

1 INTRODUCTION

Musculoskeletal disorders (MSD) constitute a major proportion of all registered and/or compensable work-related diseases in many countries, representing a third of all registered occupational diseases (Punnett et al., 2004). Global Burden of Disease 2010 Study revealed that, LBP top the list in terms of disability and sixth in terms of Disability-adjusted life-years (Hoy et al., 2014).

Low back pain is the second most cause of disability in US adults. More than 80% of the population will experience an episode of CLBP (Freburger, 2009). Recurrence of LBP with the percentage ranging from 20% to 44% within 1 year for working population to lifetime recurrence upto 85%.CLBP prevalence was around 50% higher in womens than in men (Ganesan et al., 2017). Many studies had a response rate lower than 75% the chronic low back pain (Meucci et al., 2015).

Nursing occupation is the second highest incidence of all types of non-fatal work related injuries in U.S.A (Maul et al., 2003). Cross sectional study on Low back pain among nurses in Slovenian found 85 % prevalence (Skela-Savič et al., 2017). Low back pain (LBP) can be described as low back pain without underlying cause or disease, and has a lifetime prevalence of 80% (Palmer et al., 2001). Point prevalence ranges from 12% to 33%, with 90% of acute episodes recovering within six weeks. However, 62% of people experiencing their first episode of LBP will develop chronic symptoms lasting longer than one year, with 16% of people still sick listed from work at 6 months (Smith et al., 2014).

Burden of LBP:

LBP represents a major social and economic problem (Allegri et al., 2016). The prevalence of CLBP is estimated to range from 15 to 45% in French healthcare workers (Cougot et al., 2015) the point prevalence of CLBP in US adults aged 20–69 years old

was 13.1% (Shmagel et al., 2016). The general population prevalence of CLBP is estimated to be 5.91% in Italy (Juniper et al., 2009). The prevalence of acute and CLBP in adults doubled in the last decade and continues to increase dramatically in the aging population, affecting both men and women in all ethnic groups (Freburger et al., 2009). LBP has a significant impact on functional capacity, as pain restricts occupational activities and is a major cause of absences. Its economic burden is represented directly by the high costs of health care spending and indirectly by decreased productivity (Delitto et al. 2012). These costs are expected to rise even more in the next few years. According to a 2006 review, the total costs associated with LBP in the United States exceed \$100 billion per year, two-thirds of which are a result of lost wages and reduced productivity (Katz, 2006).

According to the data published in *The Lancet*, in 2010 musculoskeletal disorders were the cause of nearly 166 million years lived with disability (YLDs), with neck and low back pain accounting for 69.9% of the total. In Poland, in 2014 low back pain was self-reported by 28.4% of women and 21.2% of men aged 15 years and over, neck pain by 21% of women and 13% of men, and middle back pain by 19% of women and 12.9% of men. In 2015, nearly 33 million man-days were lost due to spine disorders, and nearly 2.7 million medical certificates were issued for back pain (15% of the total) (Raciborski et al., 2016).

The prevalence of laboratory work-related musculoskeletal problems has been reported to be between 72% and 80% in Iran and India. The lower back (31 to 43%) and neck (18 to 33%) are common sites of laboratory work-related musculoskeletal problems (Sadeghian et al., 2014).

Causes of Low Back Pain

LBP symptoms can derive from many potential anatomic sources, such as nerve roots, muscle, fascial structures, bones, joints, Inter Vertebral Discs (IVDs), and organs within the abdominal cavity. Moreover, symptoms can also spawn from aberrant neurological pain processing causing neuropathic LBP (Smart et al., 2012). The diagnostic evaluation of patients with LBP can be very challenging and requires complex clinical decision-making. Nevertheless, the identification of the source of the pain is of fundamental importance in determining the therapeutic approach (Amirdelfan et al., 2014). LBP can also be influenced by psychological factors, such as stress, depression, and/or anxiety (Besen et al., 2015). History should also include substance use exposure, detailed health history, work, habits, and psychosocial factors (Minkalis et al., 2016).

Imaging findings are weakly related to symptoms. In one cross-sectional study of asymptomatic persons aged 60 years or older, 36% had a herniated disc, 21% had spinal stenosis, and more than 90% had a degenerated or bulging disc (Boden et al., 1990).

Risk factors include heavy physical work; frequent bending, twisting, and lifting; and prolonged static postures. Numerous studies have reported that the prevalence of low back pain increases in middle aged women (Wáng et al., 2016; Shemshaki et al., 2013). As chronic LBP could have simultaneous multiple pain generators, a multi-disciplinary diagnosis and multimodal treatment is necessary. Biopsychosocial model is gold standard in treating non specific CLBP (Allegri et al., 2016).

A case control twin study found the different factors such as physical workload of the lumbar spine, specifically, the engagement in different types of work (n=23/24 pairs, 96%). Types of work included those involving heavy loads, lifting, manual tasks, awkward postures, and gardening etc. Along with the physical strain psychological factors are also associated with it (Oliveira et al., 2015). There is growing consensus

that psychosocial factors play a role in the development of CLBP (Mosrafa et al., 2008; Habibi et al., 2012).

Psychosocial variables will be having more impact than biomedical or biomechanical factors on CLBP and disability related to it. According to the bio-psychosocial model, a patient's functioning is influenced by biological, psychological and social factors.

Psychological distress has been identified as one potential pathway by which an episode of pain influences the development of persistent disabling symptoms; analysis of the components of psychological distress revealed that the symptoms of depression and stress, but not anxiety, are responsible for mediation of the pain-disability relationship. (Hall et al., 2011).

Occupation and CLBP

CLBP and identification of risk factors in evolution toward chronicity has been the subject of numerous controversial works. Recent studies show the need for networked care for the patient, including health actors as well as interlocutors within the company, to enhance diagnosis and care quality (Cougot et al., 2015). Several psychosocial factors at work place may contribute for LBP. Nurses are more vulnerable populations among healthcare professionals which negatively effects physical, psychological, social and quality of life.

One study shows that health professionals and especially nurses and midwives have the highest odds of developing low back pain (Hafner et al., 2018). A Slovenian survey on health-related absenteeism also established that female health and social care employees are the most susceptible to low back pain (Bilban et al., 2007).

Management of CLBP

Most clinical practice guidelines for chronic LBP recommend patient education, supervised exercises, multidisciplinary treatment and cognitive behavioral therapy, as

well as short term use of pharmacological therapies such as paracetamol, non steroidal anti inflammatory drugs and weak opioids. Currently, the guidelines do not recommend the use of chiropractic therapies as unimodal or long term interventions (Pillastrini et al., 2012). To treat the back pain multidisciplinary approach is needed with integrated care. For some back pain sufferers conventional treatments have limited therapeutic affect (Chenot et al., 2007) leading often to the use of various ‘alternatives’.

Low back pain (LBP) is often treated using integrative medicine (IM). Most reviews have focused on a single complementary and alternative medicine (CAM) therapy for LBP rather than evaluating wider integrative approaches. CAM is a group of diverse medical and healthcare systems, practices, and products that are not generally considered part of conventional medicine (Hu et al., 2015). In recent years there has been growing interest in the use of CAM for the treatment of back pain, growing body evidence supports the use of CAM for improving back pain outcomes, with back pain being the most common condition for which patients use CAM. This has led to the need of research in other non-pharmacological therapies including yoga (Ghidayal et al., 2016).

Yoga includes a variety of theories and practices that originated in ancient India and have evolved and spread throughout the world. In the two decades Yoga emerged as Complementary and Alternative Medicine (CAM) or therapies with stamp of National Institutes of Health. Yoga and Yoga therapy has been practices across the globe. Yoga includes *Asāna* (postures), *Prānāyāma* (voluntary regulated nostril breathing), relaxation techniques, meditation and counseling. Literature supports Yoga as a CAM to promote wellbeing/ well, treating several psychosomatic / lifestyle diseases. Multiple systematic reviews on yoga for low back pain showed promising results but the most of

the studies lack the RCT, bigger sample size, specific objectives. In the present study we made an attempt to overcome the lacuna which was found in earlier studies.

Need for the study

Low back pain (LBP) was identified by the Pan American Health Organization as one of the top three occupational health problems (Punnett et al., 2005). Nursing occupation is the second highest incidence of all types of non-fatal work related injuries in U.S.A (Maul et al., 2003).

Yoga is one of the CAM which widely used across the globe (Meyer et al., 2012). Several studies revealed the feasibility & safety of therapeutic yoga (Narasimhan et al., 2011). The earlier studies had revealed that back pain as mechanical/ physical strain in nurses and even treatment is also limited to physical level (Zhao et al., 2012). Several studies revealed relation between mind-body medicines (Wahbeh et al., 2008). Stress is one of the risk factors which induce back pain (Vargas-Prada et al., 2012). Complementary and Alternative Medicine (CAM) is commonly used in MSD (Grazio et al., 2011). Yoga is found beneficial in pain, functional disability, spinal flexibility (Tekur et al., 2008) anxiety, depression (Tekur et al., 2012) and it also improves quality of life compare to physical exercises (Tekur et al., 2010). Although there are a wide variety of treatments for back pain, including medications, exercise, education, self-care, injections, life-style aids, manual therapies, complementary and alternative medicine (CAM) therapies, minimally invasive treatments and surgery, there is surprisingly little consistent evidence to support most of these treatments (Haldeman et al., 2008) due to unavailable, insufficient or conflicting evidence. However, low back pain patients are relatively dissatisfied with their medical care. Eisenberg found that most people with back problems considered CAM care to be superior to conventional medical care for back pain (Eisenberg et al., 2012). At present, no previous effort has

been made to assess the effect/efficacy of integrated Yoga for CLBP in nursing professionals. Considering this fact, the current study was designed to gain preliminary insights into holistic/ integrated approach in dealing the CLBP faced by nursing students/nurses in the India.