CHAPTER - I

INTRODUCTION

1.1 Burden-global

Low back pain is a major clinical and public health problem. Low back pain is a leading cause of disability. It occurs in similar proportions in all cultures, interferes with quality of life and work performance, and is one of the most common reasons for medical consultations (Ehrlich et al, 2003). It carries a set of challenges involving sensory and distressful aspects i.e. pain and disability. Chronic Low Back Pain (CLBP) is the most frequent cause of activity limitation in people below the age of 45 years and the second most frequent reason for visits to primary care physicians in the United States. About 1% of the US population is chronically disabled due to low back pain (Andersson, 1997). It is a very costly condition as it accounts for many lost work days and disability claims (Franks et al 1996, Carey et al 2000). Low back pain was identified by the Pan American Health Organization as one of the top three occupational health problems to be targeted by surveillance within the WHO Region of the Americas. Worldwide 37%, and in South East Asia including India and China 39%, of CLBP, is attributable to occupational ergonomic stressors, both physical and psychosocial (Punnett et al 2005). Campbell et al (2004) report that in the United States the estimated annual cost to society of back pain is between £13 billion ($20 billion) and £33 billion ($50 billion).

1.2 Burden- India

A survey on 814 subjects by Madan et al (2008) reported that manual workers (MW) in India had the least prevalence (15%) of back pain. It was 33% in MWs of Indian origin in the UK, 37% of UK white MWs, 25%, 24%, and 28% in three similar groups of Office Workers (OW) respectively. A 23% prevalence of CLBP has been reported from an
outpatient orthopedic unit in north India (Sharma S C et al 2003). Joshi et al reported a prevalence of 59.4% musculoskeletal disorders in industrial workers in Delhi.

1.3 Causes of mechanical Back Pain.

Several studies point to the role of sedentary lifestyle that includes (a) mechanical factors such as prolonged wrong postures leading to wasting and weakness of postural muscles and (b) chronic muscle spasm due to psychological stress in the etiology of CLBP (c) Psychosocial aspects of work may play an important role in the perpetuation of back pain, even among patients with disc herniation (Ann-Christin Johansson et al, 2007). Fanian et al., (2007) found a positive correlation between scores on anxiety and depression and pain and functional disability in patients with lumbar disc herniation.

1.4 Psychological stress and CLBP

The most frequently reported psychological disturbances amongst patients with CLBP are depression, anxiety (Linton, 2000), fear (McCracken et al., 1992) and anger (Fernandez E and Turk DC, 1995, Kim TS et al., 2006) Fanian et al., (2007) found a positive correlation between scores on anxiety and depression and pain and functional disability in patients with lumbar disc herniation. 69 elderly and 59 nonelderly patients with CLBP reported more antidepressant use, greater pain intensity, greater interference due to pain and less control over life than the non depressed patients. (Herr et al, 1993) In the approach towards understanding CLBP psychological factors are firmly placed at the realm of pain research and practice (Turk, 1999). It is known that psychosocial variables generally have more impact than biomedical or biomechanical factors on CLBP related disability (Linton 2000). Psychological disturbances may either cause or result from CLBP, it is most likely that pain and psychological disturbances interact to exacerbate each other (Miller and Hafner, 1993). The ongoing attempts to adapt to pain and its widespread consequences
result in a wide range of affective disturbances. Functional disability (Moldofsky et al 1993) sleep disturbances, fatigue and medication abuse (Williams et al 1993) are seen in people suffering from CLBP. It is known that psychosocial variables generally have more impact than biomedical or biomechanical factors on CLBP related disability (Linton 2000).

1.5 Psychological stress and musculoskeletal health.

The connection between psychosocial stress and musculoskeletal disorders has been explained in studies showing that mental stress induces a significant increase in muscle tension in the trapezius muscle. Several models have been proposed in order to understand the mechanisms linking low sustained muscle tension to musculoskeletal disorders. Increased paraspinal electromyographic (EMG) activity has been observed in subjects with CLBP that may be the result of both voluntary and non-voluntary changes in motor control in response to perceived stress (Fryer, 2004). Unexpected failures and recurrences after physical and surgical therapies have been documented. One out of three patients operated for herniated lumbar disc in their area presented with failed disc surgery with persistent pain, fatigue, exhaustion and also emotional problems that interfered with their job and only 2 out of three patients, who were active before the operation, returned to work (Rodríguez-García, et al 2005).

1.6 QoL in CLBP.

In recent years, Quality of life (QOL) has become a key concept in the medical community where health care places dual emphasis on treatment and quality of care. WHO defines QOL as an ‘individual’s perception of his/her position in life in the context of culture and value system in which they live and in relation to their goals, expectations, standards and concerns’ (WHO 1996). It depends on a patient’s physical, psychological
and social responses to a disease and its treatment (Schipper H 1990). One percent of the US population are chronically disabled due to Chronic Low Back Pain (Franks J 1996). Studies on QOL in chronic diseases including CLBP point to factors such as chronicity, seriousness of the episode, stress and depression reduce the QOL (Anderson G B J 1997). Chronic low back pain (CLBP) in women seems to be associated with the lowest quality of life amongst many types of non-malignant chronic pains as was observed in a survey carried out in a multidisciplinary pain clinic in Netherlands (Lamé I E et al 2005).

1.7 Need for CAM
The modern medical system has replaced almost all the traditional systems of medicine in different parts of this globe because of its rational basis. It has proved itself most effective in saving man from the fatal hands of contagious and infectious diseases. However, rapidly increasing incidence of stress related ailments is posing a great challenge to the modern medical system. This has led to research in non-pharmacological therapies including yoga. It is here that CAM research appears to make a vital contribution to the modern medical system. A survey reported 38.4% of LBP patients use CAM therapy as a treatment method (Fleming et al, 2007), including massage therapy, chiropractic treatment, acupuncture, yoga, herbs, and supplements. Acupuncture treatment for LBP showed significant reduction in pain (Brinkhaus, et al., 2006). However, regular exercise 3-4 times per week or more would be most effective in reducing the incidence and duration of low back pain (Kwon et al, 2006). Psychological interventions had positive effect on LBP (Hoffman et al 2007).

1.8 Yoga therapy
Yoga offers a largely unexplored, widely available resource for the management of psychosomatic diseases. Yoga as a mind body therapy is being practiced increasingly in
both Indian and western populations. It is an ancient Indian science that has been used for therapeutic benefit in numerous health care concerns. These techniques not only bridge psychosocial and somatic aspects of care but also address the subject’s spiritual needs.

Yoga techniques such as āsānās (postures), prāṇāyāma (voluntary regulated nostril breathing), yoga nidrā (guided relaxation with imagery), meditation and yoga philosophy promote physical wellbeing and mental calmness. A number of studies exist on the efficacy of yoga. These include osteoarthrosis (Garfinkel et al., 1998), multiple sclerosis (Oken et al., 2004), bronchial asthma (Nagarathna and Nagendra, 1985; Vedanthan et al., 1998), pulmonary tuberculosis (Visweswaraih and Telles, 2004), drug addiction (Shaffer et al., 1997), hypertension (Murugesan et al., 2000), irritable bowel syndrome (Taneja et al., 2004), lymphoma (Cohen et al., 2004), anxiety neurosis (Nagaratna et al., 1988; Gupta et al., 2006), depression (Woolery et al., 2004), chronic low back pain (Galantino et al., 2004), chronic head ache (John P J et al., 2007) and fibromyalgia (da Silva G D et al., 2007) to name a few. Kjellgren et al (2007) report increasing rates of psychosocial disturbances give rise to increased risks and vulnerability for a wide variety of stress-related chronic pain and other illnesses. Relaxation exercises aim at reducing stress and thereby help prevent these unwanted outcomes. Sūdācāna kriyā and related practices (SK&P) which are understood to have favorable effects on the mind-body system. In a three year follow up study it has been shown that mindfulness meditation can have long-term beneficial effects in the treatment of people diagnosed with anxiety disorders. (Miller et al 1995). da Silva et al (2007) in their study aimed to verify whether techniques of yoga with and without the addition of Tui Na might improve pain and the negative impact of fibromyalgia (FMS) on patients' daily life. These study results showed that yogic techniques are valid therapeutic methods for reduction of pain in FMS. John et al
(2007) in their study demonstrated a significant reduction in migraine headache frequency and associated clinical features, in patients treated with yoga over a period of 3 months.

1.9 Yoga for CLBP

There are a few studies that point to the effect of yoga in reducing other types of chronic pains such as chronic headache (John et al., 2007) and fibromyalgia (da Silva et al., 2007). A few peer reviewed studies of yoga and CLBP have been published. (Vidyasagar et al., 1989, Galantino et al., 2004). Two well designed RCTs on yoga in CLBP showed that Vini yoga (Sherman et al., 2005) and Iyengar yoga (Williams et al., 2005) were effective in reducing pain, analgesic usage and functional disability when administered as an outpatient intervention for 3 and 4 months respectively. Different yoga practices have been used to reduce stress, anxiety and depression. Yoga-based mindfulness meditation showed beneficial effects on perceived stress and anxiety disorders (Carmody, 2008, Miller et al., 1995). Increasing knowledge of the modulating effects of mood and other central nervous system mechanisms on pain has had a considerable effect on the management of CLBP with increasing trend towards the non surgical methods of pain control and relief. The gate control theory has provided the physiological basis of the biopsychosocial model. Pain can no longer be regarded as merely a physical sensation of noxious stimuli or disease. Conscious experience of pain can be modulated by mental, emotional and sensory mechanisms. The RCTs on CLBP and yoga have demonstrated its efficacy after the intervention for 3 to 4 months, in an out patient setting. Bijlani et al reported favorable metabolic effects after 9 days of yoga-based lifestyle change program (4 hours per day) in patients with hypertension and diabetes mellitus which pointed to the feasibility of an effective short-term yoga program. It appears that yoga may also be effective when condensed into a shorter intensive program than spread over many weeks.
without compromising on the total duration of yoga practice hours. The feasibility and acceptability of an intensive short-term program with good results will be more welcome in CLBP in today’s fast life when patients need to get back to normalcy and return to work as quickly as possible. These studies and our own experience in treating psychosomatic diseases including CLBP for 25 years and pilot studies on CLBP led us to plan an intensive week long residential yoga program. In this study we proposed that the multidimensional approach of yoga that is meant to provide better mastery over the modifications of the mind would have addressed the psychosomatic aspect of CLBP. This is also supported by a study that showed significant reduction in state and trait anxiety scores after a short-term yoga-based lifestyle intervention for 10 days in patients with different psychosomatic problems (Gupta et al., 2006).

1.10 Need for present study

Although these studies have shown the effect of yoga in reducing chronic pain or anxiety or depression independently there are no studies to date that have shown significant improvement in emotional factors along with pain and spinal mobility in CLBP. Hence the purpose of this study was to determine the efficacy of yoga therapy on pain-related outcomes, efficacy of yoga on disability due to pain and spinal flexibility, and quality of life in patients with CLBP in a short-term comprehensive intensive residential setup which would hasten the time of recovery as patients have to get back to normal life as soon as possible.