

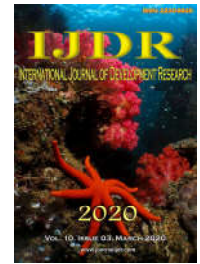


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RELATIONSHIP BETWEEN LUMBAR NEUROMUSCULAR PAIN, LUMBAR DISABILITY AND PHYSICAL PERFORMANCE IN PATIENTS WITH CHRONIC NONSPECIFIC LOW BACK PAIN

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ABSTRACT

Objetivo: Nonspecific low back pain (LBP) refers to pain and discomfort localized in the lumbo-sacral region, with or without radiating leg pain. The patient often shows pain between the costal margins and the inferior gluteal folds, and it is usually accompanied by painful limitation of movement. Non specific Low back pain can also affect the person's health, physical performance, quality of life. It also increases the medical burden and social costs. The LBP imposes high direct and indirect costs on the patients and therefore the society. **Methodology:** In this study subjects 41 subjects were taken, who were having nonspecific chronic low back pain for more than 3 months, male and female with age group between 18 and 35 years old, and a minimum pain intensity score of 3 on the Numerical Pain Rating Scale (NPRS). Subjects who had any history of malignancy or spinal fracture, had undergone any surgical procedure in the previous 6 months, had orthopedic or neurological diseases affecting ambulation, pregnant women were excluded from the study. **Result:** The data were analyzed by using Pearson correlation Coefficient to check the relationship between pain by using NPRS, disability by Roland Morris questionnaire, Physical performance by using WHOQOL-BREF. **Conclusion:** This study concluded that there was a positive correlation between neuromuscular pain and lumbar disability and negative correlation between neuromuscular pain and physical performance.

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INTRODUCTION

Nonspecific low back pain (LBP) refers to pain and discomfort localized in the lumbo-sacral region, with or without radiating leg pain. The patient often shows pain between the costal margins and the inferior gluteal folds, and it is usually accompanied by painful limitation of movement (Airaksinen, 2006). Chronic nonspecific low back pain (CNSLBP) has been defined as a persistent pain in the lower back for at least three months with no known causes (Ferrari et al., 2015; Isgro et al., 2014; Lee and Kang, 2016). Low back pain (LBP) is one of the leading forms of chronic pain and is among the leading causes of pain and disability (Hoy, 2014 and Vos, 2010). LBP is a most common musculoskeletal disorder involving the muscles and bones of the back.

It affects about 40% of people at some point in their lives (Hoy, 2012). The prevalence of low back pain in the general population is reported to be up to 18%, increasing to 31% of the population reporting low back pain in the last 30 days, 38% in the last 12 months, and 39% at any point in life (Nascimento, 2015). A prognosis of low back pain is directly related to the duration of the symptoms (Tulder, 2006; Costa, 2009; Ulug, 2016). Around 85% of chronic low back pain has no specific diagnosis or pathology which is called as nonspecific chronic low back pain¹. Nonspecific Low back pain can also affect the person's health, physical performance, quality of life. It also increases the medical burden and social costs. The LBP imposes high direct and indirect costs on the patients and the society (Henschke, 2008; Hestbaek, 2003), Whereas a specific pathology has not been identified for

Chronic nonspecific low back pain, mechanical factors (e.g., changes in muscle length, strength, or endurance) may contribute to the pain and disability (Bae, 2017; Farahbakhsh, 2018; Nourbakhsh, 2002; Pillastrini, 2015; Villafañe, 2005; Villafañe, 2016 and Yoon, 2013). The neuromuscular function including several parts: muscle strength; muscle power; muscle endurance; voluntary muscle activation; and proprioception (Jensen, 2017). Pain problems have been viewed as complex, multidimensional developmental processes where various psychosocial factors are of the utmost importance (Skevington, 1995 and 1996). A variety of risk factors are known to contribute to this condition. These included increased age, female gender, low educational status, obesity, occupation and psychological factors. In addition to these, postural variations (including variations in the lower extremity) play a significant role in predisposing an individual to low back pain by altering the stresses placed on soft tissue structures around the spine. Ergonomic risk factors can result in musculoskeletal disorders of the lower extremities due to abnormal biomechanics and structural adaptations. Abnormal joint loading, muscle imbalances and deviation from neutral alignment which are observed in lower extremity malalignment may cause musculoskeletal dysfunction (Usa Karukunchit, 2015). There have been many studies done on nonspecific low back pain mainly prevalence and associated factors. So the aim of the study was to correlate the neuromuscular lumbar pain, disability and physical performance in chronic nonspecific low back pain.

MATERIALS AND METHODS

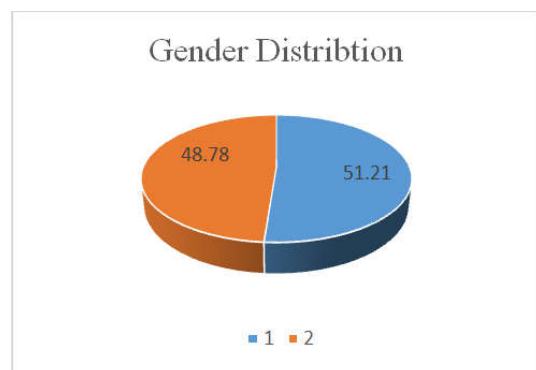
The experimental Study was conducted on the in and around Surat, Gujarat, India by Purposive sampling. Total 41 patients were included in the study. The sample size was calculated in G power 3.1.9.2 with effect size 0.50 and $\alpha = 0.05$ at 80% power. Sample size calculated was 52, with a drop out chances of 20% the total sample size was 41. The inclusion criteria were: nonspecific chronic low back pain for more than 3 months, male and female with age between 18 and 35 years and a minimum pain intensity score of 3 on the Numerical Rating Scale (NPRS) (Farahbakhsh, 2018). Subjects who had any history of malignancy or spinal fracture, had undergone any surgical procedure in the previous 6 months, had orthopedic or neurological diseases affecting ambulation, pregnant women were excluded from the study. In this study Pen and Pencil, Paper, Measure Tap, Chair with and without armrest, Consent form, NPRS sheet, Assessment Form, Roland Morris questionnaire, WHO -QOL BREF sheet were used. Outcome measures were -NPRS for pain, Roland Morris questionnaire for disability and WHO-QOL BREF for physical performance.

Procedure: Ethical clearance was taken by the institutional ethical committee. We contacted the participants using study flyers, newspaper advertisements, and a list of patients with low back pain. All the participants were confirmed as having chronic nonspecific low back pain, as diagnosed by an orthopedist through a detailed evaluation and imaging (x-ray), to exclude associated diseases. After the evaluation by a physician, the participants were contacted by phone and invited to participate in the study. Participants gave their informed consent before participation. A written consent seeking the permission to conduct the research was taken. First, the demographic data and subject Performa sheet was filled. Subjects were screened for the inclusion and exclusion

criteria. After screening the subjects, they were asked to fill the Performa. Pain was assessed using the numeric pain rating scale (NPRS). This is an 11-point numeric pain scale, ranging from 0 to 10, on which 0 indicates “no pain” and 10 the “worst possible pain” at the time of the assessment (George, 2006). For disability, the Roland Morris Disability Questionnaire was used to assess functional disability due to low back pain. This questionnaire consists of 24 questions that focus on regular activities in daily living. Each affirmative answer is awarded 1 point and the final score is determined as the total number of points. Total scores range from 0 to 24, with higher scores reflecting increased disability. Scores above 14 indicate severe impairment (Nusbaum, 2001). Quality of life was assessed using the WHO -QOL BREF to assess health related quality of life.

RESULTS

All the statistical test and calculations were performed using SPSS version 20.00 software. Total 42 patients were recruited. The data was normally distributed using Shapiro Wilk test. The mean \pm S.D value for age was 26.65 ± 5.42 . Gender distribution is given in the chart. Mean and SD for NPRS was 6.56 ± 2.69 , for Roland Morris Disability Questionnaire was 15.70 ± 6.22 and for WHOQOL-BREF was 86.88 ± 7.98 respectively.



Graph 1. Illustrates Percentage of Gender Distribution

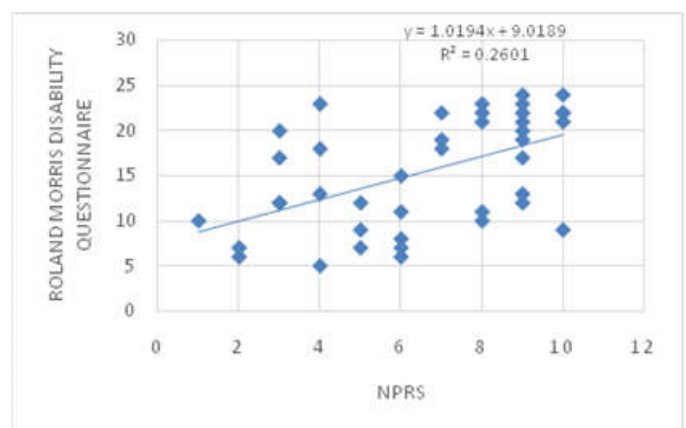


Figure 1. Illustrates Positive correlation between NPRS and Roland Morris Disability Questionnaire

Here Pearson correlation coefficient was used to examine relationship between the NPRS and Roland Morris Disability Questionnaire and NPRS and WHO-QOL BREF. Pearson correlation coefficient value between NPRS and Roland Morris Disability Questionnaire was $r = 0.515$ which is showing moderate positive correlation.

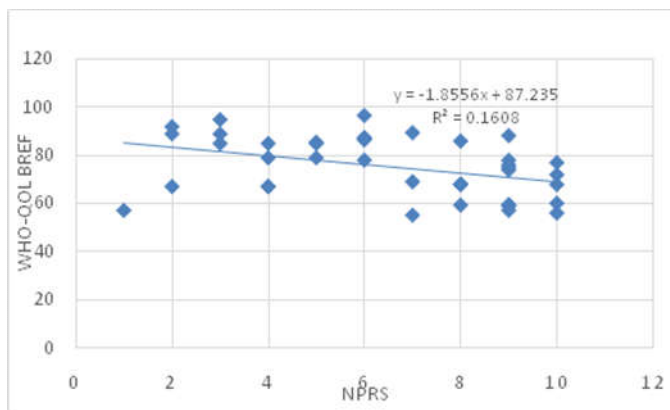


Figure 2. Illustrates negative correlation between NPRS and WHO-QOL BREF

Pearson coefficient correlation value between NPRS and WHOQOL-BREF $r = -0.401$ which is showing negative correlation.

DISCUSSION

The aim of this study was to find the correlation between lumbar neuromuscular pain, lumbar disability and physical performance in patients with chronic nonspecific low back pain. The result showed that there was correlation between lumbar neuromuscular pain, lumbar disability and physical performance in patients with chronic nonspecific low back pain. In one study conducted by Raymond W. Mc Gorry et al. (2000) the relationship between pain intensity, disability and the episodic nature of chronic and recurrent low back pain. They found a significant effect of pain intensity on disability. The study concluded that during an episode of low back pain, higher pain levels are related to greater disability and medication use²⁹. Present study shows the positive correlation between lumbar neuromuscular pain and lumbar disability. In addition, Rabini et al. found a significant correlation between disability and quality of life in this population (Rabini, 2007). Horng et al (2005) reported that the presence of lumbosacral radiculopathy correlates significantly with poor HRQOL. This may not necessarily be contradictory as numbness in the lower limbs may be a consequence of lumbosacral radiculopathy. The increasing incidence of disability and pain intensity in patients with LBP is a major predictor of poor HRQOL, which has been corroborated by several studies. In present study, negative correlation was found between pain and physical performance. Due to pain and disability the patient may not be able to perform his/her activities of daily living. This can lead to decrease of physical performance. One study showed that the HRQOL of LBP patients worsen with increasing pain severity and disability. This inverse relationship has been reported in other studies on the Caucasian and Asian populations (Horng, 2005; Kovacs, 2005; Patrick, 1995; Mishra, 2017). Many previous studies have also been done to check the relationship between pain and quality of life and they also found negative correlation which also supports present study. With the positive nonspecific low back pain history patient has decrease ability to perform any task. This can affect the disability of patient which will be increasing with increase pain. Ultimately these will cause the dependency and significant reduction in the any patient physical performance.

Conclusion: This study concludes that a positive correlation exists between lumbar neuromuscular pain, lumbar disability and negative correlation between lumbar neuromuscular pain

and physical performance in patients with chronic nonspecific low back pain.

Clinical Implication: The clinical importance of current findings is to ensure the relationship between chronic nonspecific low back pain and disability, a factor that clinicians need to take into account when treating their patients. Concerning LBP treatment, our observations were consistent with the concept of physiotherapy, which emphasizes not only pain relief but also functional improvement by the therapeutic exercise in order to promote a better HRQOL. Whenever we are managing chronic non-specific low back pain comprehensive planning needs into consideration for pain, disability and quality of life.

Limitations: Sample size was small. In this study only 18-35 year of age group were included so these findings cannot be applied to entire human population.

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Conflict of interest: none declared.

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