

LOSS OF LUMBAR LORDOSIS CAUSING DISABILITY IN YOUNG ADULTS WITH LOW BACK PAIN: A COMPARATIVE STUDY

Physiotherapy

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ABSTRACT

Lumbar lordosis is one of the most important feature of the human spine which dissipate forces evenly in and around the structure of the spine. And if this lumbar lordosis reduces low back pain might occur which is one of the most prevalent cause of decreased quality of life and disability in adults. So, this study is designed to find the effect of loss of lumbar lordosis causing disability in young adults with low back pain. Total 160 low back pain subjects were included, 80 subjects with normal lumbar lordosis along with other deteriorative changes on MRI were in group 1 whereas 80 subjects with loss of lumbar lordosis along with other deteriorative changes on MRI were in group 2. Disability of both the groups was measured using Roland Morris Disability Questionnaire (RMDQ). The total scoring of all the subjects were analyzed using independent t test in SPSS 20 version ($p < 0.05$). Significant difference was found in RMDQ score in between both the groups. The results of this study showed that group 2 had significantly greater disability in comparison to group 1. The result of the study concluded that loss of lumbar lordosis could affect low back pain and can cause greater disability in young adults with chronic low back pain.

KEYWORDS

Disability, Loss of lumbar lordosis, Low back pain, Roland Morris Disability Questionnaire

INTRODUCTION

Lordosis of the lumbar spine is one of the unique feature of the human spine. It is not developed in neonates but as the child acquires an upright posture the curvature of the spine starts developing. The main function of the curvature of the spine is to dissipate the shear load on the spine and surrounding soft tissue structures, So that an individual can stand erect and sit for long duration without undue fatigue and pain with minimal energy expenditure.

Low back pain is one such condition that nearly 50% of the population would have experienced once in their lifetime. The worldwide annual incidence and point prevalence to be 15-45% and 18-22% respectively (Wu A et al 2020 & Hoy D et al 2012). Low back pain in young adults is one of the most prevalent cause of disability and decreased quality of life. The cause of low back pain could be multifactorial including structural, mechanical, psychological or social in nature. If we take an account of low back pain in young adults, majority of people are highly active in their daily life and are likely to expose to various stress. Whereas, in older adults the most prevalent cause of low back pain are deteriorative degenerative changes in the spine. Many researchers have found that faulty posture or changes in the lumbar curve of spine could be one of the significant cause of low back pain. Therefore this study was designed to find the effect of loss of lumbar lordosis causing disability in young adults with low back pain so that adequate measure could be taken to prevent this from occurrence.

METHODOLOGY

After approval from the ethical committee subjects coming in orthopaedic OPD were approached. Those who fulfill the inclusion criteria of the study were included in the study. Procedure of the study were explained to all the subjects and a written informed consent was obtained from all subjects. The inclusion criteria of the study was 1) subjects with low back pain with more than three months duration 2) age between 21- 35 years 3) both male and female 4) subjects who does not undergone any spine related surgery. Subjects were excluded if they had 1) any congenital deformity of the spine 2) history of trauma and fracture 3) pregnancy 4) any spinal surgery.

A total of 160 young adults were included in the study. All the subjects were sent for lumbar spine MRI and evaluation was done by two expert radiologists. As per the MRI findings, 80 subjects were kept in Group 1 who showed other deteriorative lumbar spine changes with normal lumbar lordosis, whereas, 80 subjects were kept in group 2, who showed deteriorative changes in the lumbar spine along with loss of lumbar lordosis (figure 1).

Disability was measured in Low back pain patient using Roland Morris Disability Questionnaire (RMDQ). The questionnaire consists of 24 questions about activities of daily living which could be affected by

low back pain. The patient is asked to tick a statement which describes his/her condition best. The end score is the sum of all ticked boxes. The score ranges from 0 (no disability) to 24 (extremely severe disability).

Data analysis was done using SPSS 20. Difference in the Roland Morris disability questionnaire was analyzed using independent t test. ($p < 0.05$).

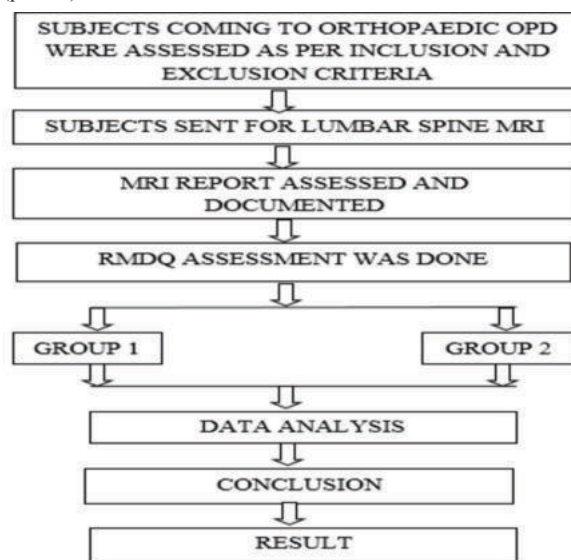


Figure 1: Flow diagram

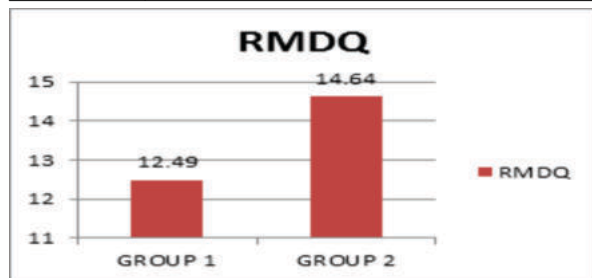
RESULT

There were 36 male and 44 female in group 1 with a mean age of 27.75 ± 4.474 whereas in group 2 there were 46 male and 34 female with a mean age of 29.10 ± 4.359 . The mean score of RMDQ was 12.49 ± 3.253 and 14.64 ± 4.289 for group 1 and 2 respectively (table 1). The result of this study showed significant difference between RMDQ score of group 1 and group 2 which means that group 2 had significantly greater disability in comparison to group 2 which had loss of lumbar lordosis along with other MRI changes (graph 1)

Table 1: comparison between Groups

	GROUP 1 N-80	GROUP 2 (with LOL) N- 80
Male	36	46
female	44	34
Mean AGE	27.75 ± 4.474	29.10 ± 4.359

RMDQ mean	12.49 ± 3.253	14.64 ± 4.289
T value	-3.573	
P value	0.000	



Graph 1: Comparison of RMDQ scores between groups

DISCUSSION:

A significant association was found between loss of lumbar lordosis and disability. Chun et al 2017 mentioned in their study that loss of lumbar lordosis is a major risk factor for low back pain. They further explained that a normal lumbar lordosis is a shock absorber which prevents lumbar pathologies and low back pain. Loss of lumbar lordosis and low back pain has a cause and effect relationship where reduced lumbar lordosis is a cause which results into low back pain.

The intervertebral disc of the spine has its contribution in the angulations of the spine. An attenuation in lumbar curve is mainly due to wedging or a reduction in the height of the intervertebral disc which initiate a cascade of disc degeneration and numerous spinal pathologies (Takeda N 2009). This decreased lumbar lordosis causes anterior sagittal imbalance which further enhances the stress and loading on the structure around the spine and the disc in between the two vertebrae. This increased stress induces cellular and structural cascade which make discs more prone for developing disc related pathologies.

Murray K J et al .(2017) also mentioned that altered lumbar curve correlates more with increased stress and load of the intervertebral disc and further increases low back pain. Hansen B B et al (2015) also found a strong association between loss of lumbar lordosis and low back pain and also mentioned that in patients with low back pain, decreased lumbar curve was noted in both standing and sitting position. Many of the patients shows decreased lumbar curve as a strategy to relieve lumbar spine pain which relieve tension on the spinal structure.

Loss of lumbar lordosis is a complex problem which ranges from mild to severe disability. Many researchers advocated that restoration of the normal lumbar curve is significantly associated with pain and function. There are various factors which were significantly associated with low back pain and its related disability. Due to low back pain many researchers reported pain related fear, functional impairment and disability. Intensity of pain could be another reason for disability in subjects with low back pain. It was also found that low self efficacy had a significant contribution in disability of the subjects. (Miki T et al 2021)

Lorio A D et al 2017 also mentioned in their study that subjects with chronic low back pain has significant association with some of the activities of daily living which leads to disability in those subjects. Subjects reported to had more difficulty in carrying shopping bags or taking bath, doing laundry or performing heavy household tasks. Doualla M et al 2019 listed factors that influence disability score in subjects with chronic low back pain. Among those factors intensity of pain is one of the factor that was significantly associated with Roland Morris Disability Questionnaire scoring. Subjects with chronic low back pain had more day of absence at work or limitation of activities of daily living.

Some limitation of this current research must be acknowledged. Firstly, the inclusion of only a specific age group of subjects with a limited sample size. And second, the addition of only one questionnaire as a measure of disability.

CONCLUSION:

This study revealed that loss of lumbar lordosis has an effect on low back pain and could also cause other MRI changes in the spine at a much faster rate which increases the severity of low back pain. So, we

can conclude that the intensity of low back pain due to loss of lumbar lordosis has a significant effect on disability.

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