

Prevalence of Gluteus Medius Weakness in People with Chronic Low Back Pain in General Population

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ABSTRACT

Background - Relationship between low back pain and weakness of gluteus medius extensively studied. Determining whether such relationship exist would help improve our understanding of etiology of low back pain.

Objective- To find out the Prevalence of gluteus medius weakness in people with chronic low back pain in general population.

Material and Methodology -for this study include Number of population -126, Test: -manual muscle testing and scale: - numerical pain rating scale

Result -Study show that out of 126 people interpretation of score 1-3 subject with mild low back pain have 30 subject (13%). With 4-6 score with moderate low back pain have 80 subject (24%). With 7 -9 score low back pain 16 subject (63%).

Prevalence of gluteus medius weakness in both extremities were observed by using MMT. In right side with grade 3 have 10 subjects. With grade 4 have 76 subjects. with grade 5 have 40 subjects. In left side with grade 3 have 6 subjects. With grade 4 have 70 subjects. with grade 5 have 50 subjects.

From the study it is concluded that Prevalence of gluteus medius weakness in people with chronic low back pain in general population

Keywords: Low back pain (LBP), Gluteus Medius (GM), Numerical pain rating scale (NPRS).

INTRODUCTION

Low back pain was recently reported to be single largest cause of disability across the globe. A variety of exercise intervention have been studied in randomized controlled trails and have been shown to improve pain and disability in people with chronic low back pain. higher prevalence of gluteal medius trigger point in people with low back pain .GM weakness associated myofascial pain and trochanteric bursitis in common clinical representation in people with LBP.¹ Low back pain is experienced in 60-80% of adults pt some point in their life

time. Andersson estimate annual world wild low back pain incidences in adult to be 15% and point prevalence to be 30%.² the estimation is that between 5.0% and 10.0 % of cases will develop chronic low back pain which responsible for high treatment cost, sick leave and individual suffering. ³ The United nation has recently recognized that low back pain is one of the leading causes of disability among individual aged 60 year leading to significant disability as well as great economic. some studies have demonstrated that low back pain is one of the most common causes of visit to

physician and men and women are equally affected by low back pain.⁴

Many conditions have been associated with low back pain contributing to its chronification such as psychological factor, job Dissatisfaction, obesity, smoking habits, schooling, labor, physical demanding, job, sedentary behaviors, depressing syndrome, labor, genetic and anthropological factor postural habit and climate change.⁵ Low back pain is classified into acute (6 week/ shorter) subacute (from 6 week to 3 months) and chronicle back pain (3 months or longer) according to the duration.⁶

In the terms of hip muscle strengths, there was moderate quality evidence that patients with CLBP have weaker hip abductor /hip extensor strength when compare to healthy control.⁷

GLUTEUS MEDIUS AFFECTING CHRONIC LOW BACK PAIN

Dysfunction of muscle of lumbopelvic hip complex is hallmark of low back pain.¹¹ Because of characteristics of hip joint function are closely related to low back pain.¹² Back and hip muscles strengthening exercises are important to prevent and treat chloric low back pain because muscle weakness risk factor.¹³

At the hip individual with low back pain more likely to exhibit reduce gluteus medius muscle strength and reduce hip abduction force output and altered hip muscle recruitment demonstrating a distant to proximal muscle activation pattern in lower limb compared to proximal to distal in healthy control. This alteration to gluteus medius muscle function and strength have been suggested to lead to low back pain¹¹

When Co-activation occur in two muscles that typically work in agonist and antagonist relationship it is generally strategy used to improve biomechanical stability. Prior researchers have linked with high magnitude of gluteus medius Co-activation with development of low back pain in asymptomatic working population during prolonged standing.¹¹

With regard to muscular influence on low back pain hip musculature play significant role in transferring forces from lower extremity up toward spine during upright activities and the theoretically may influence development of low back pain.¹⁴

Gluteus media control femoral motion primary during dynamic lower extremity motion and stabilizers pelvis in frontal and transverse plane.¹⁵ Gluteus medius weakness and consecutive loss of dynamic lateral stability of pelvis and lower back suggested to lead to increase lateral trunk flexion and subsequent intervertebral disc compression as well as after movement pattern which may contribute to development of lower back pain during standing.¹¹

Gluteus maximus is most important during 50% of trunk extension from full flexion when in intervertebral disc are known to be most at risk for herniation. thus, weak GM may lead to improper lifting techniques.¹⁶ Poor strength and delayed firing of hip extensor and abductor muscle has been observed in individual with chronic low back pain.¹⁷

In this study, we have quantified prevalence of gluteus medius weakness, low back pain in patient with chronic low back pain. Need of study is that low back pain has been identified as leading contributor of disability and was ranked 6 largest contributors to burden of global disease costing individual and government billion of dollar in both direct and indirect cost annually. Dysfunction of muscle of lumbo pelvic hip complexes hallmark of low back pain. At hip individual with low back pain are more likely to exhibit reduce gluteus medius muscle strength reduced hip abduction force output. Gluteus medius weakness and consequential loss of dynamic lateral stability of pelvis and lower back is suggested to lead to increase lateral trunk flexion and subsequent intervertebral disc compression as well as alter movement pattern which may contribute to development on exaggerate low back pain so to analyse this, we need to study prevalence of gluteus medius weakness in

people with chronic low back pain in general population.

MATERIALS & METHODS

126 subjects were taken who have low back pain more than 3 months. subjects were recruited if they have low back pain of duration more than 12-week, non-specific LBP, lower limb weakness, people with 18-year upto 60 years with low back pain. People with history of low back surgery, pregnancy, tumour, neurological condition, lumbar fracture, Material used was pen, paper, consent form, numerical pain rating scale, couch.

Numerical pain rating scale: -To assess pain intensity an 10 point numerical rating is used where 0-no pain, 10 is worst pain possible. NPRS is used to examine intensity of pain in patient with chronic LBP.

Manual muscle testing: - Manual muscle testing is used in rehabilitation and

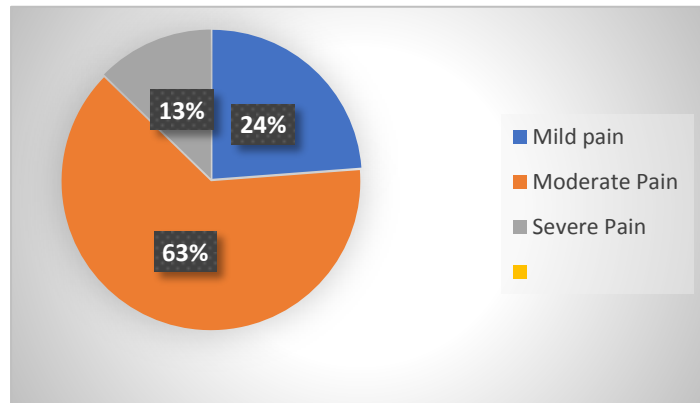
recovery to evaluate contractile units, including muscles and tendons, and their ability to generate forces. Manual muscles testing is a procedure for the evaluation of strength of individual Our muscle group based upon the effective performance of movement in relation to forces of gravity and medius muscle strength was tested by placing subject into side lying and having subject slightly extend hip While keeping the pelvis rotated slightly forward. Resistance was applied at ankle. manual resistance through available range of motion Gluteus.

RESULT

Interpretation of score 1-3 subject with mild low back pain have 30 subject (13%) With 4-6 score with moderate low back pain 80 subject (24%) With 7-9 score low back pain 16 subject (63%).

Score	Frequency
1-3	30
4-6	80
7-9	16

Table 1. Prevalence of chronic low back pain using numerical pain rating scale.



Pie chart 1: - Prevalence of chronic low back pain using NPRS

STATISTICS OF MANUAL MUSCLE TESTING

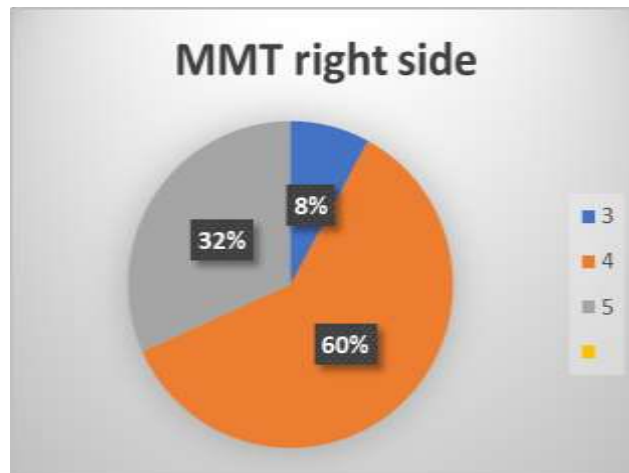
On the basis of grades of MMT both right and left gluteus medius were assessed.

Where they include right side gluteus medius strength active range of motion

against gravity grade 3 (10). Grade 4 active range of motion with minimum resistance but not full strength (76). Grade 5 normal in power (40).

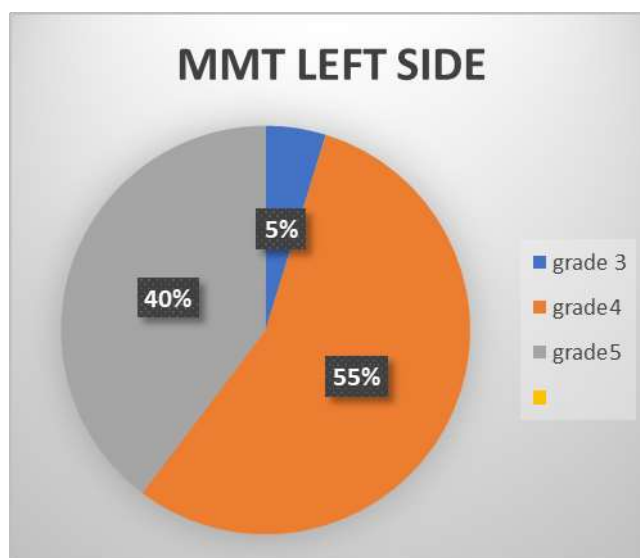
Where on left side it includes grade 3 (6). Grade 4 (70). Grade 5 (50).

Grade of MMT	Frequency
3	10
4	76
5	40



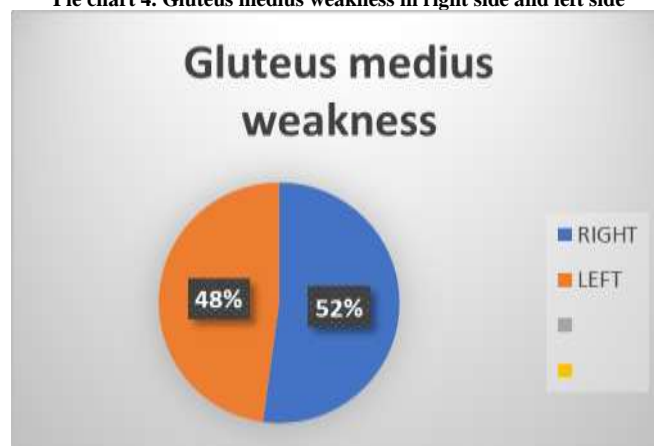
Pie chart 2: Percentage of strength of Right Side

Grade of MMT	Frequency
3	6
4	70
5	50



Pie chart 3: percentage of left side of gluteus medius strength

Pie chart 4. Gluteus medius weakness in right side and left side



DISCUSSION

Study was conducted on 126 people in age group of 18 to 60 year. This study was done to observe the prevalence of gluteus medius

weakness in people with chronic low back pain in general population.

Current physical therapy Reported to be single largest cause of disability across globe myofascial pain form gluteus medius

weakness and tender occur in majority of people with chronic low back pain.

A large proportion of our population score only 4/5 on MMT of gluteus medius muscle and thus this could be potential risk factor for development of low back pain. Use of dynamometry may better evaluation this apparent difference in muscle strength.

Reproduction of result with quantitative strength assessment such as dynamometer on low back pain itself would further help determine relevance of weakness to pain itself. Additionally there may be some amount of gluteus medius muscle weakness in population management of patients with LBP is guided by a treatment-based classification system that attempts to match subgroups of patients with the interventions that lead to the best outcomes. Much of this work has focused on acute LBP; patients with chronic LBP do not readily fit into this classification system. A recent review of classification systems for chronic LBP found strong evidence to support the reliability of only two systems: the McKenzie and the movement

CONCLUSION

Gluteus medius weakness common symptoms in people with chronic LBP. Future investigations should validate these findings with quantitative measures as well as investigate the effect of gluteus medius strengthening in people with LBP.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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