in relation of coping strategies. Indian psychological literature for past twenty years was also reviewed to find out the relation between arthritis and coping. There is no study showing this type of relation in arthritis to best of our knowledge. However, there are some studies which have studied the relationship between coping and other diseases e.g. cancer, diabetes etc. Whereas for preparing the health management programs to educate the patients, it is important to find out which strategy is most effective. It was decided to investigate arthritis in this investigation, because this is one of the most frequently occurring disease with which an individual lives for a very long period, and it is a chronic stressor.

Various people adopt various kinds of strategies. In this era of learning and teaching the “health management”, it is becoming more and more popular day by day to impart the health management programme. To develop programme, it is important to compare the different strategies of coping. With this background we can now proceed to the review of literature.